Weekly ICBM EAR Report

Image: Illustration of the Sentinel next-generation ICBM. Credit: Northrop Grumman - Space News

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Edition: Week of January 5, 2026

ICBM EAR Week of January 5, Prepared by Peter Huessy, President of Geostrategic Analysis, and Senior Fellow at the National Institute for Deterrence Studies

Summary

Mark Schneider has an important essay on the cost of not testing nuclear weapons; the Sentinel is getting more funding to get it fully back on track; The EAR has a new analysis of what the nuclear freeze of 1981 proposed and what the strategic balance was at the time; two upcoming nuclear seminars are scheduled for Jan 23 and Jan 30 and six more or the early months of 2026 including reviews of the nuclear threats from China and Russia; a new Gatestone update on Iran and its missile production; the Russian used an Oresknik missile against Ukraine; the ROK outlines a possible deal with North Korea and China; two new analyses of the SLCM-N; Elizabeth Economy has an interesting essay on China's quest for power; the EAR's new essay on the goals of the abolition movement; Michael Waller explains how undoing the dictatorship in Venezuela could unravel the Chinese plan for regional and world hegemony; Rep Banks supports the President's proposal to increase defense to a $1.5 trillion annual budget; and Shoshana Bryen gives us some wisdom about our military capability. And of course, we begin with quotes of the week but also quotes from the archives—almost exactly 45 years ago.

NEWS: The Nuclear Triad Event at LSUS Will be June 23-24. Please save the dates.

Theme: The US Nuclear Deterrent is the Bedrock of US National Security.

Quotes of the Week

Air Force Maj. Gen. Brandon Parker, director of global operations at U.S. Strategic Command. The nuclear triad is "the bedrock of our national defense. While the nuclear triad is thought of as three separate but complementary legs, "we really view them from a holistic perspective" — but the land leg is the most responsive.

USSTRATCOM: "Right now, America's warfighters are on duty. Missileers are underground. Bomber crews are ready. Submariners are underway. Command and support teams are watching. They are professionals, all. They do not stop, and they never will. New year. Same mission."

Senator John Warner: "In recent years we have seen our strategic posture transformed from one of 'massive retaliation' through 'sufficiency,' 'parity,' 'essential equivalence' and 'rough equivalence,' to the imbalance and inferiority which characterizes the 'window of vulnerability' which will exist until the deployment of the MX missile." SASC Hearing, February 18th, 1981, Strategic and Nuclear Forces and FY82 Authorization of Appropriations. [45 years ago]

General Richard Ellis, Commander in Chief, Strategic Air Command, February 18th, SASC: "A serious strategic imbalance currently exists between the United States and the Soviet Union and will continue to exist throughout the decade. Correcting this imbalance must be the nation's top priority in the immediate yours ahead." [Feb 18, 1981]

General Richard Ellis: "Program delays, cancellations, stretch-out's have combined through the years to reduce the total effectiveness of America's retaliatory capability." [Feb 18, 1981]

General Richard Ellis: "The imbalance has deepened since last year" and is not corrected until the Trident, MX and ALCM come online operationally which is after 1985…."But just putting the programs in place (although not to fruition) and having that strong national will, will have a major deterrent effect." [Feb 18, 1981]

Secretary of the Navy Phelan: "This ship [battleship] isn't just to swat the arrows; it is going to reach out and kill the archers. And for the first time in generations, we'll have a new leg in America's nuclear deterrence, because the Trump-class battleship will carry the nuclear-armed, sea-launched cruise missile."

President Donald Trump: I want U.S. military spending to reach $1.5 trillion in FY 2027, citing "troubled and dangerous times.

ICBM Sentinel News

The USAF will be adding funding to the Sentinel ICBM program to replace funds that were previously used for other purposes, which would place the program on track to meet its new scheduled deployment.
Brig. Gen. William Rogers, program executive officer for intercontinental ballistic missiles, said the Air Force has to be more responsive to threats to the land leg of the nuclear triad, which could include cyberattacks. “A core part of Sentinel is actually making sure that we are cyber secure, [ensuring] that we bake cyber into that system, and we can defend it from not just the traditional kinetic type of attack, but also cyber and non-kinetic attacks.” .

Pentagon, Industry Looking to Put Troubled Sentinel Program Back On Track

ICBM EAR Essay of the Week

Looking Back to 1981: The Strategic Balance and the Nuclear Freeze

These quotes from the archives are an important glimpse at the critical state the US faced in 1981. The initial SASC assessment of the strategic balance in early 1981, some 45 years ago, provides an important historical lesson. Forty five years ago, the nuclear freeze community was proposing the US stop all testing, development and acquisition of nuclear weapons and nuclear platforms. Their argument was that the world was already getting more dangerous so it made no sense for the new US administration to foolishly embark on a nuclear arms race. Similarly, today the nuclear abolitionists are pushing to delay or end or cut all of our nuclear Triad.

According to Wikipedia’s review of the nuclear freeze campaign, “In the late 1970s, Soviet-American détente unraveled and the Cold War began to revive, with new conflicts emerging in Africa, Central America, and Afghanistan. That caused nuclear arms control agreements between the two superpowers, such as SALT II, to be jettisoned and each embarked on dangerous nuclear expansion programs.” To which the freeze campaign objected.

In reality, the EAR would note that during the 1970’s the showed remarkable restraint in our foreign policy. The US withdrew from Indo-China, dramatically curtailed its defense spending, secured a peace treaty between Egypt and Israel while also adopting détente and peaceful coexistence as the basis for dealing with the USSR. The US sought to normalize relations with China, even going to far as to kick Taiwan out of the United Nations and put mainland China in its place.

