ICON Weekly Report

by
Peter Huessy, President of GeoStrategic Analysis

"Previews of Coming Distractions"

Week of July 17, 2020

HAC MARK-UP COMPLETED

The House Appropriations passed the defense budget marking up the bill Tuesday.[fiscal 2021 defense spending bill].For the major RDT&E accounts the Committee approved $306,682,000 for the continued development of the Columbia class ballistic missile submarine; and $2,848,410,000 for the continued development of the B–21 bomber. As for the ICBM programs, over-all we received GBSD cuts of $60 million and B-52 squadron cuts of $52 million, with overall ICBM/GBSD cuts of $87 million out of the $2.2 billion ICBM related budget request or a 3.9% reduction. [Susan has those details; the most serious cuts and changes were in the Energy and Water bill dealing with NNSA].

ADDED TO THE DEFENSE BILL? NEW START TREATY REQUIREMENTS

The HAC and HASC full committee markup and the floor consideration of the defense bill, respectively, will probably consider an amendment by House Foreign Affairs Chair Eliot Engel (D-NY) who will propose that no funding will be made available for supporting the deployment of any missiles, submarines, bombers or warheads beyond the 1550 allowed by the New Start treaty consistent with the Treaty's counting rules. Unless the President submits to Congress a report re what warheads will be deployed above New Start, what missiles, submarines or bombers will be affected, and a certification that the head of Strategic Command concurs, the costs of such action and why the new threats (if any) justify the US action; and how Russia and China might respond. In addition, the DNI shall report on the size, composition and posture of the deployed and non-deployed Russian nuclear systems, and a plan of how the administration will seek to have China and Russia join arms control discussions, and regular briefings to Congress of such discussions.

However, the amendment goes far beyond this general provision. It provides Congress complete oversight and direction of US nuclear arms control even in the absence of a Senate ratified treaty including independent assessment of the extent of the Russia and Chinese nuclear stockpile, the impact of different levels of deployed nuclear weapons, keeping the US beholden to an expired treaty unless the administration can prove a Russian violation, or if the administration has entered into a new agreement.

The President now has to certify whether the New Start treaty is in the interests of the US, justify why the treaty should expire, how to restrain Russian nuclear forces and ensure the US does not need more nuclear forces to still deter Russia if Russian forces increase beyond New Start levels;

what consultations we took with our allies; what changes in the US nuclear force would be required including increased costs, to meet US nuclear deterrence including extended deterrence, if New Start expires.

SENATE AND HOUSE FLOOR POSSIBLE AMENDMENTS TO THE DEFENSE BILL

The Senate will consider an amendment to cut 10% or $74 billion out of the defense budget in an amendment Senator Sanders will offer that Senator Schumer endorsed. A companion measure will be offered in the House along with amendments to both curtail and accelerate troops withdrawals from Afghanistan; prevent the use of force against Iran unless authorized by Congress or I response to an attack on the United States;

House Foreign Affairs Chairman Eliot Engel (D-N.Y.) has proposed calling for the extension of the New Strategic Arms Reduction Treaty that limits the nuclear arsenals of the U.S. and Russia through 2026. The agreement expires early next year, but could be extended up to five years. Engel's amendment would prohibit an increase in deployed warheads over the 1,550 limit imposed by the treaty unless authorized by Congress.

An amendment from Rep. Ben McAdams (D-Utah) would bar money to conduct or prepare for a nuclear weapons test. A separate measure from Nevada Democrats Steven Horsford and Susie Lee would require Congress to sign off on a nuclear test.

CALENDAR OF EVENTS

- 14th of July Dr. Uzi Rubin of the BEA Center in Israel will be discussing the Iran ballistic missile threat and Middle East regional security issues as well as the cooperative US-Israel missile defense programs at the Huessy/Mitchell seminar series on nuclear deterrence and missile defense. Video posted on the Mitchell Institute website. https://www.mitchellaerospacepower.org/aerospace-nation https://www.youtube.com/watch?v=NrdPe6wzcT4&t=88s..

- July 13, 2020, Mr. Huessy spoke on Secure Freedom Radio about nuclear weapons threats and challenges facing the USA. Link here: https://simplecast.com/s/10d92acd

- You are cordially invited to a webinar presentation on the topic: How the Nuclear Arms Control Lobby Killed Arms Control! with Mr. Peter **Huessy** Monday, July 27th, 2020 5:00 PM – 6:00 PM ET ** https://www.iwp.edu/events/webinar-how-the-nuclear
- July 29 Dr. Vernon of NNSA will speak as part of the MI/ANWA series of seminars on the Department of Energy/NNSA. B invitation only please contact Mr. Huessy.

- July 30, Admiral Charles Richard will speak from 11-12:30pm as part of the Huessy/MI nuclear and missile defense seminars series by invitation only. Including a special off the record Chatham House rules session with limited (150=-20) attendees again by special invitation only. Please contct Mr. Huessy.

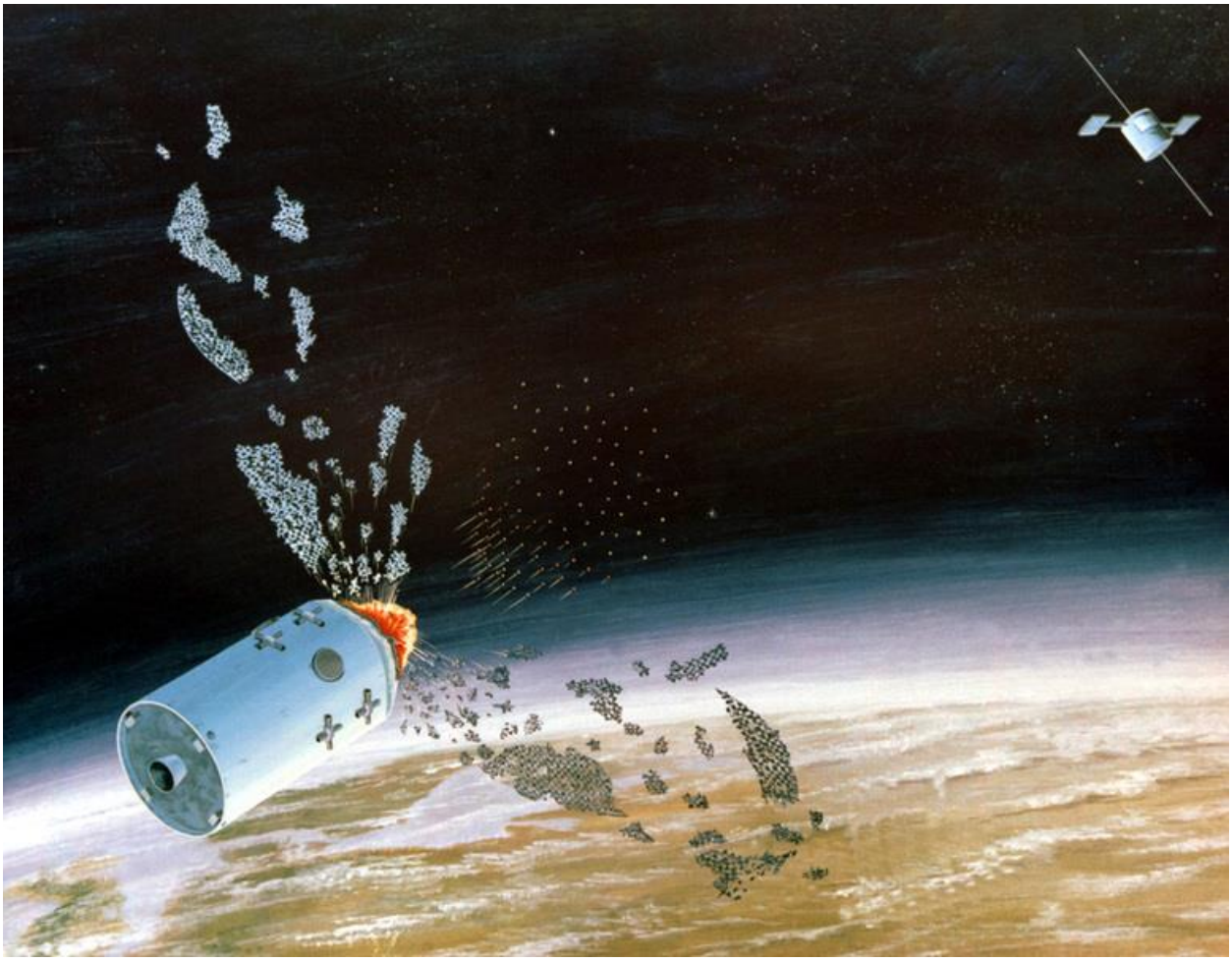
- July 31, Huessy/MI Space seminar series features NASA Administration Jim Bridenstine.
- August 20 from 230-3pm the NNSA administrator will address the GWU/MI Nuclear Fellows on Capitol Hill in a video seminar under Chatham House rules; limited to Hill defense and national security staff.
- On September 22th is my annual Task Force 21 Triad event I usually host at the Capitol Hill Club—we are doing this online this year for obvious reasons. General John Hyten will be our keynote speaker. Other featured speakers are Senator Cramer; Senator Hoeven; Tim Morrison, Bill Chambers, Frank Klotz, Michaela Dodge, Rick Fisher and Joe Bosco, HASC members Turner and Cheney and Cooper (House members Invited); Drew Walter and Brad Roberts/Amb. Lehman. Secretary Barrett has also been invited to speak live, with audience participation in the Q&A session, by invitation only. I am asking ICON members to vote which speakers they would like to have presentations that are live and will enable ICON members to ask questions and participate in the discussion.

Russia and China Have Militarized Space

Real Clear Defense:
Have Russia And China Already 'Militarized' Space?

By Dr Peter Vincent Pry

July 16, 2020



Space "Militarization" Hypocrisy

President Trump's U.S. Space Force is constantly under attack, from critics both foreign and domestic, as a giant step toward supposedly violating long-standing international norms and treaties against "militarizing space." Russia, China, and perpetual domestic critics of U.S. defense programs like the Arms Control Association, Union of Concerned Scientists, and Federation of American Scientists are particularly opposed to U.S. space-based missile defenses.[1]

According to Beijing, Moscow, and their like-minded U.S. allies, it is OK to use space satellites for sensors, communications, and global positioning to support terrestrial military operations on land, sea, and air. It is also OK to launch nuclear-armed ballistic missiles and hypersonic warheads through space without being guilty of its "militarization."

But to base defensive weapons in space capable of intercepting nuclear warheads would violate international norms, destabilize the principle of Mutual Assured Destruction (MAD), and ignite another costly and dangerous arms race for control of the "high frontier." Or so it is argued not

[1] Laura Grego, "Creating A Space Force Would Trigger A Space Arms Race And Threaten US Satellite Security" Union of Concerned Scientists (December 10, 2019).

only by Russia, China, and the American Left, but by enough officials in the U.S. Departments of State and Defense to thwart the near-term deployment of space-based missile defenses.

Disappointed Hopes for U.S. Space Force

Those of us who cheered President Trump's establishment of the U.S. Space Force hoped—and I believe President Trump intended—that it would become the vehicle for quickly resurrecting President Reagan's Strategic Defense Initiative (SDI), the so-called "Star Wars" program. President Reagan's SDI envisioned a space-based "shield" to intercept nuclear missiles, replacing MAD's immoral concept of national suicide with the moral principle of defending life—call the new concept Strategic Assured National Existence (SANE).

But officials at State and Defense worry that "militarizing" space by orbiting anti-missile systems to defend the U.S. homeland will ignite an anti-satellite arms race by Russia and China to threaten America's over 900 satellites.[2] By this thinking, U.S. national security will lose far more than it would gain from space-based defenses—because the U.S. economy and military depends far more on satellites than Russia, China, and other potential adversaries.

Accordingly, even though it is well within U.S. technological capabilities to deploy Brilliant Pebbles space-based missile defenses now, over the next 5 years for $20 billion, the Defense Department and U.S. Space Force have no such plans.[3] Space-based missile defenses currently are relegated to long-term research and development. If State and the Pentagon have their way "Star Wars" will never become reality and "Dr. Strangelove's" MAD will continue forever.

MAD versus SANE

One big problem with this thinking is that MAD is no longer what it used to be. Since the 1960s the criteria for enforcing MAD, established by then Defense Secretary Robert McNamara, is a residual U.S. capability—after a Russian first strike—to deliver 400 equivalent megatons (EMTs), enough to destroy 25% of Russia's population and 75% of its industry.[4] However, due to the New START Treaty, the U.S. has reduced its number of strategic nuclear weapons to 1,500 warheads. This is grossly insufficient, after a Russian disarming first strike, to meet the criteria for enforcing MAD.[5]

---

[2] E. Mazreanu, "Number of Satellites in Space by Country 2019" Statistita.com (September 4, 2019).

[3] Brilliant Pebbles was a successful space-based anti-missile technology developed by the Strategic Defense Initiative that could have been deployed by President Clinton, but who was ideologically opposed to national missile defense, regarding the ABM Treaty and MAD as "the cornerstone of strategic stability." Brilliant Pebbles would have comprised thousands of small, autonomous, space-based interceptors. See Donald Baucom, "The Rise and Fall of Brilliant Pebbles" Journal of Social, Political and Economic Studies (Summer 2004). General (ret.) James Abrahamson and Ambassador Henry Cooper, "America Must Revive Space-Based Defense Initiatives" Newsmax (August 14, 2017).

[4] Equivalent Megatons (EMTs) is a metric for counterarea and countervalue destructive capability. One EMT can blast 58 square miles with overpressures of at least 5 psi, enough to destroy all brick buildings. Dr. Peter Vincent Pry, *The Strategic Nuclear Balance: And Why It Matters* (Crane Russak, Taylor and Francis: 1990) "Equivalent Yield" pp. 187-198.