As for growing conflicts around the world, it was the USSR not the United States that engaged in worldwide wars of liberation in more than a dozen nations, invading Afghanistan, and overthrowing the governments of Angola, Grenada and Nicaragua. Multiple nations were Soviet linked sponsors of terror centers, funded and armed by the USSR. Détente unraveled because Moscow sought to militarily expand its empire while pretending to seek peaceful coexistence and observe détente.

The freeze groups opposed US plans to deploy the Pershing and GLCM missiles, already approved in a NATO wide agreement. NATO had long proposed that no such missiles would be deployed if the USSR took down its missiles, but the freeze campaign described that idea as a “trick” Moscow would never adopt. A 1981 proposed freeze would have left in place a few thousand intermediate-range Soviet SS-20 missile warheads, not just directly threatening Western Europe but also Asia. And leave NATO with no Pershing or GLCM, as acquisition and deployment funds were not in the US defense budget until the FY 1982 or first Reagan defense budget. And without the deployment of these two NATO missiles, there would never have been the 1986 INF agreement that eliminated all Soviet SS-20 missiles.

But worse was the freeze proponents would stop all US nuclear modernization when at the time the US had not modernized any part of its nuclear deterrent including the Ohio class sub, the D-5 missile, the B1 or B2 bomber, the ALCM for the B52 nor the MX ICBM. All these elements would have never gone into production with a freeze in 1981. [And these are the nuclear deterrent the US now relies on some 45 years hence.]

The Soviets on the other hand had modernized its entire Triad and built its warheads up to the 10,000 warhead level as allowed for by the 1972 SALT I treaty. In 1979 the newly completed SALT II was withdrawn by the Carter administration from the Senate because there was not the votes to secure its ratification, even though 57 members of the Senate were Democrats.

As for the Reagan administration, in late 1981, in November at the National Press Club, the administration announced proposals to eliminate all INF type missiles and reduce by 50% its long range strategic nuclear

forces, both of which culminated in the 1986 INF and 1991 START agreements, proposals President Reagan had originally sought in proposals he made as a candidate as early as 1976 and again in 1980.

That is why the EAR presents to its readers the 1981 SASC hearing that highlighted the current strategic nuclear imbalance between the US and the USSR, which the nuclear freeze would have locked in as a near permanent fixture of the international security environment. Today, the nuclear abolition is pushing very similar ideas, including major unilateral reductions in US nuclear forces, again right after Russia has completed over 90% of its own nuclear modernization but also while a new nuclear armed near-peer—China—is projected to build by 2035 a new nuclear force reaching US deployed levels of nuclear weapons as well.

Congressional Nuclear Developments of Note

"Senators [told the Jewish Insider that] an additional round of U.S. strikes on Iran remains on the table if the regime makes strides in rebuilding its nuclear program or other malign activities, echoing recent warnings from Trump."

Rep. Dina Titus (D-NV): "The last remaining U.S.-Russia arms control agreement expires in just one month. The 2010 New Strategic Arms Reduction Treaty (New START) limits both the United States and Russia to 700 deployed strategic-range nuclear delivery vehicles and 1,550 warheads on those vehicles. @POTUS must renew this critical agreement to promote nonproliferation and prevent a catastrophic nuclear arms race."

Rep. Don Bacon (R-NE): "I strongly support [increasing defense to $1.5 trillion.]. Our current defense spending sits around 3% of GDP, not counting the one year plus up from the Reconciliation Bill. A one year plus up does little good. We need a steady minimum of 4% GDP to modernize our nuclear deterrent, boost our Navy and AF, and support our service-members." Rep. Don Bacon (R-NE) further explained: "The current defense budget is inadequate to modernize our nuclear deterrent, increase ship production, field fifth & sixth generation fighters, install air defenses for U.S. and take care of our service members. We need to spend above 4% of GDP on defense."

International Nuclear Developments of Note

The Iran Missile Threat is detailed here: https://www.gatestoneinstitute.org/22157/iran-missile-threat

Russia struck Ukraine with a nuclear-capable, medium-range Oreshnik ballistic missile as part of a large-scale aerial assault on the country overnight, which the Washington Post described as "a menacing reminder to the world of Moscow's huge nuclear arsenal."

President Trump, when asked about New START, said: "If it expires, it expires […] We'll just do a better agreement,"

China is intensifying objections to what it claims are Japan's nuclear ambitions, citing Tokyo's talk of revising the three nonnuclear principles, discussion of nuclear-powered submarines, and calls to strengthen "extended deterrence."

Western security analysts are "divided about the wisdom" of the Trump administration potentially accepting Russian President Vladimir Putin's offer for both countries to continue observing New START limits on deployed nuclear weapons ahead of the treaty's expiration next month. Although the President has recently explained that while the treaty will soon expire, his goal would be to put together a better one.

Iranian Foreign Minister Abbas Araghchi, speaking in Beirut on Thursday, said that Iran does not want war with Israel or the United States, but the country is prepared to fight back if attacked again. Araghchi also said Tehran is ready for negotiations with the U.S. over its nuclear program if the talks are based on mutual respect rather than "dictation" from Washington.

South Korean President Lee Jae Myung urged Chinese President Xi Jinping to help him curb North Korea's nuclear program and suggested that Pyongyang could freeze its development of nuclear weapons in exchange for "compensation."

U.S. officials at a Paris summit for the first time said that Washington would support a coalition of Ukraine's allies in vowing to provide security guarantees that would include binding commitments to support the country if Russia attacks it again.