[5] Dr. Peter Vincent Pry, *What The Strategic Posture Commission Never Told You* (White Paper 2010) see "Expert Warns: MAD Is No Longer Mutual" All News Pipeline (March 14, 2018). See also Dr. Peter Vincent Pry, *Nuclear Wars: Exchanges and Outcomes* (Crane Russak, Taylor and Francis: 1990) "Countercity Casualties" pp. 216-223.

Perhaps unsurprisingly, since Moscow consistently does better than the United States in arms control negotiations, Russia can absorb a U.S. nuclear first strike and exceed MAD damage goals against the U.S., killing more than 25% of U.S. population and 75% of U.S. industry by delivering 100 EMTs. Even though the sides have equal numbers of strategic warheads (assuming Russia is not cheating on New START), Russia can do more damage to the United States because U.S. population and industry are much more concentrated in big urban-industrial areas.[6]

Moreover, U.S. National Missile Defenses have fewer than 100 interceptors while U.S. civil defenses are virtually non-existent, in contrast to Russia's many thousands of anti-missile systems and robust civil defenses.

Another big problem with banking on MAD instead of SANE and space-based defenses to deter World War III is that "strategic stability" is not what it used to be, as during the bipolar Cold War between the U.S. and USSR. Russia, China, North Korea, and soon (if not already) Iran comprise a more complex and much more aggressive multi-polar constellation of nuclear powers. The possibilities for nuclear war by design or miscalculation have increased exponentially.

Finally, it could be a fatal mistake for the U.S. to forego SANE's "Star Wars" and continue relying on MAD's "Dr. Strangelove" trusting that China, Russia, and perhaps others have not already "militarized" space with aggressive clandestine programs designed to sweep the skies of U.S. satellites, and thereby win the next war at the outset. Indeed, given China and Russia's contempt for international norms and noncompliance with treaties, it is likely norms and treaties are no significant obstacles to their clandestine militarization of space.

Therefore, State and the Pentagon should consider not only the known space threats from China and Russia, but possible hidden threats, as yet unknown, but well within their technological capabilities. Perhaps the Pentagon and State should weigh too the risk of forgoing "Star Wars" and leaving U.S. space assets naked to clandestine threats from Russia and China that are not only technologically possible, but even likely.

Russia and China: Space Threats

The Defense Department's *Defense Space Strategy* recognizes that Russia and China pose "immediate and serious threats to U.S. space operations" by means of hunter-killer anti-satellites, directed energy weapons, cyber and electronic warfare. The Pentagon warns that North Korea and Iran have growing capabilities to threaten U.S. space assets.[7]

Hunter-killer anti-satellites appear to receive most attention from DOD and the press, as Russia and China are both experimenting with novel anti-satellites. Russia has four known potential anti-satellites in orbit that appear to have practiced stalking a U.S. KH-11 reconnaissance satellite.[8]

---

[6] Ibid.

[7] Department of Defense, *Defense Space Strategy Summary* (June 2020) p. 3.

[8] Joseph Trevithick, "Russia Has Four Potential 'Killer Satellites' In Orbit, At Least That We Know About" TheDrive.com: The War Zone (August 16, 2018).

But DOD has recently acknowledged that a far bigger threat to U.S. satellites, instead of picking them off one at a time with hunter-killers, is the use of a high-altitude nuclear electromagnetic pulse (EMP) to disable U.S. satellites in large numbers, simultaneously, at the speed of light.

Deputy Assistant Secretary of Defense for Space Policy, Stephen Kitay, in May 2020 warned: "The challenge of a nuclear detonation is that it creates an electromagnetic pulse and signal that could then take out indiscriminately many satellites in space and essentially fry the electronics. That is a threat that we have to potentially be prepared for—a nuclear detonation in space."[9]

Space-based defenses are the best preventive for a nuclear detonation in space delivered by missile, as it could be intercepted during boost-phase before breaching the atmosphere to threaten U.S. space assets. This mission alone—protecting U.S. space assets—should be enough to warrant rapid deployment of space-based defenses.

However, instead of letting the U.S. Space Force " be all that it can be" by deploying space-based defenses, the Pentagon seems content to continue relying on deterrence and hardening satellites against attack. This could be a big mistake.

Nuclear-Armed Satellites?

Russia and China have the technical capability to make a surprise EMP attack by nuclear-armed satellite orbited over the south polar region to evade U.S. BMEWS radars and National Missile Defenses, as planned by the USSR during the Cold War.

During the Cold War, the USSR developed a secret weapon called the Fractional Orbital Bombardment System (FOBS) that would disguise a nuclear attack as a peaceful satellite launch, orbiting a nuclear-armed satellite over the South Pole to attack the U.S. from the south—from which direction the U.S. is blind and defenseless as there are no BMEWS radars or anti-missile defenses facing south. The FOBS satellite could deliver an EMP attack paralyzing U.S. retaliatory forces and C3I in the first shot of a nuclear war.

Miroslav Gyurosi in *The Soviet Fractional Orbital Bombardment System* describes Moscow's development of the FOBS as part of "a long running campaign of strategic deception against the West through the whole Cold War period, and the protracted development of the Soviet FOBS nuclear weapon system presents an excellent case study of such." Gyurosi:

"*The Fractional Orbital Bombardment System (FOBS) as it was known in the West, was a Soviet innovation intended to exploit the limitations of U.S. BMEW radar coverage. The idea behind FOBS was that a large thermonuclear warhead would be inserted into a steeply inclined low altitude polar orbit, such that it would approach the CONUS from any direction, but primarily from the southern hemisphere, and following a programmed braking maneuver, re-enter from a direction which was not covered by U.S. BMEW radars."*

[9] Ryan Pickrell, "The Pentagon Says It Needs To Be Ready Should An Adversary Try To Fry Satellites By Detonating A Nuke In Space" Business Insider (June 18, 2020).

"The first warning the U.S. would have of such a strike in progress would be the EMP...," writes Gyurosi.[10]

China and Russia also have the technical capability to clandestinely orbit a nuclear-armed satellite or satellites to be maintained in orbit for years to make a surprise EMP attack against the U.S. or other adversaries when needed. China has about 300 satellites in orbit, and Russia about 150, that could conceal among this large constellation one or a few illegal nuclear-armed satellites for EMP attack.[11]

Russian Colonel A.V. Kopylov writes in the flagship journal of the General Staff: "Nuclear war strategy has already planned nuclear explosions at an altitude of 50-100 kilometers to destroy enemy satellites' electronic instruments with electromagnetic pulse."[12]

China has a wide array of Space Launch Vehicles and satellite launch centers at Jiquan, Taiyuan, Xichang, and Wenchang that could be used for EMP surprise attack options by satellite. China's space and military programs are integrated. For example, the China Academy of Launch Vehicle Technology (CALT) "is China's largest and most important organization for the research, development and production of space launch vehicles (SLVs), liquid-fueled surface-to-surface missiles, solid-fueled surface-to-surface and submarine-launched ballistic missiles" including ICBMs, IRBMs, and SRBMs.[13]

Russia has equally or more impressive capabilities to harness for space warfighting.

Russia and China have great strategic incentives for a clandestine capability to perform EMP attack by satellite as a means of preempting or retaliating against their many nuclear-armed potential adversaries—including each other. EMP attack could enable China and Russia to "level the playing field" or defeat the U.S. by being the most effective means of quickly neutralizing large numbers of LEO satellites that are crucial to U.S. military operations.

HEMP and SGEMP

High-altitude EMP (HEMP) from a nuclear detonation in space propagates downward through the atmosphere, not through the vacuum of space, so no Russian or PRC satellites would be at risk from HEMP, unless the HEMP field is over China or Russia so satellite ground stations could be damaged—a highly unlikely scenario, that Moscow or Beijing would make a HEMP attack on themselves.

Satellites are at risk from an exo-atmospheric detonation for HEMP from the gamma rays which, if they reach the satellite and are close enough, can damage satellites by a phenomenon called

---

[10] Miroslav Gyurosi, *The Soviet Fractional Orbital Bombardment System*, Air Power Australia, Technical Report APA-TR-2010-0101 (January 2010 updated April 2012).

[11] Mazreneau, op. cit. Joyce Chepkemoi, "Countries By Number Of Military Satellites" World Atlas (March 16, 2018).

[12] Colonel A.V. Kopylov, "Weak Points of the U.S. Concept of Network-Centric Warfare" Military Thought, Vol. 3 (2011).

[13] "China Academy of Launch Vehicle Technology" https://www.nti.org/learn/facilities/59/.

System Generated EMP (SGEMP).[14] But Russia and China have almost certainly hardened their satellites against SGEMP and other phenomena that might be generated by the worst-case SGEMP threat they plan to employ: a Super-EMP weapon which is designed specifically to produce powerful gamma rays.

The U.S. hardens military satellites against SGEMP too, but probably not against the SGEMP produced by Super-EMP weapons, as the U.S. has no Super-EMP weapons. The U.S. does not even have simulators for Super-EMP weapons to test against this threat.

China and Russia can further protect their LEO satellites (those most at risk) from SGEMP by timing the HEMP attack so their satellites are over-the-horizon and will not be illuminated by gamma rays.

An exo-atmospheric nuclear detonation for HEMP can also damage LEO satellites by "pumping" the Van Allen belt with ionized particles, as happened after the 1962 STARFISH PRIME high-yield exo-atmospheric nuclear test that inadvertently damaged U.S. satellites.[15] Satellites can be hardened to survive this environment too, and presumably would be if HEMP attack is an important military option, as it is for Russia and China.

Ionization of the Van Allen belt is a much bigger threat to LEO satellites if the HEMP attack uses a high-yield weapon detonated above 100 kms HOB—and this too is another way of using a nuclear detonation in space to sweep the skies of U.S. satellites.

However, if China and Russia wanted to minimize Van Allen belt ionization to protect their own satellites, they could do so by employing Super-EMP weapons which are very low-yield (10 kilotons or less) to be detonated at 30-100 kms HOB which would maximize EMP field strength against such targets as a U.S. aircraft carrier group or ICBM wing. While attacking U.S. targets on land and sea with HEMP, SGEMP from a Super-EMP weapon, as explained earlier, could potentially "fry" U.S. satellites simultaneously.

If China and Russia are orbiting nuclear-armed satellites for EMP surprise attack, this would be one of their deepest and best protected military secrets. In addition to obvious strategic considerations, the Outer Space Treaty bans orbiting nuclear weapons in space. Moscow and Beijing have pursued a long propaganda offensive criticizing the U.S. for "militarizing space" intended to deter the U.S. from orbiting space-based missile defenses and from improving U.S. military capabilities in space.[16]

---

[14] The EMP Commission Report *Critical National Infrastructures* (2008) Chapter 10 "Space Systems" describes collateral threats to satellites from HEMP attack. All unclassified EMP Commission Reports are at www.firstempcommission.org.

[15] Ibid.

[16] U.S. Arms Control and Disarmament Agency, *Arms Control and Disarmament Agreements* (Washington, D.C.: 1982) "Outer Space Treaty" pp. 48-56.

Interestingly, one of China's foremost EMP scientists has published an unclassified article in a Western technical journal—that examines the "high-altitude electromagnetic pulse waveform amplitudes at satellite orbits."[17]

Losing World War III in Space?

Decades of experience dealing with Moscow and Beijing should by now have taught Washington that their unwarranted criticisms of U.S. defense policy—planning for nuclear first use, cheating on arms control, militarizing space—are usually a reliable indicator of their own plans and behavior.

Is it possible that Russia and China object so vehemently to U.S. "militarization of space" because they have already done so with nuclear-armed satellites, and themselves have secret plans to rapidly deploy space-based missile defenses in wartime?

President Reagan's vision of a space-based missile shield would have been stabilizing during the Cold War, and would be an excellent deterrent now, because it could at minimum greatly complicate adversary plans for a nuclear first strike. "Star Wars" could even render nuclear missiles obsolete and inaugurate a Revolution in Military Affairs that would shift technological advantage away from offensive operations to defensive operations.

U.S. deployment of space-based defenses now, in peacetime, would establish a "new normal" replacing "Dr. Strangelove's" threatened megadeaths of MAD with SANE's promise of civilizational survival.

U.S. forbearance on space-based defenses is dangerously wrong-headed, potentially yielding a decisive advantage to Russia and China that could make war more likely.

What if Russia and/or China already have or are developing a space shield, to be deployed immediately after destroying U.S. satellites or after attacking the United States itself, to neutralize U.S. nuclear retaliatory capabilities? 30 years ago, U.S. scientists working in the Strategic Defense Initiative, assessed that—using then existing commercial off-the-shelf technology—a Brilliant Pebbles space-based interceptor could be made weighing only about 1.5-2.5 kilograms (3.3-5.5 pounds).[18]

Russia or China, after their first strike, could theoretically loft a Brilliant Pebbles missile shield comprising 2,000 space-based interceptors (weighing collectively 5,000 kilograms) using only one heavy Space Launch Vehicle.

The U.S. should be very concerned about a scenario where China or Russia uses nuclear space weapons to quickly sweep the skies of U.S. satellites, even at the risk of losing their own satellites, which could then be replaced with a surge of military satellites and space-based defenses to capture the "high frontier" and defeat the United States.

---

[17] Cui Meng,"Numerical Simulation of the EMP Environment" IEEE Transactions on Electromagnetic Compatibility (June 2013)

[18] Ambassador Henry Cooper, "Brilliant Pebbles Is Affordable!" HighFrontier.com (January 8, 2019). This is also an excellent resource for a brief history of Brilliant Pebbles and current cost for deployment.