Iranian army chief Maj. Gen. Amir Hatami on Wednesday threatened preemptive military action over "rhetoric" targeting the Islamic Republic.

President Trump warned that if Tehran "violently kills peaceful protesters," America "will come to their rescue."

Administration Nuclear Developments of Note

CJCS Gen. Dan Caine: Operation Absolute Resolve led to the successful capture of Venezuelan President Nicolás Maduro by U.S. forces, and involved more than 150 military aircraft, including B-1 bombers.

President Trump said in a Truth Social post that he wants U.S. military spending to reach $1.5 trillion in FY 2027, citing "troubled and dangerous times. Further wrote the President, "After long and difficult negotiations with Senators, Congressmen, Secretaries, and other Political Representatives, I have determined that, for the Good of our Country, especially in these very troubled and dangerous times, our Military Budget for the year 2027 should not be $1 Trillion Dollars, but rather $1.5 Trillion Dollars. This will allow us to build the 'Dream Military' that we have long been entitled to and, more importantly, that will keep us SAFE and SECURE, regardless of foe."

"Pantex welcomed Scott Pappano, Principal Deputy Administrator of the [NNSA] this week. We were honored to showcase the incredible work of our team and give him a tour of the nation's primary nuclear weapon assembly and disassembly facility,"

Key Administration Development of the Week: The SLCM-N

Trump says new battleship class will carry SLCM-N as "new leg" of nuclear triad.

https://www.exchangemonitor.com/trump-says-new-battleship-class-will-carry-slcm-n-as-new-leg-of-nuclear-triad-2/ and https://www.eurasiareview.com/09012026-us-nuclear-armed-sea-launched-cruise-missile-slcmn-analysis/

This CRS analysis notes: Section 1640 of the FY2024 NDAA (P.L. 118-31) directed DOD to establish a "major defense acquisition program" for SLCM-N under the Under Secretary of Defense for Acquisition and Sustainment (USD A&S), initiate a program to alter the W80-4 warhead for the SLCM-N, and "ensure" that the system achieves initial operational capability (IOC) no later than September 30, 2034.

The FY2026 NDAA (P.L. 119-60) authorized $210 million for the missile and $50 million for the warhead. In Section 1633 of the FY2026 NDAA, Congress also required that DOD and NNSA provide "a limited number of assets" to "enable limited operational deployment" "not later than September 2032."

Vice Admiral Johnny Wolfe, Director of the Navy's Strategic Systems Programs (SSP), testified in a May 2025 hearing that SSP was working to understand the challenges of developing and integrating the SLCM-N onto the Virginia-Class submarine. A May 2025 NNSA document stated that NNSA plans to use the "W80 warhead family" for the SLCM-N warhead

Upcoming NIDS Events and Huessy Nuclear Deterrent Seminars

January 23: Rick Fisher: Is China Seeking Nuclear Superiority? Unpacking 2025 Developments

January 30th: Mark Schneider and Stephen Blank: Reflections on Russia's Nuclear Behavior: Doctrine vs. Behavior.

#1 Guest Essay of the Week

Nuclear Testing and the Stockpile Stewardship Program by Mark Schneider

The Enormous Costs of 'Science Based Stockpile Stewardship' for Nuclear Weapons

By Mark B. Schneider

January 07, 2026

The most serious problem resulting from the so-called "Science Based Stockpile Stewardship" (SBSS) as a substitute for the testing of our nuclear weapons is the potential decline in the reliability of the U.S. nuclear weapons arsenal due to aging, fixing problems by making changes from the tested designs and life extension programs which have introduced even more significant changes from the tested versions. As a publication of the Lawrence Livermore National Laboratory stated "…the U.S. stockpile of nuclear weapons aged beyond its designed service life, and the national laboratories were tasked with conducting Life-Extension Programs (LEPs) to refurbish existing designs and reuse existing parts to the maximum extent possible. Because of the nature of LEPs, key production technologies were allowed to atrophy or disappear completely from the Nuclear Security Enterprise (NSE)."[1] Worse yet, as Dr. John C. Hopkins, the retired leader of the nuclear weapons program at the Los Alamos Nuclear Laboratory and nuclear weapons designer Dr. David Sharp wrote, "Those who dismiss the need for nuclear test data pertaining to weapons in their current state are gambling with the nation's nuclear deterrent."[2] Moreover, the reduction in reliability may be asymmetrical because of the less optimized design of Soviet-era nuclear weapons which gives Russia an advantage in a protracted no testing environment.[3]

The second most important problem is that adversaries, as President Trump has stated,[4] are covertly conducting low-yield nuclear tests, creating a potentially very serious disparity in nuclear weapons reliability and introducing new and improved designs while the United States is not.[5] The late Dr. C. Paul Robinson, in his Comprehensive Test Ban Treaty (CTBT) ratification testimony as the Director of the Sandia National Laboratory, stated that, "If the United States scrupulously restricts itself to zero yield while other nations may conduct experiments up to the threshold of international detectability, we will be at an intolerable disadvantage."[6] It is noteworthy that the CTBT was rejected by a majority vote in the U.S. Senate.

The third most important problem is the enormous increase in nuclear weapons cost resulting from the absence of nuclear testing. According to Dr. George Miller, a former Director of the Lawrence Livermore National Laboratory, since the end of nuclear testing:

The U.S. has managed to execute a few modest life extension programs (LEPs), albeit over very long timescales. The country has spent a tremendous amount of money on improving the production capability of its nuclear enterprise with very little to show for it. Leadership, not money, has been the problem—principally the schism that was purposefully created between the laboratories, the production complex, and NNSA [National Nuclear Security Administration] headquarters. This strategy has largely been a failure, with one major opportunity remaining.[7]

Much of the cost increase is a result of the several fold increase in the length of time required for the life extension programs compared to the original time required to develop these weapons. The reverse should be true since the original warhead development programs were the product of much inferior technology and were making large performance increases rather than merely sustaining decades old capabilities. The cost increase has resulted in a large reduction in the number of nuclear weapons types in the U.S. active nuclear weapons stockpile.[8]

The stockpile stewardship programs are unique compared to the Cold War-era programs in that the United States was making great improvements in the military effectiveness of U.S. nuclear weapons which is much more difficult than life extension. For example, the Department of Energy's National Nuclear Security Administration (DOE NNSA) stated that with regard to the W76 life extension program (the lower yield and most numerous of the two Trident warheads types) , "The W76-1 meets all missions and capabilities of the original W76-0 warhead *without providing new military capabilities*."[9] (Emphasis added.) According to a publication of the Sandia National Laboratory, "Though the W76-1 is emphatically not a new weapon system, the scope of the LEP [life extension program] effort was very demanding."[10] It is not politically correct to explain this assessment because this would not be the case if these programs were being conducted with nuclear testing.

The original W76 design, a product of the 1970s, was built with the technology of that era. The Sandia National Laboratory says that the LEP program brings W76 technology "into the 21st century."[11] The problem is that the new technology has never been the subject of a nuclear test in the actual form of the weapons that are being life extended. The implication of this is that our main adversaries who are increasing their nuclear capabilities with nuclear testing will eventually have superior nuclear capabilities assuming this has not already happened.

The cost increase of the stockpile stewardship program is not a trivial matter in a nation that has a national debt of $38 trillion dollars which is increasing.[12] Moreover, as a direct result of the very high costs of nuclear warhead life extension without nuclear testing, there has been a large reduction in the number of weapons types in the U.S. nuclear arsenal.[13] The Obama Administration adopted the "3+2" strategy to reduce the U.S. nuclear "stockpile to three types of ballistic missile warheads and two air delivered systems, reducing the number of weapons in the deployed stockpile and simplifying maintenance requirements."[14] The idea was to have eventually three interoperable ballistic missile warheads.[15] The Biden Administration reportedly planned on reducing the nuclear stockpile to four types.[16] In addition, the high cost of stockpile stewardship is also reducing the number of variants ("Mods"). This is reducing the military options available to the United States because it is reducing the number of warhead yields in the active stockpile since Mods frequently have different yields.[17]

These reductions are increasing the potential impact of an inadvertently stockpiled dud (i.e., little or almost no yield). This happened during the 1958-1961 testing moratorium.[18] By 2050, a stockpiled dud could result in the loss of an entire leg of the nuclear Triad.[19] Even in the best case scenario, it will reduce the number of military options available to the United States.

While many of the problems faced during the life extension programs resulted from the fact that the United States has allowed its nuclear weapons production complex to become seriously broken (i.e., in part nonfunctional), this was also a result of the same mentality that ended U.S. nuclear testing. As Dr. Miller stated, the costly efforts to restore the nuclear weapons complex have resulted in "very little to show for it."[20] Moreover, the added cost resulting from the absence of nuclear testing makes it more difficult to fix problems (usually from old age) in the production complex. The W76, the lower yield strategic warhead for the Trident missile, a core element of the U.S. nuclear deterrent, began engineering development in May 1973 and the first production unit was completed in June 1978.[21] It was a major technical accomplishment. Reportedly, it more than doubled the yield of the previously developed and deployed Poseidon SLBM warhead (the W68).[22] By comparison, work on the life extended version (the W76-1) began in 2000 but the first production unit was delayed until November 2008 and the program exhibited a significant cost overrun.[23] This created problems for the U.S. Navy.[24]

The original development costs for the W76 was reportedly $128 million.[25] In current dollars this is $632 million.[26] The cost of the W76 life extension program to the first production unit reportedly was $912 million in then-year dollars.[27] This is about $1.477 billion in current dollars, or over twice the original warhead development cost. Moreover, this was the cheapest of the life extension programs probably because experienced designers with extensive nuclear testing experience were available to work on the program. This is no longer the case.

As noted above, the life extended W76 warhead provided no new military capabilities. The same is true for the subsequent life extension programs for other warhead types despite the fact that they have taken longer to accomplish and have been more expensive. The only partial exception were the W61-12 and the W61-13 which were given precision accuracy.

The W80, which started out as a warhead for the Tomahawk naval cruise missile and the AGM-86B long-range nuclear air-launched cruise missile, have been the subject of life extension programs. The original development time for the W80-0 and the W80-1, which were developed simultaneously with nuclear testing, was less than five years from the start of development engineering in June 1976 to the first production unit in January 1981.[28] The first of the W80 life extension programs life extended both of these warhead variants.[29] The second and the most significant life extension program, which is still underway, is creating the W80-4 for the new nuclear air-launched cruise missile, the Long Range Standoff Weapon.[30] For the last five years it has been funded at over $1 billion dollars a year and it is projected to continue at almost this level through the first production unit.[31] If the projected date for the first production unit is met, it will take 13 years.[32]