Dr. Peter Vincent Pry is Executive Director of the Task Force on National and Homeland Security, served as Chief of Staff of the Congressional EMP Commission and on the professional staff of the House Armed Services Committee and the CIA. He is author of ***The Power And The Light: The Congressional EMP Commission's War to Save America****.*

https://www.realcleardefense.com/articles/2020/07/16/have_russia_and_china_already_militarized_space_115469.html

1974 Strategic Stability and Arms Control, Senate Foreign Relations Committee, Secretary of Defense

This hearing was one of the most detailed re Soviet heavy, multiple warhead ICBMs and the "window of vulnerability" that President Reagan warned about and which was central to the Committee on the Present Dangers assessment of détente and peaceful co-existence. The witness was James Schlesinger, the Secretary of Defense, who began a shift toward a counterforce strategy of deterrence, what critics called "war-fighting" **and which remains at the center of the current debate over nuclear modernization.**

Here are the major points made by The Secretary of Defense, March 4, 1974

Major Points by the Secretary:

Adopting a counterforce doctrine which the MMIII is suited for will not require the US to build more nuclear weapons and can in fact be done with fewer weapons. So counterforce is perfectly consistent with arms control.

The Soviet advantage built into the SALT I treaty "is more permanent" than the current US advantage of having MIRV, guidance and RV technology.

The Soviets have an ongoing nuclear development program which is "staggering to us in its size and depth", and thus when the Soviets acquire the improved guidance technology and exploit the throw-weight they are allowed under the treaty, "they could outclass US nuclear forces."

The USSR has something on the order of 10-12 million pounds of total ICBM throw-weight as compared to our own ICBM force of 2 million pounds throw-weight.

If the USSR then puts on each of their SS-18 and SS-19 missiles 10 warheads equivalent to our Poseidon, they could have on the order of 23,000-33,000 warheads.

On the SS-18 alone, they could have 8000 one-to-two megaton warheads.

Our massive retaliation doctrine has lost some credibility and having a more flexible response capability would bolster and make more credible deterrence.

It remains impossible for the Soviets to have high confidence that a first strike would be successful in disarming the United States. The evolution of a limited US hard-target kill capability will thus not be seen by the USSR as a first strike disarming preparation but as a

flexible response capability. Schlesinger explain that even a first strike by the US would leave the Soviets with 280 surviving ICBMs with which to retaliate sufficient to destroy the US and European industrial base.

On the other hand, built into the Soviet forces now is a major counter-force capability, a potential to achieve a disarming first strike which would be a dangerous notion in the head of any political leader.

The larger the forces of throw-weight are in the force of any country we end up with less degree of strategic stability. But we hope through the SALT process to restrain the growth of nuclear forces of both nations. At this time, the USSR force structure has dramatically changed since 1969, so that the strategic balance in the last 5 years is not what it had been from the period from 1949-roughly 1966. And given the size of these warheads and better accuracy later in the decade would provide the Soviet Union a major counter-force capability, causing a serious imbalance between the forces of the USSR and US.

While arms control groups believe a counterforce capability would provide the US an unrealistic perception that such strikes would be an acceptable policy option to pursue in a crisis or conflict.

If US forces came to seen as uncoupled from Western Europe, the danger would be the Soviets would seek to exploit such a division by engaging in dangerous aggression.

However, if one deals with the Soviet ICBM component alone, the growth of throw weights has the potentially for the sort of destabilization but "there will never be a powerful incentive for a strike against land-based strategic forces taken by themselves."

And as for the option of eliminating our ICBMs, Schlesinger was clear: even as we place a higher proportion of our forces at sea, "I do not think we would be self-advised to eliminate the land-based component." This is underscored by there being "no possibility that a high confidence disarming first strike is attainable for either side, even against the ICBM components of the strategic forces on both sides, and certainly not against both sets of forces, SLBM's and ICBM's."

NUCLEAR NEWS &ESSAYS & REPORTS

OPINION: Defund the Pentagon: The conservative case

By Andrew Lautz, Jonathan Bydlak

07/16/2020 02:50 PM EDT

In just the last few months, Congress has appropriated nearly $3 trillion to fight the economic and public health impacts of the Covid-19 pandemic. This is on top of a terrible budget deal last year that blew through spending caps imposed by the 2011 Budget Control Act. With little end in sight to the pandemic and its associated recession, Congress is likely to spend even more in the months to come.

With resources more limited than ever, areas of the budget that were off-limits for years should now be more closely scrutinized. At the top of that list should be the single largest part of the federal discretionary budget, an entire category of spending that has long been off the table: the Pentagon.

For years, Congress overinvested in the Pentagon in an attempt to prevent potential attacks on our shores, while failing to prepare for other existential risks that would threaten our prosperity and way of life. Now, Congress appears ready to authorize three-quarters of a trillion dollars for defense spending alone in the upcoming fiscal year. Nearly one of every 10 of those dollars will go to an Overseas Contingency Operations account that lawmakers in both parties acknowledge is a slush fund. This is on top of a base budget that will almost certainly be higher than ever.

The organizations we represent care deeply about fiscal responsibility and limited government, but too often fiscal conservatives within Congress ignore the waste and unchecked growth of the Pentagon. The truth is that we are now in an unprecedented crisis, one that has resulted in huge outlays to combat a global pandemic and keep a faltering economy from collapse. At a time of enormous deficits and record debt, this can no longer be acceptable.

Republicans in Congress need to start tackling the Pentagon budget just as boldly as they do other areas of discretionary spending. Doing so would put our nation on a better fiscal path and create opportunities for unlikely political alliances. Conservative figures like Sen. Rand Paul (R-Ky.) and former Rep. Mick Mulvaney (R-S.C.) for years advocated restraint at the Pentagon; two of the most recent efforts to restrain the Pentagon's budget in the coming year come from staunchly progressive members of Congress: Sen. Bernie Sanders (I-Vt.) and Rep. Barbara Lee (D-Calif.).

Sanders has introduced an amendment to cut the defense budget by 10 percent and to reinvest those funds "in cities and towns that we've neglected and abandoned for far too long." Lee, for her part, introduced a resolution identifying nearly $350 billion in cuts for this fiscal year. Another amendment, co-sponsored by Rep. Mark Pocan (D-Wis.), would reduce the Pentagon budget by 14 percent.

Our organizations rarely agree with Sanders or Lee, and these particular legislative efforts fall short in a number of ways. For example, we would prefer that Sanders' amendment invest the vast majority of his proposed cut into reducing the historic deficits projected for 2020 and 2021. Lee's resolution points out some low-hanging fruit for lawmakers looking to trim the Pentagon budget, but goes too far for us by aiming to slash the Pentagon by almost half in just one year.

However, these proposals are not without merit, and there should be substantial room for compromise. Sanders and Lee are taking defense budget policy in the right direction, raising important questions and aiming for bold and significant changes at a time when doing so couldn't be more critical.

There is no shortage of opportunities to reform and reduce the size of the Pentagon, the world's largest bureaucracy, in a way that is in line with conservative principles and goals. The "Guide for A Strong America" is one resource for conservatives willing to take on the fight. Indeed, this

process is exactly how we should be examining the hundreds of billions of dollars in non-defense discretionary spending, too — focusing on those items that are working and taking a scalpel to those that aren't.

A robust debate is already happening on the right. In addition to our organizations, conservative groups including FreedomWorks, Concerned Veterans for America and Americans for Tax Reform have voiced support for putting Pentagon spending cuts on the table, while the Charles Koch Institute and Defense Priorities have made compelling cases for strategic restraint. There are some current Republican and bipartisan amendments that would advance the cause by boosting Defense Department audit efforts and reining in off-book accounts. And Sens. Chuck Grassley (R-Iowa), Mike Enzi (R-Wyo.), and Mike Braun (R-Ind.) have also taken some laudable steps to improve DoD's inconsistent audit efforts.

Congress also needs another 10 years of discretionary budget caps, and even stronger enforcement to limit cheating on those caps (as happened in the past). Many Democrats will have to sacrifice unchecked growth in non-defense spending, and defense hawks in both parties will have to sacrifice unchecked growth for Pentagon priorities that aren't making us any safer.

But in a post-coronavirus world, all expenditures can and must be on the table. Congress is already changing its old ways of doing business before our eyes, with things like virtual committee meetings and even remote voting. It's long past time to reconsider old habits when it comes to one of our nation's most bloated federal departments.

Andrew Lautz is a policy and government affairs manager with the National Taxpayers Union, a nonprofit dedicated to lower and fairer taxes at all levels of government. Jonathan Bydlak is director of the R Street Institute's Fiscal and Budget Policy Project and the creator of SpendingTracker.org.

OPINION: Defund the Pentagon: The Liberal Case

By Sen. Bernie Sanders

07/16/2020 02:43 PM EDT

Fifty-three years ago Dr. Martin Luther King, Jr. challenged all of us to fight against three major evils: "the evil of racism, the evil of poverty and the evil of war." If there was ever a moment in American history when we needed to respond to Dr. King's clarion call for justice and demand a "radical revolution of values," now is that time.

Whether it is fighting against systemic racism and police brutality, defeating the deadliest pandemic in more than a hundred years, or putting an end to the worst economic downturn since the Great Depression, now is the time to fundamentally change our national priorities.

Sadly, instead of responding to any of these unprecedented crises, the Republican Senate is on a two-week vacation. When it comes back, its first order of business will be to pass a military

spending authorization that would give the bloated Pentagon $740 billion—an increase of more than $100 billion since Donald Trump became president.

Let's be clear: As coronavirus infections, hospitalizations and deaths are surging to record levels in states across America, and the lifeline of unemployment benefits keeping 30 million people afloat expires at the end of the month, the Republican Senate has decided to provide more funding for the Pentagon than the next 11 nations' military budgets combined.

Under this legislation, over half of our discretionary budget would go to the Department of Defense at a time when tens of millions of Americans are food insecure and over half a million Americans are sleeping out on the street. After adjusting for inflation, this bill would spend more money on the Pentagon than we did during the height of the Vietnam War even as up to 22 million Americans are in danger of being evicted from their homes and health workers are still forced to reuse masks, gloves and gowns.

Moreover, this extraordinary level of military spending comes at a time when the Department of Defense is the only agency of our federal government that has not been able to pass an independent audit, when defense contractors are making enormous profits while paying their CEOs outrageous compensation packages, and when the so-called "War on Terror" will cost some $6 trillion.

Let us never forget what Republican President Dwight D. Eisenhower, a former four-star general, said back in 1953: "Every gun that is made, every warship launched, every rocket signifies, in the final sense, a theft from those who hunger and are not fed, those who are cold and are not clothed."

What Eisenhower said was true 67 years ago, and it is true today.

If the horrific pandemic we are now experiencing has taught us anything it is that national security means a lot more than building bombs, missiles, nuclear warheads and other weapons of mass destruction. National security also means doing everything we can to improve the lives of tens of millions of people living in desperation who have been abandoned by our government decade after decade.

That is why I have introduced an amendment to the defense authorization act that the Senate will be voting on during the week of July 20th, and the House will follow suit with a companion effort led by Representatives Mark Pocan (D-WI) and Barbara Lee (D-CA). Our amendment would reduce the military budget by 10 percent and use that $74 billion in savings to invest in communities that have been ravaged by extreme poverty, mass incarceration, decades of neglect and the Covid-19 pandemic.

Under this amendment, distressed cities and towns in every state in the country would be able to use these funds to create jobs by building affordable housing, schools, childcare facilities, community health centers, public hospitals, libraries and clean drinking water facilities. These communities would also receive federal funding to hire more public school teachers, provide

nutritious meals to children and parents and offer free tuition at public colleges, universities or trade schools.

This amendment gives my Senate colleagues a fundamental choice to make. They can vote to spend more money on endless wars in the Middle East while failing to provide economic security to millions of people in the United States. Or they can vote to spend less money on nuclear weapons and cost overruns, and more to rebuild struggling communities in their home states.

In Dr. King's 1967 speech, he warned that "a nation that continues year after year to spend more money on military defense than on programs of social uplift is approaching spiritual death."

He was right. At a time when half of our people are struggling paycheck to paycheck, when over 40 million Americans are living in poverty, and when 87 million lack health insurance or are underinsured, we are approaching spiritual death.

At a time when we have the highest rate of childhood poverty of almost any major country on earth, and when millions of Americans are in danger of going hungry, we are approaching spiritual death.

At a time when we have no national testing program, no adequate production of protective gear, and no commitment to a free vaccine, while remaining the only major country where infections spiral out of control, we are approaching spiritual death.
At a time when over 60,000 Americans die each year because they can't afford to get to a doctor on time, and one out of five Americans can't afford the prescription drugs their doctors prescribe, we are approaching spiritual death.

Now, at this unprecedented moment in American history, it is time to rethink what we value as a society and to fundamentally transform our national priorities. Cutting the military budget by 10 percent and investing that money in human needs is a modest way to begin that process. Let's get it done.

Sen. Bernie Sanders is an independent from Vermont.

House Republican Policy Committee

July14, 2020

MODERNIZE AMERICA'S NUCLEAR TRIAD AND MISSLE DEFENSE SYSTEMS

House Republican Policy Committee // 14 July 2020

- Ensuring a safe, effective, and reliable nuclear deterrent is the military's top priority and the cornerstone of America's national security. However, Russia and China are making significant investments in developing and deploying new nuclear weapons, even as America's nuclear arsenal ages.1

- **Quick Take:** Nuclear deterrence is the cornerstone of our national security, but the nuclear triad and missile defense systems require significant modernization. The President's budget request makes important investments to ensure a robust nuclear deterrent. weapons because, according to **Dr. Mark Schneider,** "it plugs a major hole in our current deterrent capability at virtually no cost."11

BACKGROUND

America's land-based intercontinental ballistic missiles (ICBMs), submarine-launched ballistic missiles, and bombers form America's nuclear deterrent also known as the "Nuclear Triad."2 The Nuclear Triad ensures America's ability to deliver a "decisive response, anywhere, anytime" in the event of a catastrophic first strike by an adversary.3 The United States built most of these weapon systems in the 1980s. As such, many have been extended well beyond their service lives.