The third W80 life extension program which has been classified as an "Alt" (alteration) involves development of a variant of the W80-4 for the new nuclear SLCM-N cruise missile. It is early in its development funded at $263 million in FY2025.[33] During the nuclear testing era, the time it took to modify the first production version of the W80 warhead (the W80-1) into the W80-0 (an oddity in the usual numbering) was less than two years and in addition this program corrected a low-temperature problem with the W80 and the B61 upon which W80 is reportedly based.[34] By comparison, the development time for the W80-4 variant for the SLCM-N is reported to also be 13 years.[35] U.S. Navy Commander Ben Massengale, writing in the United States Naval Institute publication *Proceedings*, states, "The W80-4 Life Extension Program's anticipated 13-year development cycle (2014–27) suggests that even the 2034 target [for the SLCM-N warhead availability] is optimistic."[36]

There have also been multiple life extension programs and problem fixing efforts related to the B61 bomb. The program to develop the B61 began in October 1961 with the first production unit delivered in October 1966.[37] The life extended versions are taking much longer to develop.

The B61-12 was initiated by the Obama Administration as a (inadequate) substitute for all the other nuclear bombs (B61 variants and the B83.). According to the Department of Energy, the W61-12 LEP "…consolidates multiple variants of the B61 gravity bomb…."[38] This is not true. What is really happening is that multiple versions of the B61 are being eliminated without replacement. As a result, the United States has lost a lot of its yield options. The maximum yield of the B61-12 is reportedly much lower than the higher yield versions of the B61 and the B83.[39] Development engineering on the B61-12 began in February 2012 with the first production unit delivered in November 2021.[40] The bomb was clearly optimized for the non-strategic nuclear mission. This resulted in a much reduced capability against hard and deeply buried targets. The B61-13, a much higher yield version of the B61,[41] was rapidly developed by the Biden Administration apparently in an effort to persuade Congress to eliminate the B83 high-yield bomb which the Congress had blocked. The B61-13 "…features a yield oriented to the defeat of certain harder and large-area military targets."[42] Yet, the B61-13 was actually inferior to the B83 against the hardest and deepest underground targets.[43] DOE NNSA says that the B61-12 life extension program will extend the service life of the weapon for at least 20 years.[44] Presumably, the same is true for the B61-13.

The W87 began as the warhead for the Peacekeeper ICBM, transitioned to the Minuteman III ICBM and now will be the warhead for the new Sentinel ICBM. Developmental engineering of the W87 began in February 1982 with the first production unit delivered in April 1986.[45] The development of the new W87-1 began in 2002 with the first projected production not until 2030, an 18 year development timeline although there was a gap in its development.[46]

According to the Lawrence Livermore National Laboratory, the W87 program is a "modification program" which will be the "…first newly manufactured nuclear warhead in three decades, which will replace the aging W78."[47] The W78 started its life as a warhead for the Minuteman III ICBM. Originally, the W78 was to be life extended as a hedge against problems with the W87.[48] This changed apparently mainly due to cost. The W87-1 will involve substantial changes in the nuclear physics package without nuclear testing – using insensitive high explosive and a new pit.[49] It is being designed to be "…interoperable with the USAF Mk-21 and the U.S. Navy Mk-5 reentry vehicles."[50] Reportedly, "…10 nuclear tests were required to certify the W-87 for stockpiling…."[51] However, the W87-1 will not be subject to a nuclear test.

The W88 is the high yield warhead for the Trident SLBM.[52] It is critically important because it is the only highly survivable U.S. nuclear warhead with substantial capabilities against very hard and very deeply buried targets. It is not the subject of a full life extension program but rather an "Alt." DOE NNSA states that, "The W88 Alt 370 program replaces the arming, fuzing, and firing subsystem; adds a lightning arrestor connector; and refreshes the conventional high explosives within the weapon to enhance nuclear safety and support future Life Extension Program options."[53] According to the Los Alamos National Laboratory, "Alterations are changes to a weapon's systems, subsystems, or components. Not as extensive as a LEP, an alteration is a limited-scope change that affects the assembly, maintenance, and/or storage of a weapon. The alteration may address identified defects and component obsolescence without changing a weapon's operational capabilities."[54]

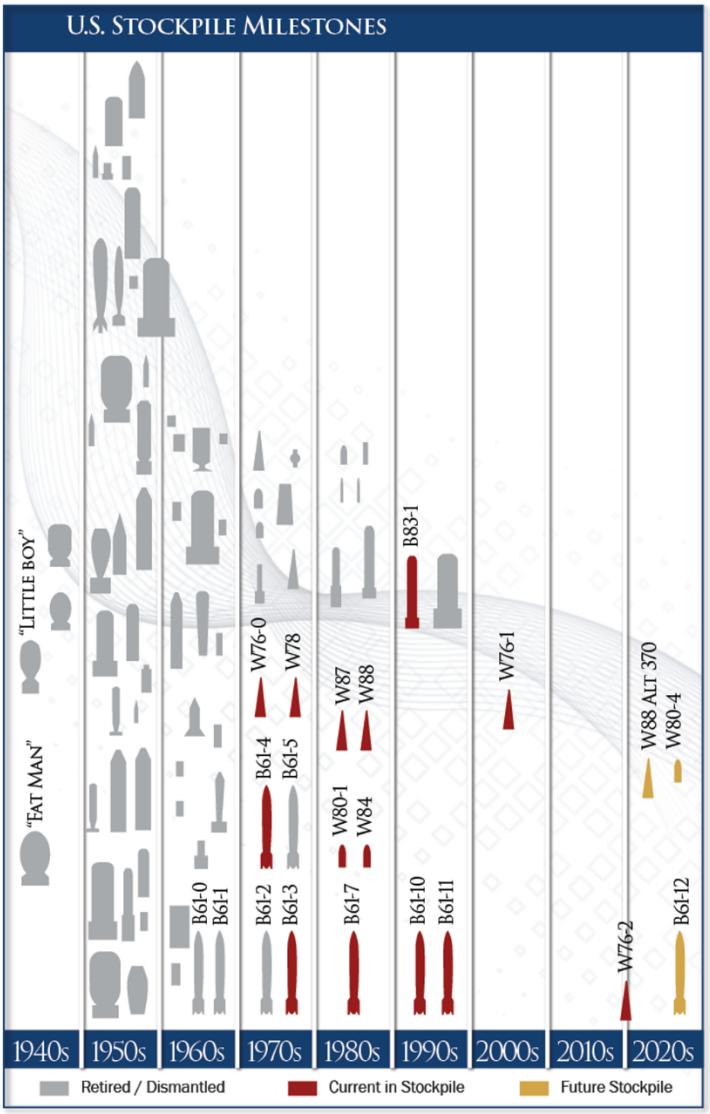
W88 development engineering began in March 1984 with the first production unit in September 1988.[55] The W88 Alt 370 entered development in 2012 with the first production unit taking place in July 2021.[56] The program was completed in December 2025.[57]

The W93 nuclear warhead development program is the only completely new type of nuclear weapon in the current program. It was not originally developed during the Cold War. However, the W93 is clearly not pushing nuclear weapons technology. According to the DOE NNSA, "All W93 key nuclear components will be based on currently deployed and/or previously tested nuclear designs, as well as extensive stockpile component and materials experience. However, the W93 will also incorporate modern technologies to improve safety, security, and flexibility to address future threats and will be designed for ease of manufacturing, maintenance, and certification."[58] The W93 development began in 2020 and is still relatively early in the development cycle. Yet it has already taken more time to develop than the full development time for most of our nuclear testing-era legacy weapons.

According to the Congressional Research Service, "NNSA and the Navy have indicated that the W93 sea-based warhead will eventually replace the W76 and W88 warheads on life-extended Trident II missiles."[59] In 2020, it was estimated that the W93 would be "fielded by 2040."[60] More recently, a LANL publication stated that deployment would be "…likely starting in the mid-2030s."[61] Either way, the development time would be several times as long as previous types of nuclear weapons which, unlike the W93, were major efforts to increase nuclear performance levels.

The Biden Administration's rationale for eliminating the B83-1 bomb was that, "DoD will rely on other existing capabilities to hold at risk adversary hard and deeply buried targets."[62] What it did not say was that none of the alternatives were nearly as effective.

The large increase in the duration of life extension programs and alterations in relationship to the original warhead development programs is a direct result of the inability to *test* these modified nuclear weapons. The following chart produced by DOD Nuclear Matters illustrated the enormous decline in productivity under stockpile stewardship.[63]



The very basis of the Science Based Stockpile Stewardship is the subordination of military and deterrence requirements to ideology. The desire to eliminate the B83 very high yield nuclear bomb was apparently based upon the fact it was the only U.S. weapon with a megaton range yield. The Obama Administration rationale for the elimination of the W83 was that:

Sustained support for the completion of the B61-12 will enable the retirement of the B83, the last megaton-class weapon in the U.S. arsenal and will result in a reduction in the total number of nuclear gravity bombs in our stockpile by a factor of two, and a reduction in the amount of special nuclear material in the total number of gravity bombs by more than a factor of six. Other strategies to extend the life of the many current variants of the B61 and the B83 would likely be double the cost compared to continuing progress on the B61-12. The B61-12 is part of an integrated national strategy for the future of the stockpile. The "3+2" Strategy provides responsiveness to the inherent uncertainty of the future global security environment with a capability that is more safe, more secure, with fewer weapons and less destructive power. I cannot endorse an alternative strategy for the weapons complex that is less safe, less secure, and that requires more weapons with greater destructive power, all at higher cost to the taxpayer.[64]

Much of this rationale was bogus. The excessive costs of the life extension programs were largely the result of the prohibition on nuclear testing. The reduction of the amount of special nuclear material was largely irrelevant because the material already exists and did not have to be procured. While the accuracy upgrade of the B61-12 was useful, it had little to do with the number of nuclear gravity bombs that were required. The "3+2" strategy is increasing the potential impact of a dud. What was left out of this assessment was that U.S. capability against very hard and very deeply buried targets was being dramatically reduced by the elimination of the B61-11 earth penetrator weapon and the B83 gravity bomb. Even with the addition of the B61-13 to the program of record, U.S. capabilities against very hard and very deeply buried targets was going to decline compared to what it was before the Obama Administration or what would have been the case if the Biden Administration had continued the programs under the Trump Administration's 2018 Nuclear Posture Review which preserved existing U.S. capabilities against very hard and very deeply buried targets.

The bottom line is that Science Based Stockpile Stewardship has been inordinately expensive and has created significant uncertainty concerning the technical effectiveness of the U.S. nuclear deterrent. The time to resume nuclear testing is sooner rather than later.