Even with extensions, these systems will reach the end of their service lives between 2025 to 2035. This leaves little time to get modern replacement systems online and no margin for error. The United States must make significant investments over the next 20 years to modernize the deterrent, but at no point is the cost expected to be greater than seven percent of the Department of Defense (DOD) budget.4 As Ash Carter, President Obama's Secretary of Defense said, "It's not an enormous part of our budget, but it is a critical part of our budget."5 Former Secretary Mattis put it more succinctly, "America can afford survival."6

China and Russia

China and Russia are rapidly modernizing their own nuclear arsenals. China is investing in long-range bombers that could make it one of three countries in the world with a nuclear triad. China is also building out a robust arsenal of missiles designed to deny the United States and our allies access in the Indo-Pacific. Russia spent more than ten percent of its military budget on nuclear modernization every year since 2011.7 In 2018, President Vladimir Putin announced six new strategic weapons systems. Five of them are nuclear capable.8

Low-Yield Weapons

The U.S. recently deployed new low-yield nuclear weapons to reinforce America's nuclear deterrent. Opponents of these weapons, including many House Democrats, argue that they are destabilizing and increase the potential for nuclear war.9 In reality, they are a deterrent to

Russia's dangerous "escalate to deescalate" theory that calls for the use of Russian low-yield weapons in a limited attack, betting that the

United States would not respond disproportionately with one of our high-yield weapons. These new low-yield weapons deter the threat of limited first use because the United States would be able to respond proportionally.10 President Obama's Defense Science Board recommended deploying new low-yield

Missile Defense

Republicans have championed strong missile defenses to protect the American homeland as well as to protect our partners and allies. While rogue nations like North Korea and Iran develop missiles capable of delivering nuclear weapons to the United States, robust layered missile defense capabilities are critical to our national security. For regional missile threats in Asia, Europe, and the Middle East, the United States has pursued capabilities that will protect our deployed troops, partners, and allies from near peer and rogue nations alike.

The U.S. continues to work with Israel in the cooperative development of missile defense capabilities which are essential to their safety and security. In addition, a robust missile defense research and development effort must address emerging threats from hypersonic weapons, cruise missiles, and other novel systems under development. Missile defense is a critical part of America's deterrence calculus.

Withdrawing From the INF Treaty

The United States completed withdrawal from the Intermediate-Range Nuclear Forces (INF) Treaty in August of 2019. The INF Treaty was established in 1987 and led to the elimination of U.S. and Soviet ground-launched cruise missiles with ranges between 500 and 5,500 kilometers.12 Beginning in 2008, the Obama Administration raised concerns that Russia was testing missiles that could fly to ranges banned by the treaty.

By 2014, the Obama Administration concluded that Russia had violated the treaty, "the most serious allegation of an arms control treaty violation that the Obama administration…leveled against Russia."13 Congress took action repeatedly to hold Russia accountable, but Russia refused to return to compliance.14 While Russia was testing banned missles, China was

developing their own arsenal of missiles unconstrained by the INF treaty. According to the US-China Commission,

"Over the last two decades Beijing has built up a formidable missile arsenal outside the limits of the [INF Treaty]."15 Prior to INF Treaty withdrawal, the United States had no comparable capability due to INF restrictions, which put "the United States at a disadvantage and place[d] our forces at risk because China is not a signatory."16

CONSTITUTIONAL AUTHORITY AND REPUBLICAN PRINCIPLES

Under Article I Section 8, the Constitution requires Congress, "To raise and support Armies; To provide and maintain a Navy," and to, "make Rules for the Government and Regulation of the land and naval Forces." As President Reagan noted, peace comes through strength. American troops and their families deserve the best deterrent to war our country can provide.

REPEAT: Nuclear Policy: Whatever Happened to Common Sense? By Peter Huessy, July 7, 2020, Gatestone Institute

—

- William Perry's proposals, in his new book, *The Button*, (1) ignore the current Russian and Chinese nuclear threats, (2) widely exaggerate the costs of US nuclear modernization and (3) would actually so upset the nuclear balance as to make a nuclear attack on the US more likely.
- For some strange reason, Perry does not ask for cuts from Russia or China, perhaps heralding a new faith-based arms control strategy? Both countries are completing massive nuclear modernization build-ups. Putin's defense minister announced Russia's nuclear modernization would be nearly 90% complete by the end of 2020, while China is on pace to double its nuclear forces by 2030.
- At its peak, then, the complete nuclear enterprise would amount to 6-7% of the defense budget to modernize, operate and maintain, while modernization alone would be 3%. This still is some one-third of what it was at the height of the Cold War, when the US economy was far smaller and the defense budget a fraction of what it is today.
- As soon as the US eliminates its ICBM force, Russia and China will get back in the business of seeking to disarm the United States, one top admiral reminded Gatestone.
- In the new defense bill, the administration and Congress are building better missile defenses, including space-based sensors, and advanced national and regional systems. Combined with the newly initiated discussions in Geneva with the Russians on arms control measures, the US is on the right path.

The new US Department of Defense nuclear handbook notes that since 1997, the US has not designed and built a single new nuclear armed missile, submarine or bomber, and will not do so until 2029 at the earliest. Pictured: The ballistic missile nuclear submarine USS Rhode Island. (Image source: U.S. Navy photo by Lt. Rebecca Rebarich)

Dr. William Perry is considered one of the fathers of stealth aircraft; he started directing research on the B2 program when a senior official in the DOD back in the 1970s.

He later became secretary of defense from 1994-1997 during the Clinton administration and was often seen in Ukraine at photo-ops where Soviet-era ICBM silos were eliminated, both between Russia and the USA, as part of the 1992 Nunn-Lugar and 1991 Start treaty.

Perry has a new book, *The Button*, about US nuclear policy and his support for global nuclear disarmament. He makes numerous proposals that he claims will lessen nuclear dangers and bring us closer to global zero, the end state when presumably all nuclear weapons have been destroyed.

Unfortunately, his proposals are seriously misguided and his numerous assumptions about US nuclear deterrence are unfortunately plain wrong.

His proposals (1) ignore the current Russian and Chinese nuclear threats, (2) widely exaggerate the costs of US nuclear modernization and (3) would actually so upset the nuclear balance as to make a nuclear attack on the US more likely.

He starts with pushing for the unilateral elimination of the US land-based Minuteman missiles, cutting the submarines that the US is acquiring from 12 to 10, and lopping off 25% of America's 100 new bombers while stopping all related cruise missile production.

The effect would be for the US to rely solely on one key technology -- submarines at sea -- for a timely deterrent, as bombers would take multiple hours to fly through heavy enemy defenses and then to find targets only long after nuclear conflict will have begun.

Russia, China, India, Israel and Pakistan all are moving to, or already possess, nuclear deterrent forces that are a Triad -- made up of submarines, bombers and land-based missiles -- which the US has maintained for 60 years. No major US nuclear adversary is moving to a single nuclear technology.

Moreover, nowhere does the author call for any nuclear armed adversary of the US to eliminate any of their current or projected nuclear forces. Such demands made only of the US.

Perry further proposes to make the US cuts unilaterally, amounting at least to one-third, and possibly to more than one-half, of the US day-to-day on-alert nuclear deterrent.

For some strange reason, Perry does not ask for cuts from Russia or China, perhaps heralding a new faith-based arms control strategy? Both countries are completing massive nuclear modernization build-ups. Putin's defense minister announced Russia's nuclear modernization would be nearly 90% complete by the end of 2020, while China is on pace to double its nuclear forces by 2030.

By contrast, the new US Department of Defense nuclear handbook notes that since 1997, the US has not designed and built a single new nuclear armed missile, submarine or bomber, and will not do so until 2029 at the earliest.

For more than 30 years after the end of the Cold War, the US became so complacent, it apparently believed that its security would take care of itself.

The cost of nuclear deterrence is, of course, critical. But the land-based ICBMs Perry wants to discard do not cost $150 billion, as he claims. According to USAF and industry studies, the ICBM leg of America's nuclear triad is the least costly to build and operate -- and at $65 billion over 20 years, it is a bargain.

Moreover, the entire planned 30-year US nuclear modernization effort, overall, costs half of what it now costs just to operate and maintain the current legacy nuclear forces without any modernization at all. In short, old forces cost a lot to keep, and as these platforms are in danger of "rusting to obsolescence," modernization is an imperative.

Is this modernization affordable? Here Perry's fuzzy math needs correcting. Even counting everything nuclear, the cost would be $850 billion over 30 years, not the $2 trillion claimed by Perry.

At its peak, then, the complete nuclear enterprise would amount to 6-7% of the defense budget to modernize, operate and maintain, while modernization alone would be 3%. This still is some one-third of what it was at the height of the Cold War, when the US economy was far smaller and the defense budget a fraction of what it is today.

The key to Perry's push to get rid of America's ICBMs is his long concern that because America's ICBM silos are in known locations, the Russians, in a crisis, might strike them. Therefore, an American president who feared losing them would launch US missiles first. Perry has described this potential problem as a "hair trigger" phenomenon too dangerous to keep.

During the 75 years of the nuclear age, however, these American missiles have been on alert, ready to deter, for 65 million minutes, but not once has an American president ever ordered them launched. President John F. Kennedy, in fact, said the just-deployed nuclear-armed Minuteman missile force at the time of the Cuban missile crisis "Was my ace in the hole" that ended the crisis without any missiles having to be launched.

As the USAF Chief David Goldfein explained recently, the 400 Minuteman missiles pose an insurmountable obstacle to the Russians: they cannot, with their current nuclear arsenal, effectively target *all* of them or avoid a certain retaliatory response from US bombers and submarines and surviving ICBMs, as the Scowcroft Commission report of 1983 concluded when supporting keeping America's ICBMs silo-based.

Although Perry says that such a Russian strike on US missile silos is not likely to occur, he nonetheless proposes that the US eliminate the ICBMs, apparently out of a concern that in a crisis, the Russians would attack the American ICBM silos first.

He also proposes to hamstring US commanders. He pushes the adoption of a no-first-use nuclear policy while still allowing Congress -- with one exception -- the power to fight wars if nuclear

force is involved. His view seems largely postulated on a conviction that it is necessary to rein in the US, meanwhile doing nothing to curtail any real aggression by Russia and China.

Finally, Perry would reduce America's nuclear deterrent from more than 500 key assets to roughly a small number of submarines on patrol at sea, with America's other nuclear forces stationed at two submarine and three bomber bases. Altogether, the US would have fewer than 10 key nuclear assets. If they were eliminated, that would put the US out of the nuclear business. As soon as the US eliminates its ICBM force, Russia and China will get back in the business of seeking to disarm the United States, one top admiral reminded Gatestone.

In conclusion, Perry's idea of a nuclear-free world is simply not going to happen. One certainly does not get there through wishful thinking and initially disarming the US.

We would be wiser to follow the lead of President Ronald Reagan, who created a revolution in strategic affairs.

Reagan reversed the Carter administration's failed policies of near-zero nuclear force modernization. Carter agreed to arms deals that allowed huge increases (not reductions) in Soviet nuclear warheads and continued the ban on all US missile defenses. Reagan successfully fully modernized a more effective (and eventually smaller) nuclear force, all the while calling for both the deployment of global missile defenses and verifiable major reductions in nuclear arms -- to a Russia in severe economic decline. That is how he ended the Soviet empire and won the Cold War.

President George W. Bush ("43") unburdened the USA of the ABM treaty in 2002-2003, and, surprisingly, the subsequent Moscow and New Start nuclear deals followed, reducing nuclear warheads by another 70%. The surprise was that despite near the universal conventional wisdom and "expert" opinion that US missile defenses were incompatible with arms reductions, Bush both secured reductions and built defenses.

Reagan's "Peace through strength" was not just a slogan. It was a strategy. "Trust but verify" was a serious response to Soviet cheating.

The good news is that the US today is once again following President Reagan's lead.

The Senate Armed Services Committee last month overwhelmingly passed the defense bill by a vote of 25-2, which included $8.5 billion for a new strategic B-21 bomber, new Columbia-class submarines and a new land-based missile -- exactly what the administration requested.

In addition, in the new defense bill, the administration and Congress are building better missile defenses, including space-based sensors, and advanced national and regional systems. Combined with the newly initiated discussions in Geneva with the Russians on arms control measures, the US is on the right path.

Peter Huessy is Director of Strategic Deterrent Studies at the Mitchell Institute. He is also senior consulting analyst at Ravenna Associates, a strategic communications company.

https://www.gatestoneinstitute.org/16180/nuclear-policy-common-sense

July 9, 2020, Peter Huessy on Secure Freedom Radio speaking on the subject Iran's nuclear ambitions, the future of the JCPOA and the arms embargo.
https://simplecast.com/s/10d92acd

UPDATED: The History of Strategic and Crisis Stability: The Role of ICBMs in US Deterrent Policy, 1956-2020 by Peter Huessy, Special Report for the ICON Team

What is Strategic Crisis Stability?

Strategic crisis stability is often defined as the state of international affairs where we have successfully prevented an adversary of the United States from threatening or actually using nuclear weapons in a crisis or conventional conflict. Over the 75 years of the nuclear age, no adversary has used nuclear weapons against the Unite States. And despite the positive arms control developments where there has been a nearly 85% reduction in deployed strategic nuclear weapons by the United States and Russia since the 1991 Start agreement, the threat of such nuclear weapons use has risen recently, making crisis stability an emerging concern for US policy makers.

As the 2018 NPR explains, "Nevertheless, global threat conditions have worsened markedly since the most recent 2010 NPR, including increasingly explicit nuclear threats from potential adversaries. The United States now faces a more diverse and advanced nuclear-threat environment than ever before, with considerable dynamism in potential adversaries' development and deployment programs for nuclear weapons and delivery systems."

Why is this important?

For the USAF nuclear deterrence mission, it has become increasingly important to deter Russia and China from potentially using or threatening to use nuclear force in a crisis or conflict, in particular having to do with the US protection of our NATO allies in the Baltics and the protection of Taiwan and other western Pacific nations from aggression.