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Notes:

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Guest Essay of the Week: How China Wins the Future

In a new article for *Foreign Affairs*, Senior Fellow Elizabeth Economy outlines “Beijing’s strategy to seize the new frontiers of power.” The former Commerce Department senior advisor on China writes, “American policymakers have only started waking up to the full extent of China’s success at building power in key areas of today’s world.” She warns that the United States “is not just abdicating its role in the current international system. It is falling behind in the fight to define the next one.” Economy focuses on China’s activity in the Arctic ocean, outer space, and cyberspace—three frontier areas for 21st-century geopolitical competition—as well as its efforts to displace the dollar as “the most traded currency and the dominant reserve currency” by promoting the use of the renminbi or local currencies. Connecting all these areas are international institutions, which Xi Jinping seeks to alter “in ways that reflect Chinese economic, political, and security interests.” Economy concludes by outlining how the US can compete across these key domains. Read more here. [subscription required]

The Goal of the Abolitionists

Guest Essay from RealClearDefense which will be published Jan 12.

Nuclear Deterrent Choices

By Peter Huessy, President, Geostrategic Analysis and Senior Fellow, National Institute for Deterrence Studies

The United States Congress has 465 House and Senate members up for election in November 2026 with a predicted 60 new members promised just from current retirements and other open seats. The new Congress will face having to assess and pass a defense budget as well as implicitly approve a national security strategy embedded in such a budget. Of critical importance will be the nuclear deterrent direction the new Congress decides to take as there will probably be very starkly different choices on the table.

The nuclear program of record (POR) was initially established in negotiations between the Obama administration and the US Congress over approval of the 2010 New START treaty, led by former Senator Jon Kyl (R-Arz), a stalwart for defense especially missile defense and warhead production and James Miller, an administration official.

That United States POC, given the subsequent Russian and Chinese nuclear expansions, has been modified with additional programs, with significant additions now approved by this current Congress which largely followed the recommendations of the Strategic Posture Commission of the United States October 2023 report.

The program of record as passed by Congress and signed into law by the President supports 400 new Sentinel land based ICBMS to be deployed between 2030-50; from 12-15 Columbia class SSBNs (subs) with a compliment of at least 192 upgraded D-5 Sea launched ballistic missiles (SLBMs); 100 new B-21 Raider strategic bombers of which 20 will be deployed as part of the nuclear deterrent; a new nuclear capable sea-launched cruise missile to augment the US extended deterrent capability; a compliment of low-yield D-5 warheads to further enhance US extended deterrence; a goal of having the capacity to build 80 warhead pits a year, enabling the US to maintain and secure a robust nuclear warhead force; and a Golden Dome multiple layered regional and national missile defense capable of intercepting a variety of missile and drone threats, while utilizing currently deployed missile and air defense technologies, that in June 2025 were between 87-99% successful in intercepting Iranian enemy missiles, drones and other projectiles launched at Israel.

All of the modern nuclear force will cost $25 billion in the FY2026 defense budget, with an additional increase of funding of $5.9 billion added to the NNSA budget, for a total of $58-60 billion investment for both modernization and legacy force maintenance.

Both House and Senate members, including Senators Sanders, (I-Vt), Warren (D-MA), Markey (D-MA) and Representative Garamendi, (D-Ca) have introduced legislation to unilaterally curtail the planned POR, including major elements of the US nuclear deterrent and the Golden Dome missile defense. Their proposals would pursue a strange hybrid combination of unilateral restraint and outright abolition, giving the US the smallest deterrent in 75 years, a nearly absent regional extended nuclear deterrent, and a relatively minimalist missile defense capability. Despite that the current US nuclear forces have already been in service between 43-63 years, making the US nuclear forces the oldest in US deterrent history.

First their proposals would eliminate all space based elements of missile defense, which would discard the very backbone of the new and advanced missile defense technology now being developed.

Second, they would eliminate 250 of the 400 Minuteman III missiles, eliminate the new Sentinel ICBM altogether, ensuring that after the next two decades the US would largely be out of the nuclear deterrent ICBM business as the legacy Minuteman missiles, now 55 years in service, will have to be taken down having reached obsolescence.

Third, the new Columbia class submarine acquisition would be reduced to as low as four subs, from the 12-15 planned submarines, that even with a 50% at sea deployment rate would allow the US to field only one submarine per each of the Atlantic and Pacific oceans, with 32 missiles and roughly 246 warheads having to hold at risk a target set many times larger.

Fourth, the plan envisioned by Senators Sanders and Markey would eliminate all strategic bombers from the US nuclear deterrent, leaving the US with 152 combined ICBM silos and submarine bases, and over time a Monad of just two Navy bases with two submarines at sea or only 4 targets/assets that if eliminated would put the US out of the nuclear business. Eventually, Russia and China combined would have one thousand strategic, long—range warheads for every US nuclear launch asset, compared to 6 to 1 today.

However, the Congressional abolition crowd wants to go even further. The proposals would eliminate the extended nuclear deterrent capability the US has in Europe, consisting of gravity bombs aboard theater aircraft, as well as eliminating any funding for additional theater systems including cruise missiles aboard aircraft and submarines, such as the nuclear armed sea-launched cruise missile (SLCM-N.)

As for pit production, a joint House-Senate bill would eliminate the current objective of securing 80 pits per year and reduce that number to no more than 30 and achieve the capability no earlier than 2050.

In the face of a joint China-Russia deployed force projected at 4500 strategic, long-range nuclear warheads by 2035, the US would have a mini-deterrent of a combined 214 ICBM and SLBM missiles and at most 950 warheads---if the MMIII legacy force of 150 missiles each had three warheads and the remaining D-5 missiles each had eight warheads per missile, both the maximum capability. This of course gives the US no upload or surge capability.

Even worse, with the eventual and relatively near-term phasing out of the MMIII due to age/obsolescence, the US strategic, long-range nuclear deterrent would be limited to 512 warheads, of which roughly 33-50% would be on alert and at sea at any one time, but outgunned by China and Russia by a 9 to 1 margin, to say nothing of a regional, theater nuclear capability outgunned as well but by a 5000 to zero warhead balance.