While in both scenarios, an attack by Russia or China using nuclear weapons against the US mainland is less likely, the use of nuclear weapons by such adversaries regionally including potentially using hypersonic speed missiles is growing.

To meet this challenge, the USAF needs to sustain its current Triad of nuclear forces, enhance missile defenses, improve our regional conventional capability, but in particular ensure the building of our new GBSD or land-based ICBMs and our B-21 strategic bomber. Without these upgraded and modern elements, the US strategic nuclear deterrent would "rust to obsolescence", the US deterrent would falter and be less credible, while emerging crises or conflicts could easily escalate to the nuclear level as our adversaries might not fear deteriorating US deterrent forces.

Effective U.S. deterrence of nuclear attack and non-nuclear strategic attack requires we ensure that potential adversaries not miscalculate the consequences of their nuclear first use, either regionally or against the United States itself. They must understand that there are no possible benefits from non-nuclear aggression or limited nuclear escalation.

As the 2018 NPR explained, "Correcting any such misperceptions is now critical to maintaining strategic stability in Europe and Asia. Potential adversaries must recognize that across the emerging range of threats and contexts: 1) the United States is able to identify them and hold them accountable for acts of aggression, including new forms of aggression; 2) we will defeat non-nuclear strategic attacks; and, 3) any nuclear escalation will fail to achieve their objectives, and will instead result in unacceptable consequences for them.

Early Stability Concerns

Concerns over strategic stability are not new for the United States Air Force. For example, early on in the nuclear age an important USAF concern was whether the Soviet Union would attack the US nuclear forces early in a crisis in order to disarm the United States. While the US did have at the time some 1500 strategic bombers at dozens of military bases in the United States and worldwide, the nuclear gravity bombs for the strategic airplanes were held at only 14 bases in the United States. At a hearing before the Senate Armed Services Committee in 1956 during the Eisenhower administration, General Curtis Lemay, then Commander of the Strategic Air Command, expressed serious concern over this potential Soviet threat, explaining that the USAF could lose out if the Soviet Union took out the bases where the USAF bombs were stored.

Two crises early in the Kennedy administration highlighted strategic stability concerns. According to newly discovered archival material, Soviet general Secretary Khrushchev threatened to attack American conventional forces in Germany unless they were removed from Berlin. According to new research, Kennedy responded noting that would mean the US would have to use nuclear weapons against the USSR to stop such a threat. Apparently, Khrushchev thought better of attacking the American forces in Berlin but instead built the Berlin Wall.

The following year, Khrushchev again tried to bully the United States and placed nuclear armed missiles in Cuba. President Kennedy announced the presence of the missiles in Cuba on the same day as he also announced the first Minuteman missile doing on alert in North Dakota, Montana and Wyoming. As the President would later remark, "Minuteman was my ace in the hole" in pressuring Khrushchev to stand down and remove the nuclear armed missiles from Cuba.

Consequently, although it took a decade to materialize, the United States and the Soviet Union sought to create an "arms control" framework to better manage our nuclear arsenals so, ostensibly, crises such as occurred over Berlin and Cuba would not escalate into nuclear war and the end of civilization. The 1972 SALT agreement between President Nixon and General Secretary Brezhnev took three years to negotiate and while described as "arms control", the joint deal essentially endorsed a massive Soviet modernization and increase in Moscow's nuclear arsenal, to where by the middle of the next decade the USSR could deploy some 12,000 strategic weapons.

However, the genesis of the executive agreement came from the USSR concern over the possible US deployment of missile defenses, announced by US Secretary of Defense McNamara in 1967 as an objective of US policy to counter a then emerging Chinese nuclear threat. This possible deployment of missile defenses so worried the Soviets that immediately following the 1968 election, Brezhnev called the newly elected President Nixon and demanded that arms control talks begin but also include a ban on missile defenses.

While SALT as noted above "approvingly managed" a 500% increase in deployed Soviet strategic nuclear warheads, a companion ABM treaty eliminated all missile defenses for the United States except an allowed 100 interceptors around each nations Capitol or alternatively, an operational ICBM field. The USSR chose to defend Moscow, where upwards of 100 interceptors now the 5th generation technology are deployed. Given that the decade of the 1970's, subsequent to the SALT and ABM deals, saw the expansion of the Soviet empire and a change in the Soviets favor of the "correlation of forces", strategic stability cannot be said to have "improved." Especially as the decade culminated in the 1978 Soviet invasion of Afghanistan and the 1979 fall of Iran to Islamic radicals.

The Reagan Revolution

Strategic stability concerns heightened during the Reagan administration as Soviet deployments of heavily multi-warhead missiles grew exponentially under the SALT I agreement as well as the SALT II treaty that while agreed to between the USSR and American leaders was withdrawn from the US Senate by President Carter after the Soviet invasion of Afghanistan.

Facing a very robust strategic nuclear buildup by the Soviets, and the deployment by Moscow of thousands of SS-20 nuclear armed medium range missiles in Eastern Europe and Soviet Asia, as well as the inheritance of a seriously degraded US military (commonly referred to as a "hollow army"), the Reagan administration embarked on a major shift in strategic policy. No longer would the US support a policy of peaceful coexistence and détente with the USSR. As an alternative, the US adopted a multi-pronged strategy, to actually take down the Soviet empire and end the Cold War on terms favorable to the United States and its allies.

Reagan jump started the economy with major tax rate reductions and regulatory reform, while also significantly increasing the defense budget. This also included a push for an across the board strategic nuclear deterrent modernization including building the Ohio class submarines and the C-4/D5 missiles, the Peacekeeper ICBM, the B1 and B2 strategic bombers along with their associated cruise missiles.

The administration then produced GLCM and Pershing missiles for the first time to deploy in Europe and Asia to counter Soviet SS-20s, with an alternative offered to Moscow of an elimination of all such medium range ballistic missiles (<550 kilometers), which came to be known as the zero-zero option that led to the successful ban on all such missiles in the 1987 INF treaty.

To further give the US leverage over the Soviets, Reagan also proposed in the fall of 1981 a plan to radically reduce the nuclear arsenals of the USSR and the US by at least 50%, and then further, while in March 1983, Reagan proposed an SDI program to eventually deploy missile defenses to further complicate Soviet attack plans and make less coercive Soviet missiles.

Reducing Soviet heavy and multi-warhead first strike-type weapons through arms control, building defenses to further complicate Soviet war plans, and modernizing US nuclear forces across the board together markedly improved the US strategic position in the world. As a result, the correlation of forces moved decidedly in the direction of the United States as Reagan seized the high ground of "peace through strength" as well as the arms control initiative in pushing for major reductions in nuclear weapons.

The Soviet missiles, especial the SS-18, was widely seen even by arms control groups, as a "first strike weapon" and highly destabilizing. As long ago as 1974, the then Secretary of Defense Melvin Laird told Congress that with the pursuit of such heavy missiles as the SS-18, capable of carrying upwards of 20+ warheads per missile, the Soviets were definitely going for a first strike disarming strike against the United States, "and of that there is no doubt."

Nearly twenty years later, START was finally agreed to by the newly created Russian Federation in 1991, and a follow on START II treaty was signed by President Bush and President Yeltsin in January 1993 which took the fifty percent cut of the START 1 and further reduced nuclear forces by an additional sixty percent.

However, key to stability concerns and mindful of Laird's earning decades ago, START II contained a critically important measure to improve strategic stability. The treaty while reducing overall countable, deployed strategic weapons to 3500, banned all multiwarhead land-based

missiles, weapons widely seen as the lynchpin to Soviet plans to pre-emptively attack an adversary (the US) in the hopes of putting the United States out of the nuclear business.

Unfortunately, while START II was overwhelmingly approved by the US Senate in 1996, the Russian Duma in April 2000 while ratifying the agreement also insisted that the US had to also agree to keep all missile defense work in the laboratory and not deploy missile defenses, even to defend the United States against rogue state threats from the DPRK or Iran, for example. While Secretary of Defense Aspin in 1993 had killed most US missile defense work, particularly any space based elements considered by the previous administration, Congress had passed in 1998 legislation authorizing the US to proceed with a missile defense for the United States when technologically possible to defend against limited missile threats from North Korea, for example.

Though the Russian Duma placed a missile defense poison pill in their ratification document, the arguments within Russia against START II went considerably beyond missile defense concerns. For example, in 1996 firmer Soviet leader Gorbachev wrote in the New York Times that the ban on multiwarhead ICBMS contained in the treaty would force Russia to move increasingly to sea based nuclear forces which would in the former Soviet leaders view "bankrupt" Russia.

True, banning multi-warhead ICBMs makes it more expensive to build forces because at sea platforms cost more than ICBMs and a smaller percentage of submarine-based warheads are on alert compared to the close to 100% of land-based missiles. But such deployments are also markedly more stabilizing in that to use a high percent of such a deployed force would require the Russians to put at sea more of their day-to-day naval forces. This action would readily be seen by US satellites and thus give the US time to put its own forces on higher alert and thus more survivable. That in turn would make any Russian plan to strike the US and take out our nuclear forces highly improbable and in fact in reality impossible. Thus, stability in a crisis would be strengthened.

Here one has to mention that the Russian signature on START II was Yeltsin, who spoke at the United Nations and endorsed not only START II and the ban on multi-warhead land based missiles, but also a parallel worldwide missile defense system—a global protection against limited strikes—to be initiated by the US and Russia together. Yeltsin obviously did not seek to maintain a Soviet-era first strike type arsenal as did the Duma and President Putin in 2000 when the Duma rejected that idea of combining stabilizing missile defenses and START II compliant forces.

The US Senate did not agree to such a constraint and thus ratified the START II treaty without placing any conditions on the treaty which was of course consistent with the language of the START treaty itself. With the Duma action in early 2000, however, the START II treaty was a dead letter, but later replaced by the 2002 Moscow treaty or SORT (Strategic Offensive Reduction Treaty) that went into effect in June 2003. While avoiding the extensive detail of other nuclear agreements and going into effect on the last day of the treaty on December 31, 2012,

SORT did reduce nuclear forces to 2200 warheads while avoiding tying such reductions to a ban on missile defenses.

In fact, while securing over a 70% reduction in deployed strategic nuclear weapons, the SORT treaty was accompanied by the near simultaneous US withdrawal from the 1972 ABM Treaty, which had all but banned missile defenses protecting the United States. Both the DUMA and United States Senate concurred with the new nuclear arms agreement.

Subsequently, the US began building an initial missile defense system in California and Alaska, which now includes 44 interceptors with plans to grow them to 66. The US also seeks to deploy an underlayer of Navy Aegis ashore standard missile interceptors to further protect the continental United States from missile threats as well as space-based sensors to pick up enhanced missile threats especially those of hypersonic speed.

Additionally, in 2010, the Obama administration successfully negotiated another nuclear arms control deal with Russia. And with New Start, nuclear warheads were reduced to a notional 1550, although each of 60 allowed strategic bombers only counted as 60 warheads, even though fully loaded bombers would boost the deployed warhead total to around 2100-2200, but with the advantage that the expired START I verification measures would be replaced, albeit with significantly less effective verification measures dealing with mortal monitoring, telemetry rules, and accountable warhead loadings.

Now the issue facing the US is whether to extend the New START agreement an additional five years as allowed by the treaty, or to seek changes and improvements to the agreement, or to seek to bring China into the discussions to at the very least secure some transparency in Chinese nuclear forces and doctrine, which at this time is non-existent. In fact, the Chinese continue to assert they do not even deploy their nuclear warheads on their missiles, bombers or submarines.

Future Considerations

From over 2500 missiles and bombers to a cap of no more than 700 strategic deployed systems, and from 12,000 deployed nuclear warheads to some number between 1550-2200 warheads, the nuclear landscape between the US and Russia has markedly changed since the 1972 SALT agreement. However, with the failure of the ban on multi-warhead land based missiles and the uncertainty over how many warheads do the Russians and the Chinese deploy, strategic stability remains a critical concern of US policy makers and will impact the work of our USAF missileers and pilots for some time.

It may be that “arms control” as we know it has reached a certain limit where further reductions would have to eliminate one leg of the US nuclear Triad, and thus create heightened instability if

for example the ICBM leg of the Triad is eliminated as some have proposed. In the absence of an additional arms deal, the US through its deployment policy has reached the extent to which it can demonstrate a commitment to stability. Our land-based missiles are all deployed with one-warhead; an ICBM upload capability is possible as a hedge against a possible Russian breakout, but to do so would require some 4 years to implement. Our submarines are deployed on a limited basis of a percent only being at sea on a day to day basis, while our bombers are not on alert nor are their bombs or cruise missiles loaded.

Although not addressed in this chapter of growing concern is the Russian adoption of a doctrine of "escalate to win", which we discuss more thoroughly in the chapter on CNI, or Conventional/Nuclear Integration. Here the Russian leadership has openly discussed the use of limited numbers of nuclear weapons in a crisis or early in a conventional conflict as a means of stopping the US from engaging and coming to the defense of our allies. In short, getting the US and its allies to stand down and surrender.

While as Keith Payne in his new book, Shadows on the Wall, explains in great detail, the US has gone beyond MAD or Mutual Assured Destruction where it was assumed literally upwards of ten thousand nuclear warheads were needed to deter a Soviet attacks on Western Europe, for example. And further, while the United States has moved to adopt a largely counterforce strategy to sustain deterrence (holding at risk our adversaries military targets not their cities), the United States has not engaged in civil defense or building a robust missile defense to further enhance deterrence, while significantly reducing the potential damage to the US from any kind of nuclear weapons use by an adversary.

Simple further reductions of nuclear weapons without an assessment how this might affect the stability of the strategic balance is wrong headed. And adding significant missile defenses does not necessarily cause an imbalance in deterrence yet that is often a central assumption of arms reduction enthusiasts.