The US has never deliberately built a minimalist nuclear deterrent, one only a fraction as large of that of its enemy. Even more worrisome, these proposals would leave our enemies, each with nuclear forces multiple times larger and more capable than such a planned US nuclear deterrent force, while also diminishing a missile defense capable of dealing with accidental, unauthorized or coercive nuclear threats.

A change in the makeup of the US Congress is a choice on the ballot in November. Depending on the choice made, with it could come putting in charge of Congress and its key committees those who seek the near virtual nuclear disarmament of the United States.

Guest Commentary of the Week of Note

Commentary by Ms. Shoshana Bryen of the Jewish Policy Center: We are accustomed to staring wide-eyed and open-mouthed at Israeli military prowess. But respect and honor also to the United States military and its amazing personnel. Since the days of Thomas Jefferson's war against the Barbary pirates, they have protected our people and our way of life, regardless of the situation presented to them by the political establishment. And to Gen. Dan Caine, Chairman of the Joint Chiefs of Staff, who twice in seven months commanded an extraordinary operation to accomplish legitimate American objectives with minimal collateral damage.

The Iranian Corner

Presidents quickly learn the wisdom of distinguishing between an authoritarian regime and the people who suffer under its rule. President Donald Trump did just that, albeit in his own way, with a 2:58 a.m. Truth Social post Friday aimed at the leaders of the Islamic Republic of Iran. The president warned that, if protesters in escalating demonstrations are shot and killed, the United States "will come to their rescue." He added: "We are locked and loaded and ready to go."

Event Coming Up

Join the 2026 Doomsday Clock Announcement

Since 1947, the Clock has served as a metaphor for how close the world is to destroying itself. On January 27th, globally recognized experts from the *Bulletin*'s Science and Security Board will join Nobel Prize winner **Maria Ressa** to unveil the 2026 Clock setting. Read more.

NIDS and Huessy Events for 2026

1/23/2026 - Rick Fisher - Is China Seeking Nuclear Superiority? Unpacking 2025 Developments

1/30/2026 - Mark Schneider and Stephen Blank - Reflections on Russia's Nuclear Behavior: Doctrine vs. Reality

2/20/2026 - Laura McGill, Director of Sandia National Laboratories

2/27/2026 - Roundtable: Dr. Don Cook, Jim, Dr. Laura Hopkins, Henry Sokolski on nuclear testing

3/6/2026 - Sean McDonald - Los Alamos National Laboratory, Program Director, Strategy & Planning Office

3/13/2026 - Paige Gasser- LLNL Extended Nuclear Deterrence publication: https://cgsr.llnl.gov/sites/cgsr/files/2025-12/forweb-cl251210-Toward%20a%20New%20Strategic%20Approach%20to%20U.S.%20Extended%20Nuclear%20Deterrence-WEB.pdf

Editor's Note: This essay concentrates on whether the US in reducing its commitments to defend nations with our extended nuclear deterrent would spur other nations to take on that role or push nations to adopt their own nuclear capability, and how this world of greater proliferation would make the use of nuclear weapons more likely.

The Pillars of Global Nuclear Order Are Cracking

U.S. allies and partners are taking steps toward a post-American nuclear order.

JANUARY 5, 2026, 12:05 AM

By **Rebecca Lissner**, a senior fellow for U.S. foreign policy at the Council on Foreign Relations, and **Erin D. Dumbacher**, the Stanton nuclear security senior fellow at the Council on Foreign Relations.

Guest Essay from Michael Waller

China, Oil and the End of the Chinese Expire

The loss of Venezuela and, ultimately, the Cuba domino, on top of Trump's decisive move early in 2025 to ensure American interests in the Panama Canal, will deprive the CCP of any hope of establishing naval port access in the Caribbean.

This is all, of course, consistent with the powerful restraint philosophy of the Monroe Doctrine, which aimed to protect the independence of new American republics from European empires. The Trump Corollary subtly broadened the Monroe Doctrine to exclude the Chinese Communist empire. It merits mention here that the CCP's Belt and Road Initiative did not encroach into the Western Hemisphere until 2013, the year the Obama Administration formally renounced the Monroe Doctrine.

The critics have it wrong when they accuse Trump of dividing the world with Putin and Xi. Trump has succeeded in pushing a howling Europe to empower itself to ensure its own self-defense. He similarly persuaded Australia, Japan, the Philippines, South Korea, and Taiwan to do the same against China. His corollary ensures a peaceful American hemisphere, with foreign empires keeping their political, military, and subversive influences out. That principally means China.

Iran and Venezuela helped fuel the Communist China-dominated order. By helping remove hostile regimes in both countries, Trump is pulling out the linchpins without resorting to war.

About the ICBM EAR

Peter Huessy's ICBM EAR Report was originally prepared for the USAF in 1981 to help inform US nuclear deterrent policy professionals at the height of the Cold War. Eventually it was provided only to key elements of the Nuclear related Aerospace Industry. The objective: help build an informed political community on nuclear deterrent issues, especially the deployment of the US nuclear deterrent, especially the MX (Peacekeeper) missile. The report covered developments in the nuclear arena on a weekly basis, including developments in Congress, key events, threat assessments, remarks of top US officials, international activity key to US security interests, nuclear budget and program element issues, and arms control and proliferation matters as well.

Weekly ICBM EAR Report
Prepared by Peter Huessy
Edition: Week of January 5, 2026

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