For example, with 44 and possibly 66 GBIs (Ground based interceptors) as well as THAAD and Aegis missile defenses deployed in the regional defense of Japan/ROK, how can either of these deployments challenge China's doubling of its nuclear arsenal to 600-800 warheads, let alone the official Russian inventory of 2200 deployed strategic warheads? Even with 200 interceptors protecting CONUS, how would that fundamentally challenge deterrence except it would make limited coercive strikes or threats of such strikes far less credible or likely on the part of Russia and China. This factor alone leads one to reasonably believe China and Russia opposition to US missile defenses is based largely on how US military power checkmates Russia and China planned aggression, and to use the words of Bill Keller, how the two powers are worried their ambitions will not "remain unfettered."

Furthermore, again as Payne emphasizes, arms control cannot change the strategic great power competition between the US and its allies on the one hand and our adversaries Russia and China on the other. So, both civil defense and missile defense are required to add to deterrence, which enhances and not undermines deterrence and crisis stability.

Thus, given the view of Russia and China that the US is there strategic enemy, there is a conflict between assuming more "arms control" or movements toward global zero will improve the strategic stability between the US and Russia and China, as opposed to a realization that arms control, especially simple reductions in deployed arsenals, cannot fundamentally change our adversaries perception of the United States as well as their hegemonic ambitions.

Significantly, this would doubly involve whether US unilateral restraint, as advocated by former Defense Secretary William Perry and others, for example, such as phasing out ICBMs, stopping cruise missile production or cutting the number of Columbia class submarines, will in fact have a reciprocal impact on China and Russia to also show such restraint.

Strategic and crisis stability remains an important watchword from which to judge the requirements for US security and the adequacy of our nuclear deterrent. Strategic nuclear modernization, with the added elements such as missile defense and credible, verifiable and sound arms control, the revolution started by President Reagan that triggered the end of the Cold War may still pay dividends for the free world.

REPEAT: COVID-19 CORNER

Jim McAleese provides this write-up re defense firms receiving assistance for dealing with CV-19.

There are five major "take-aways" from Defense CEO Letters to both OMB Acting Dir. Russell Vought & USD(A&S) Ellen Lord, requesting additional DoD funding for COVID-19 contractor-reimbursement, in upcoming Congressional "Fourth Stimulus" package. **[McAleese estimates likely ceiling of ~$12B-$15B, to fully-shield ~$249B 2020 DoD Investment Accounts,** ($105B 2020 DoD RDT&E + $144B 2020 DoD Procurement)]

- **Recently, Treasury Sec. Steve Mnuchin has tele-graphed that "Fourth Stimulus" will likely be narrowly-focused on a handful of devastated-industries,** (including frugal "re-purposing" of ~$130B of unspent funding from $2.2T CARES Act). **Sec. Mnuchin has warned that upcoming Fourth Stimulus will likely be smaller than previously-expected, because ~+8M jobs were re-added during May-June,** (with ~+10M jobs still to be re-added, from April COVID-19 shut-down).

1. While the July 7th letters were signed by almost all of the "top six primes", (Lockheed; Boeing Defense; Raytheon Technologies; GD; BAE Systems; L3Harris; Textron; HII), **note the visible-absence of Northrop CEO Kathy Warden's signature. [Northrop CEO Warden committed to absorbing as much of the COVID-19 costs as possible, during Northrop's 1Q 2020 Results Call; because of potential for public misperception of excessive DoD funding, (from increasing Progressive demands to slash defense funding)]**

2. Note the threat of "significant job losses in pivotal states", during the critical November Election. [Most defense primes 1Q 2020 sales grew ~+5%-9%]

- [Lockheed 1Q 2020 sales grew +9%; Boeing Defense Sector 1Q 2020 sales grew +4%, (excluding -$827M USAF KC-46 charge); Northrop 1Q 2020 sales grew +5%; GD 1Q 2020 sales grew +1%, (excluding Gulfstream business jets); Legacy Raytheon 1Q 2020 sales grew +6% (excluding Collins Aerospace and Pratt & Whitney); HII 1Q 2020 shipbuilding sales grew +6%; L3Harris 1Q 2020 sales grew +5%]

3. All of the companies have formally-committed to submitting their respective "rough-order-of-magnitude" COVID-19 cost estimates, (including all suppliers), ("Section 3610" employee-wage-reimbursement, (cost, but no profit), and equitable adjustments, (cost + profit)), **to USD Lord, "by the end of this week".**

4a. It is widely-believed that Lockheed's ~$2.5B COVID-19 cost estimate is significantly-larger than any of the other primes, primarily-driven by ~-15% slippage of planned 2020 F-35 aircraft deliveries, (-18-24 aircraft, from previous ~141 2020 delivery plan), **(suggesting that Lockheed will still be ~1.5-2 months behind schedule by end of 2020). [Lockheed 2Q 2020 Results Call is July 21, 2020]**

- Lockheed has also signaled potential COVID-19 cost impacts to C-130J production, plus delayed delivery of micro-electronics for its ~$11B Missiles & Fire Control Sector, (e.g., GMLRS; Hellfire; ATACMS; JASSM; PAC-3 MSE; THAAD), (with juicy ~14% MFC sector operating margins).

4b. Boeing Defense is presumably-focused on Section 3610 employee-wage-reimbursement, for both plant shutdowns of USAF KC-46 (~2.7K FTE in Puget Sound, WA, after COVID-19 death of adjacent 787 worker), **and also Army CH-47 & USMC/Navy V-22** (Philadelphia, PA), (presumably also impacting Textron, as 50/50 V-22 JV partner). **[Boeing 2Q 2020 Results Call is July 29, 2020]**

4c. Raytheon Technologies specific-impacts are not yet known, but commercial aerospace ~$26B Collins Aerospace & ~$19B Pratt & Whitney are slashing costs, to "down-size" for projected ~-50% drop in 2020 commercial aircraft OEM production, (Boeing & Airbus),

and projected ~-50% drop in 2020 Aftermarket/MRO/Spares, (commercial airlines). **[Raytheon Technologies 2Q 2020 Results Call is July 28, 2020]**

4d. BAE Systems is presumably-focused on York, PA plant shutdown, (M109; Bradley; AMPV; ACV 1.1). [Investors have historically-challenged BAE Systems for sub-optimal ~8% operating margins in US Platforms & Services Sector, (which includes both higher-margin ground combat vehicles, but also lower-margin Navy ship repair O&M), versus peer GD Combat Systems Sector (at ~14%-15% operating margins)] **[BAE Systems 1H 2020 Results Call is July 30, 2020]**

- BAE Systems also issued a "market update", (on June 25th), warning that 1H 2020 sales will be flattish, but 1H 2020 profit will likely be ~-15% lower, due to both COVID-19 costs in its defense sectors, plus slumping commercial aerospace avionics sales. **This makes it likely that BAE Systems will submit at least modest Section 3610 claims.**

4e. Presumably, both GD Bath Iron Works (union on-strike since June 22nd), **plus HII, may suffer from Overhead-absorption, (driving up Navy SCN costs), if ship deliveries potentially-stretch into ~2021-2022.** [HII has vowed to attempt to recover lost schedule during 3Q-4Q] [GD BIW was already behind schedule on ~six DDG-51 hulls, before COVID-19 onslaught. However, strong appearance that GD Electric Boat will maintain Virginia-class submarine schedule, because GDEB immediately broke its workforce into alternating-shifts, for social-distancing] **[GD 2Q 2020 Results Call is July 29, 2020] [HII 2Q 2020 Results Call is August 6, 2020]**

5. Note demand for "streamlined and accelerated claims-processing methodology". [Lockheed CFO Ken Possenriede has publicly-reinforced need for "accelerated corporate settlement(s)" in recent investor briefings. Lockheed has committed to investors, to deliver at least $7.6B of Cashflow in 2020 (see below); plus at least ~$7.7B of Cashflow in 2021; and at least ~$7.8B of Cashflow in 2022] **[Investors are generally-expecting major 2020 Lockheed Cashflow upside, from both 2Q-4Q increase to 90% DoD Progress-payments, (61% fixed-price & 39% cost-type), plus $460M payroll-tax-deferral until 2021-2022 under CARES Act]**

While unspoken, there is likely to be to growing industry-wide urgency, to "lock-in" ~2020-2022 Cashflow, before potential for severe-turbulence in November Election.

Verification After the New START Treaty: Back to the Future

INFORMATION SERIES
HON. DAVID J. TRACHTENBERG, *Editor*
DR. MICHAELA DODGE, *Assistant Editor*
AMY JOSEPH, *Managing Editor*
Issue No. 463 July 16, 2020

Verification After the New START Treaty: Back to the Future

Bryan Smith
Bryan Smith is a Senior Fellow at the George Mason University's National Security Institute. He served in national security senior civil service positions and as a professional staff member of the House and Senate Intelligence Committees.

The New START Treaty verification regime is far less effective than that agreed to in the original START Treaty. As the Trump administration pursues a new approach to arms control, which seeks to limit China's rapidly growing nuclear arsenal and the currently unconstrained shorter-range nuclear weapons, U.S. negotiators should insist upon a much stronger verification regime. Any future agreement must shut the door to rapid Treaty breakout—a key New START verification flaw. The new verification regime should also reinstate key elements of the original START Treaty that were excluded from the New START Treaty and must address difficult new challenges that stand to benefit from one New START verification innovation.

New START, Verification, and the Future of Arms Control

The New START Treaty was signed by Presidents Obama and Medvedev on April 8, 2010, and approved by the Senate, with conditions, on December 22, 2010 by a vote of 71-26—only 7 votes over the two-thirds minimum required for approval. The Treaty went into force on February
5, 2011. It sets limits on deployed strategic warheads, deployed strategic missiles and bombers, and deployed and non-deployed strategic launchers. The New START Treaty expires February 2021, unless the United States and Russia mutually extend it for up to five years, as it allows.

The President has appointed Ambassador Marshall Billingslea to serve as Special Envoy for Arms Control to engage with the Russians on both New START and the future of nuclear arms control. The President has stated that China's nuclear forces should be included in future arms control agreements, and Russian Deputy Prime Minister Ryabkov has made an earlier statement to the same effect.1 President Trump has also directed that nuclear weapons that are now unconstrained by New START, the so-called tactical nuclear weapons, also be included in a future agreement.

This only makes sense. We have a multi-polar nuclear world, in which President Xi has announced that China will be a "first tier" military by 2050. Also, the idea of "strategic" nuclear weapons (determined by range) is arguably obsolete. Any use of a nuclear weapon would have strategic consequences. Russia's nuclear doctrine, which would use "tactical" nuclear weapons to "de-escalate" a nuclear conflict makes this painfully clear. Russia also has an overwhelming numerical advantage in these unconstrained nuclear weapons over the

United States and NATO. Recognizing this, the Senate's Resolution of Ratification for the New START Treaty called for future negotiations to "secure and reduce tactical nuclear weapons in a verifiable manner."2

If we are to add China as a party, and include smaller, highly mobile and concealable nuclear weapons, there needs to be a special premium placed on verification and strict compliance. In essence, the standards for what constitutes "effective verification" need to be higher than for New START. Thus, highly effective verification and strict compliance constitute the third pillar for the future of nuclear arms control.

But what does this mean in practice? To what extent should future nuclear arms control resemble New START or its predecessors, the START and INF treaties? To answer this question, we need to take a close look at these treaties' verifiability. In this regard, it is instructive to review the critique of New START verification offered by Senate Republicans at the time of ratification.

I am very familiar with that critique. As a staff member of the Senate Select Committee on Intelligence (SSCI), I was tasked to analyze the effectiveness of the New START Treaty's verification, and draft a classified report for Members' consideration. This assignment was based in part on my previous experience working for President Reagan's top verification expert, Dr. Manfred Eimer, on INF, START, and Soviet arms control compliance determinations.

START and INF Treaty Verification Precedents

In 2010, I fully expected President Obama's New START Treaty to be effectively verifiable—for three reasons. First and foremost, INF and START had been built from the ground-up for effective verification. Those Treaties' central limits were well-matched to our verification capabilities. The Treaties also contained groundbreaking verification procedures that New START could logically build upon, most notably:

● Warhead counting rules that captured the warhead-carrying capability of a missile, taking into consideration its throw-weight and flight-test history;

● Banning encryption of telemetry on these flight-tests and full exchange of the unencrypted telemetry recordings;

● Continuous "Portal Perimeter Monitoring" (PPM) of the critical mobile ballistic missile production facility at Votkinsk, Russia, and at Magna, Utah to help verify critical limits on deployed and non-deployed mobile missiles; and

● On-site inspection of the entire missile and launcher destruction process.

Second, Russia was a serial violator of arms control agreements, so we knew the standards for verification had to be high. Third, the Obama national security and treaty negotiating team was highly seasoned and respected.

Assessing the New START Treaty's Verification

On the surface, New START's verification looked good to many or most, and still does. It features plenty of verification bells and whistles, including exhibits and displays, serial number tracking, and a potentially useful new radiation sensor for on-site counting of nuclear warheads.

But when you carefully analyzed it, there was much less to New START verification than met the eye. The Obama team deliberately chose to abandon all the key START and INF verification measures listed above—no missile warhead counting rules, no encryption ban, no throw-weight limits, no PPM, and no limits on non-deployed mobile missiles. But why?

In engineering parlance, the Obama Administration's choices constituted a conscious "design trade." They chose (minor) cost savings, administrative convenience to the military, and warhead deployment flexibility over binding limits on Russian military capability. A recent article on the New START Treaty's supposed verification virtues by former Under Secretary of State and New START Treaty chief negotiator, Rose Gottemoeller, admits as much. It touts the Treaty's achievements of cost savings, administrative convenience, and warhead deployment flexibility.3

are not bad things, of course. But the rub, as I will explain, is that this design trade, forfeiting key limits on capability contained in the original START Treaty, proved highly unfavorable for verification and led directly to the New START Treaty's major verification shortcomings.

New START's poor verifiability was not only deeply disappointing, it was highly disturbing to many Republican Senators. The Vice Chairman of the SSCI, Senator Kit Bond, was philosophically disposed to support a follow-on treaty to START to regulate strategic competition. (So was I.) However, Senator Bond and 25 other of his GOP Senate colleagues decided to oppose the treaty, in no small part due to its verification shortcomings, especially as compared to START.

On November 18, 2010, Senator Bond presented his reasons for opposing the New START Treaty in a Senate floor statement.4 He made four main points on verification, elaborated below:

1. Russia is a serial arms control violator, requiring extra stringent verification, but the Administration failed to acknowledge this in its New START Treaty verification regime. According to official State Department reports on compliance published at the time, Russia had violated, or was still violating, important provisions of virtually all key arms control agreements to which it was a party. This included the original START, the Chemical Weapons Convention, the Biological Weapons Convention, the Conventional Forces in Europe Treaty, and Open Skies.

Ironically, the major exception was the INF Treaty! Little did the Senate know that, as it deliberated on whether to ratify the New START Treaty, Putin was actively laying the extensive groundwork for Russia's material breach of the INF Treaty with a new prohibited, ground-launched cruise missile. Indeed, **had** the Senate known, the New START Treaty surely would have fallen short of the required two-thirds votes needed for approval.

2. New START Treaty's central warhead limit could not be effectively verified because it abandoned START's warhead counting rules and featured only limited on-site inspection.

The START Treaty, like all sound arms control treaties, limited ***capability—***not intent. Accordingly, it established "counting rules" for limiting existing missile warheads based on their flight-tested capability—each missile of a type was attributed the same number of agreed warheads. Similarly, it established a formula for attributing warhead numbers for new missile types based on their throw-weight and flight-tested warheads (i.e., their warhead carrying capability). These counting rules allowed warhead verification to become a matter of simply multiplying the counting rule for a missile type times our count of the deployed missiles of that type. The United States can do this confidently with NTM, except for mobile ICBMs. (More on mobiles later.)

By contrast, the New START Treaty set limits on the "actual" number of warheads loaded on deployed missiles, regardless of a missile's capability. It used a small sample of on-site inspections with radiation sensors to attempt to verify these limits. Ambassador Gottemoeller in her article lauds this change as "*the most important innovation in New START…permitting a more accurate accounting of warheads*."5

Unfortunately, it is also arguably the ***worst*** innovation in the New START Treaty. Establishing legal limits on "actual" warheads is not the same as "accurate accounting" of them. So what exactly is the problem with "actual" deployed warhead limits on missiles? To begin with, the New START Treaty permitted only ten warhead inspections per year, a sample of only 2-3 percent of the force. And unlike START, the New START Treaty allowed any missile to be loaded with any number of warheads.

So even if a U.S. inspection revealed that a particular missile was loaded with a number larger than Russia had declared, there is no logical way to infer from this—or ***any*** such discrepancy—that the ***entire force*** had exceeded the 1,550 warhead limit. Conversely, neither could we logically conclude that the entire force ***complied*** with the 1,550 limit, even if the 20-30 percent life-time sample inspections all confirmed that the observed warhead loadings matched their declarations. Hardly a model for effective verification for future, more ambitious arms control.

True, the Administration has certified Russian compliance with the New START Treaty, including its deployed warhead limit. However, such compliance conclusions are necessarily based on samples and some significant assumptions and extrapolations. We can really never ***know*** the actual force-wide warhead loadings under the Treaty.

But what if we ***are*** willing (as the Administration is) to infer from a 20-30 percent sample that the Russians are complying with the deployed warhead limit? Aren't we ok then? No. As we shall see, the Treaty's breakout potential for warheads and missiles is even more problematic than its unverifiable warhead limits.

3. The New START Treaty allows for massive breakout potential via missile warhead "uploading"—a legal route open to undermine the treaty. In her New START Treaty verification article, Ambassador Gottemoeller correctly points out that "…[effective*] verification regimes must not tempt either side to try an illicit treaty break-out*."6 However, this is exactly what the New START Treaty does. In fact, Treaty breakout was probably the top monitoring concern for U.S. Intelligence. Consequently, the Senate required, as a condition of Treaty ratification, that the President certify prior to entry into force and annually thereafter, that "*National Technical Means [NTM]…are sufficient to ensure...timely warning of any Russian preparation to break out of the limits in Article II of the New START Treaty*."7 The Obama and Trump Administrations have made this certification, which readers of the 2010 National Intelligence Estimate on the Treaty monitoring may find surprising.

Again the root of the problem is in trying to count "actual" warheads without regard to a missile's warhead carrying capability. Unlike the original START Treaty, the New START Treaty ***legally*** allows a side to flight-test missiles with an ***unlimited*** number of warheads but declare only ***one*** "actual" warhead towards the treaty's 1,550 deployed warhead limit—an obvious and potentially destabilizing flaw.

As a result, both sides in the New START Treaty are ***legally*** permitted to have thousands of spare warheads that can be easily and quickly "uploaded" to deployed missiles in a crisis. This upload potential for Russia is estimated to be a third of its current missile warhead level

and even more for the United States, according to one respected U.S. think tank.8 Consequently, the New START Treaty actually incentivizes competitive warhead uploading in a crisis. This incentive is the exact opposite of a key goal for nuclear arms control—promoting strategic stability.

Given this breakout potential, the Intelligence Community discounted likely Russian cheating on the Treaty's unverifiable warhead limit. It would probably be more attractive for Russia to legally prepare to quickly and easily break out of New START Treaty constraints through warhead uploading. Again, hardly a model for effective verification for future, more ambitious arms control.

4. The New START Treaty failed to limit non-deployed mobile missiles (as START had), permitting further potential for massive breakout. This failure was almost certainly driven by the decision to abandon PPM to save a few million dollars a year of operating costs. Ambassador Gottemoeller terms the Votkinsk PPM "*an expensive program for the United States to implement*," and credits the New START Treaty for avoiding these costs.9 The annual cost for the United States to operate PPM at Votkinsk and at Magna UT for INF was $12.4 million, according to DoD testimony in 1991.10 To put this "expensive" program into perspective, PPM at Votkinsk cost the U.S. Government ***half*** what Sam Houston State and Prairie View A&M colleges each spend yearly on their football teams.11 This "penny wise, pound foolish" New START logic resulted in major verification and breakout problems that far exceeded its very modest cost avoidance benefit.

Ambassador Gottemoeller's article offers an additional (and somewhat odd) defense of the New START Treaty's abandonment of PPM—i.e., that it would not have detected Russia's illegal INF cruise missile system.12 This is like faulting a Covid therapeutic drug for not being a vaccine. PPM's verification purpose was simply to count treaty-limited missiles at declared facilities; we use National Technical Means (NTM) to detect and deter ***covert*** behavior. That division of labor was the whole foundation of the successful mobile missile verification regime embodied in both the INF Treaty and the START Treaty.

Without PPM, the United States cannot verify mobile missile production at declared facilities. Under the New START Treaty the Russians can have an ***unlimited*** number of non-deployed mobile missiles. This means they could ***legally*** build and store any number of these missiles. While non-deployed ***launchers*** are capped, we cannot effectively verify mobile launchers either. We have no way to reliably count (verify) mobile launcher production at declared facilities. Moreover, it would be relatively easy for Russia to covertly produce and hide these mobile launchers in mundane-looking tractor trailer factories, without detection. Such illegal non-deployed mobile launchers could be mated with legal, unconstrained mobile missiles in a crisis. The Treaty allowed this security risk in order to save a few million dollars a year of PPM operating costs.

Again, the New START Treaty presents a massive, ready-made breakout potential that is hardly a model for future arms control.

In 2010, Senator Bond sent a Top Secret SSCI minority report, detailing these four and other verification issues, to the Senate Foreign Relations and Armed Services Committees. This SSCI minority report was consistent with the facts contained in the National Intelligence Estimate on the IC's ability to monitor the Treaty. Additional issues discussed in the SSCI's classified report included:

● Classified details on Russian treaty non-compliance;

● Concerns regarding Russia's potential to evade and frustrate the New START Treaty's on-site inspections;
● Then-Top Secret information on Russian strategic threats that were not covered under the New START Treaty, including some that President Putin subsequently touted in public; and
● Lax missile and elimination procedures in the new Treaty, relative to the START Treaty's continuous on-site inspections, giving rise to worrisome scenarios for falsifying missile and launcher destruction.

The Obama State Department, on November 24, 2010, attempted to rebut Senator Bond's verification critique with a written article, but it fell short.13 It hardly tried to dispute the logic of Senator Bond's verification critique. It is but a small exaggeration to say that the State Department's "rebuttal" boiled down to this: "We have loads of verification stuff in our treaty, and important people say it is better than no treaty; therefore, it is effectively verifiable. Trust us."

Ultimately, however, the New START Treaty's verification problems proved far too technical and arcane for most U.S. Senators. The understandable urge to regulate strategic nuclear competition in the hope of avoiding a costly and dangerous superpower arms race led to the Treaty's approval. Still Senate ratification was a "near-run thing", in contrast to the nearly unanimous votes enjoyed by all previous nuclear arms control treaties with the Soviet Union.

Considerations for the Trump Administration

I believe New START Treaty's verification problems are too systemic to remedy in a New START Treaty extension process. Even relatively minor improvements would require extensive negotiation and Senate ratification. Time is too short, the issues too big.

I can only offer one verification band aid if the New START Treaty is extended: the United States should inform Russia that henceforth any discrepancy between warhead declarations and on-site inspection results, or any unavoidable procedural delay or interference, would be considered a de facto violation of the Treaty's limit on deployed warheads. This does nothing about the breakout problem, however.

The good news is that despite the New START Treaty's verification inadequacies—or perhaps because of them—the Russians ***appear*** to have complied with the treaty. (I say "appear" because we can't really know, given the Treaty's serious verification deficiencies, and after all, we've never found anything successfully hidden.) Further, since Russia can gain major advantage through legal and/or partially legal breakout options, they may be content with this benefit. (It would be unimaginable that Russia's General Staff has ***not*** drawn up serious contingency plans for warhead uploading during a crisis.) One might even wonder whether Russia's strongly expressed desire to extend the New START Treaty is motivated, in part, by a desire to also extend the Treaty's breakout options. Therefore, the good news on Russian compliance warrants skepticism, especially in light of its history of arms control violations.

Even so, Russia's apparent compliance with the New START Treaty is one argument that can be made in favor of the Treaty's extension. At the same time, the Administration has a golden opportunity to strengthen future verification as one of its conditions for any possible extension of the New START Treaty. It ought to.

Specifically, the United States should seek Russia's commitment that future nuclear arms control must meet a verification standard significantly higher than that embodied in the New START Treaty. (This would be in addition to adding China as a party and including unconstrained nuclear weapons.) If China ***is*** party to the next nuclear arms control treaty, Russia might finally be motivated to be as serious about verification as the United States, so this condition might not be a heavy negotiating lift.

Under no circumstances should the United States use New START Treaty as the verification "model" for a future arms control agreement—especially one that seeks to limit the many thousands of currently unconstrained "tactical" nuclear warheads possessed by Russia and China. The Administration should make this clear to the Russians and the Chinese.

The Administration should consider some specific "back to the future" START and INF approaches as it contemplates the future of nuclear arms control, most notably:

● Scrap the New START Treaty's unverifiable "actual" deployed warhead limits in favor of the START Treaty's counting rules based on demonstrated warhead carrying capability.

● Re-impose the START Treaty's ban on telemetry encryption, and return to complete telemetry exchanges, which will be useful in verifying missile throw-weight and warhead flight-test limits.

● Ban mobile ICBMs to eliminate a class of major verification risk; of course, we still need to apply NTM to detect and deter covert violations.

● If mobile ICBMs are nonetheless permitted, re-impose the START Treaty's limits on non-deployed mobile missiles, and re-establish continuous PPM at key mobile missile production facilities to verify declared production. Use NTM to detect and deter any covert production. Also, confine mobile ICBM deployment to declared and limited geographical areas—and make them much smaller than those in the START Treaty.

● Reinstate the rigorous, high confidence procedures for eliminating Treaty-accountable items contained in the START and INF Treaties.

● Ensure that "novel" strategic nuclear systems are brought into Treaty limits, if not banned.

Above all, ***verification must be woven into the very fabric of the Treaty***. This was the key to achieving effective verification in START and INF. The Treaty's central limits, obligations, and definitions must be well-matched to our projected verification capabilities and methods (especially NTM, but also inspections, cooperative sensors, and declarations). Verification measures cannot be an afterthought—"bolted on" via an annex late in the game to try to accommodate whatever text the Treaty's negotiators produced. This is a formula for unverifiable arms control, which is to say no arms control.

In that regard, the inclusion of unconstrained, so-called "tactical" nuclear systems pose a whole other category of severe verification challenges. Never will it be more critical for a treaty to be designed ***from the start*** for effective verification.

A marriage of continuous PPM and sophisticated radiation sensors at warhead production facilities may form the core of a future Treaty's cooperative verification capabilities. Here Ambassador Gottemoeller's article is on the mark. She observes that the New START Treaty sensor innovation "*opens up new opportunities for future arms control agreements….it opens up new opportunities for limiting non-strategic nuclear warheads."14* At the same time, there will also be greatly increased demands on NTM to detect and deter low-observable covert activity. We ought to begin to program and budget for these ***now***.

The Russians—and no doubt the Chinese—will fight many of the changes offered here. Our own military establishment may fight some of them as well, such as the warhead counting rules. And the Washington arms control lobby and its allied foreign policy establishment will surely oppose almost anything that makes it harder to negotiate any new arms control agreement. These critics will invariably claim that any condition for extending New START represents an attempt to "kill" arms control.

That's exactly what the same establishment said about Ronald Reagan when he proposed the "zero option" for banning an entire class of missiles, and when he insisted on continuous PPM as part of the INF Treaty. They were wrong then and will be now, too.

1. Rachel Oswald, "Russia Insists on Multilateral Nuclear Arms Control Talks," Nuclear Threat initiative, May 28, 2013, available at https://www.nti.org/gsn/article/russia-insists-next-round-nuke-cuts-be-multilateral/.
2. U.S. Department of State, "New START Treaty: Resolution Of Advice And Consent To Ratification," December 22, 2010, available at https://2009-2017.state.gov/t/avc/rls/153910.htm.
3. Rose Gottemoeller, "The New START verification regime: How good is it?," *Bulletin of Atomic Scientist*s, May 21, 2020, available at https://thebulletin.org/2020/05/the-new-start-verification-regime-how-good-is-it/.
4. Statement of Senator Kit Bond, *Congressional Record*, November 18, 2010, pp. S8052-S8053, available at https://www.govinfo.gov/content/pkg/CREC-2010-11-18/pdf/CREC-2010-11-18-pt1-PgS8052.pdf.
5. Gottemoeller, op. cit.
6. Ibid.
7. U.S. Department of State, "New START Treaty: Resolution Of Advice And Consent To Ratification," op. cit.

- 8. Jacob Cohn, Adam Lemon, and Evan B. Montgomery, *Assessing the Arsenals: Past, Present, and Future Capabilities*, Center for Strategic and Budgetary Assessments, May 15, 2019, p. 44 available at https://csbaonline.org/research/publications/Assessing_the_Arsenals_Past_Present_and_Future_Capabilities/publication/1.

9. Gottemoeller, op. cit.
10. House Committee on Appropriations, Subcommittee on Defense, *Hearings, Department of Defense Appropriations for 1991*, p. 151, available at https://books.google.com/books?id=TQ9EAQAAMAAJ&pg=PA151&lpg=PA151&dq=OSIA+Budget,+Portal+Perimeter+Monitoring&source=bl&ots=eqgkEzsvNn&sig=ACfU3U3FwW0GCAprXj2VAcTKmLQHEuLfuw&hl=en&sa=X&ved=2ahUKEwi04IWgvpXqAhXflHIEHeO5AosQ6AEwAXoECAoQAQ#v=onepage&q=OSIA%20Budget%2C%20Portal%20Perimeter%20Monitoring&f=false.
11. Steve Berkowitz and John Kelly, et. al., "NCAA Finances, 2017-18," *USA Today*, available at https://sports.usatoday.com/ncaa/finances/.
12. Gottemoeller, op. cit.

13. U.S. Department of State, "A Rebuttal to Sen. Kit Bond's November 18, 2010 Floor Speech in the U.S. Senate on the New START Treaty," November 24, 2010, available at https://2009-2017.state.gov/t/avc/rls/151981.htm.
14. Gottemoeller, op. cit.

The Next U.S. Strategic Posture—and the Posture After Next (Notes prepared by and distributed by LLNL's Brad Roberts)

Summary of an unclassified virtual workshop

Center for Global Security Research

Lawrence Livermore National Laboratory

July 8-10, 2020

Key questions:

- What will be the main attributes of the US strategic posture in 2030?
- Relative to the predicted Russian and Chinese strategic postures of 2030, will the US position have improved, stayed the same, or eroded? Why?
- What factors should guide the development of capabilities beyond 2030?

Key insights:

1. The US strategic posture is diversifying. In the Cold War, the terms "strategic" and "nuclear" were nearly synonymous. But missile defenses began to take on strategic functions, then counter-space capabilities, and now precision conventional strike and cyberspace are demonstrating strategic potential. As the strategic toolkit diversifies, synergies can be reaped. But new instabilities and vulnerabilities are also emerging.

2. The US strategic toolkit is also becoming more robust. US capabilities are improving as a result of significant investments and a purposeful exploration of emerging technologies. This is primarily a bottom-up process, shaped by technological possibility and funding availability. A top-down process would align investments with operational requirements deriving from a military strategy tailored to the security environment. This would enable a comprehensive portfolio-management approach. That top-down process is largely missing today.

3. In thinking about the future of this toolkit, it is useful to distinguish between the next strategic posture, of 2030, and the posture after next, of 2040. The next strategic posture promises to be an incremental improvement on the 2020 posture. But the posture after next could be substantially different. Today's investment decisions are down-payments on both.

4. By 2030, the nuclear deterrent will have been partially modernized but little changed; by 2040, it may include new and different weapons. But even the road to 2030 is uncertain. Modernization of the US nuclear deterrent faces three major risks in the coming few years. The just-in-time nature of the program of record may prove unrealistic. The bipartisanship necessary for the full program may slip away. The security environment may generate unwelcome surprises requiring new US capabilities quickly. Thus, there is a realistic possibility that the force may fall short of existing requirements as it is modernized. The longer-term question is whether the legacy mix of capabilities will be fit for purpose in the security environment a decade or two hence.

5. By 2030, the Ground-based Mid-Course Defense (GMD) system protecting the US homeland against long-range missile attack may have been augmented with a few additional interceptors and also reinforced with an underlayer of shorter-range Aegis and THAAD systems. Some modest tailoring of the defense to address the hypersonic threat with new sensors and interceptors is also likely. By 2040, directed energy weapons may have revolutionized the defense, along with a significant move to space. The further development of US missile defenses may be driven by a simple calculus of technology and money: that is, 'we should have as much of the best available defensive technology as we can afford.' A strategy-driven approach is more challenging to define. A central feature of strategy since 1999—to seek protection of the homeland from *limited* missile strikes—was recently set aside in law. The new push for the protection of the American homeland from larger scale strikes brings with it significant new questions about how much missile defense is enough. One is whether to compete with new developments in the missile postures of Russia and China. Another is whether to compete with rogue state forces if and as they gain the ability to conduct the larger scale strikes that the US has heretofore seen as deterrable by the threat of retaliation.

6. By 2030, the US, Russia, and China may all have deployed hypersonic strike weapons, potentially in significant numbers. While a few of these may be intercontinental in reach, the vast majority are likely to be medium- and intermediate-range and designed for theater-strategic functions. These new theater systems raise new questions about offense/defense and conventional/nuclear integration; accordingly, their fit with the regional deterrence architectures of the US and its allies and with extended US nuclear deterrence remains an open question. They also raise difficult new questions about how to protect strategic stability as competition intensifies.

7. By 2030, US space capabilities will have become more strategic in potential effect; by 2040, they could become more decisively advantageous to the US. This is in sharp contrast to the last decade, when long-standing US advantages in space eroded greatly as adversaries fielded counter-space capabilities. By 2030, the US may have redressed the worst through augmentation strategies, hybrid architectures, and space control measures. By 2040, it can push further ahead of Russia and

China—but not without some fundamental and revolutionary changes to the way it thinks about space as a warfighting domain and prepares for war in space and for space in war.

8. The combination of improving space-based sensors, cyber capabilities, and long-range precision strike implies a significant on-going improvement of US counter-force capabilities. Moreover, artificial intelligence (AI) may yet have a revolutionary impact, especially beyond 2030. Russia and China have long anticipated and feared such US improvements, especially in combination with improving US missile defenses. After all, the combination will, sooner or later, call into question the viability of their deterrents. Thus, for well over a decade, Russia and China have been adapting their strategic postures and gearing up to compete. Their improving capabilities will have potentially significant implications for the design and posture of US strategic forces in the late 2030s and 2040s.

9. As the US strategic toolkit diversifies, there is a rising premium on the US ability to effectively integrate strategy, plans, and operations. Truly integrated strategic deterrence remains a distant goal. In recent years some important progress has been made on conventional-nuclear integration to reinforce deterrence; but it is limited in nature and must be sustained over the long term. Offense-defense integration is less advanced, especially at the regional level with allies. Russia and China have put a premium on such integration and have implemented major organizational reforms to enable it.

10. Integration brings with it new questions about how much of each capability is enough in the overall mix. The old questions about how many nuclear weapons are enough or how much missile defense is enough were already complex enough in a multipolar environment. Answers should be informed by a basic concept for sizing and shaping US strategic forces. But one does not seem to exist. For the post-cold war period from 1990 or so to 2014 or so, US strategic forces were sized and shaped according to the desire to negate rogue deterrents while preserving strategic stability with major powers; but this fits poorly in an era of major power rivalry and growing rogue forces. The updated 2018 US concept for sizing and shaping conventional forces is a logical starting point for an updated strategic concept but is of limited utility for this purpose. Faced with a complex security environment and diversifying strategic toolkit, there is a logical allure of a simplifying approach. This may help explain the embrace of strategic dominance as a goal. On balance, this is an unhelpful simplification, as it is not plausible technically but nonetheless motivates unhelpful responses to American power. “Second to none” could be a better guide.

11. In the emerging strategic competition among Russia, China, and the US, a net assessment of winners and losers in 2030 is very difficult to construct. It is easier to measure progress by each country in capability development than to measure success relative to an adversary. But progress does not equate with success. Success equates with shifting the balance of power and influence in a decisive way (or with preventing an adversary from doing so). This might be measured in terms of the military ability to seize and hold some gain. Or it might be measured in terms of the ability to set expectations and influence decision-makers to achieve the intended deference to one’s interests without fighting. Whatever its challenges, a strategic net assessment is urgently needed as a guide to strategy and capability development. Properly crafted, it would include all-domain expertise,

clear metrics, allied expertise, both classified and unclassified components, and appropriately tailored war-gaming and red-teaming.

12. Despite a great deal of fluidity and uncertainty, it seems unlikely that the net balance of strategic power and influence will have shifted dramatically in favor of any of the three by 2030. Each will be able to look back on a record of progress in maintaining a credible threat of nuclear retaliation. None should be able to conclude that it is in a position to seize and hold some gain bearing on a vital interest of another.

13. In 2030, Russia's leaders are likely to be satisfied that they have repaired the instabilities that they attribute to a US strategic ambition for preeminence. They will have robust all-domain means to inflict punishment on the US and its allies and also to protect themselves and many of their forces from crippling US/allied punishment. But they will not have put US retaliatory forces in jeopardy (though US caution is in order). Moreover, they are unlikely to feel secure, to have abandoned a revisionist worldview, or to have set aside their conviction that any conflict with the US will inevitably bring US efforts for regime removal. They will work hard to continue to strengthen their position over the subsequent decade.

14. In 2030, China's leaders may be similarly satisfied that they have repaired the instabilities that they attribute to the US strategic ambition for Absolute Security. They may also be satisfied that they have the military means to re-take Taiwan and prevail in other local informationized wars. Like Russia, they too will have robust all-domain means to punish and perhaps also to protect. But in 2030, their strategic focus may be pivoting onto a new set of challenges. The 2049 centenary will then be looming, bringing major questions about the types of conflicts for which China must next prepare. They will also be debating what use to make of China's new capabilities to project power much further from its shores. Of course, it is possible that this pivot may occur earlier, if and as China's foreign relations, especially with the US and its allies, continue to deteriorate.

15. In 2030, US leaders are likely to be satisfied that the US nuclear deterrent remains credible and that good progress has been made in developing and fielding new all-domain capabilities and thus in competing with improvements to the Russian and Chinese strategic postures. Many assumptions underpin this assessment, about which there is a good deal of disagreement in the American expert community. Some technical experts anticipate significant progress in developing and fielding new capabilities; others are troubled by the sclerotic federal acquisition process. Some see a glass half full and filling; other see the glass as unlikely to fill, as the US continues to lag Russia and China in adapting strategic postures to a changing security environment. In fact, there are widely varying expectations about whether the US will have gained or lost ground against China and Russia over the coming decade. For reasons not fully articulated, there appears to be more confidence in the likely competitive position of the US in the following decade.

16. US allies are cautiously optimistic that the regional deterrence architectures to which they and the US contribute capabilities will be fit for purpose in 2030. But they see many challenges on the road ahead arising from assertive and creative adversaries, emerging and disruptive technologies, and the need for comprehensive strategies that integrate political, military, and economic factors. Some

are doubtful that the extended nuclear deterrent posture now in place but largely designed in the 1990s can be effective against emerging challenges. Allies too are tackling new questions about offense-defense and conventional-nuclear integration. They also struggle with renewed and deeper doubts about US resolve to defend them whenever their vital interests might be at risk.

17. Strategic competition brings with it the possibility, even likelihood of arms races. There are already signs of intensifying competition. Russia and China have competed to redress damage they believe the US did to strategic stability during its "unipolar moment;" they have also begun to exceed the requirements of the status quo ante. In response, the US is now deciding how to compete. Arms races are not necessarily a bad thing. An arms race may be necessary to redress a new instability or to signal, as an alternative to war, the resolve to stand up to a challenger. But an arms race will likely produce winners and losers. Moreover, in a free-for-all among three powerful actors, everyone might lose. Arms races come with risks—including, in the contemporary case, a heightened risk of crisis stability associated with the apparent need to strike first and hard to gain a decisive advantage early in a mounting crisis. Arms races also bring uncertainty, fear, and temptation. This begs the question: is there an alternative to a strategic free-for-all? The collapse of the legacy arms control regime casts a dark shadow over this question, as does the failure so far to start meaningful dialogues among the three about possible future forms of strategic restraint and common security.

18. Cutting across this discussion was an oft-voiced concern about the level of intellectual effort so far invested in designing the US strategic posture of the future and in understanding and mitigating the risks of a strategic free-for-all. Strategy was defined as "underdeveloped." The policy discussion of hypersonic weapons was defined as "under-conceptualized." There were warnings of "preventable strategic surprise." There were calls for "a broad analytical agenda" and (in the words of one participant) "an improved ability to listen to others." Policymakers were described as "uninterested" in the dangers of arms racing. Together with its allies, the US needs to become much more competitive with Russia and China in developing the needed strategic thought. This is essential if sound choices are to be made about the future roles, size, and shape of US strategic forces. This is one balance that can easily be restored by 2030—if defense leaders were committed to doing so.