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### **The Implications of the Air Force's Suspension of the Next Generation Air Dominance Fighter – Symptomatic of a Crisis in Defense Spending**

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Earlier this year, the Air Force put its planned Next Generation Air Dominance (NGAD) Fighter on hold. NGAD is a critical element in the Air Force's plan to maintain air dominance. Several reasons were given by Air Force officials for the suspension, including cost; yet this action is symptomatic of problems that the U.S. military is facing due to decades of defense underfunding.

While the Air Force is expected to pursue some program that will be called NGAD, the existing concept will almost certainly be degraded in order to force the next generation fighter's square peg into the Biden Administration's inadequate defense budget round hole. If Congress had not vetoed a significant part of the proposed Biden defense cuts<sup>1</sup> (which is unprecedented since both houses were controlled by his own party at the time), the situation would be significantly worse. Even with Vladimir Putin's "hybrid war" against the United States and NATO, his war of aggression against Ukraine, his menacing comments against the United States and NATO, his constant threats of nuclear war, China's unprecedented nuclear buildup, its growing military assertiveness, Xi Jinping's threats against Taiwan, and China's growing entente with Russia, President Biden's proposed 2025 defense budget, according to *Reuters* "...is just 1% higher than last year, forcing a slowdown in spending on a wide range of



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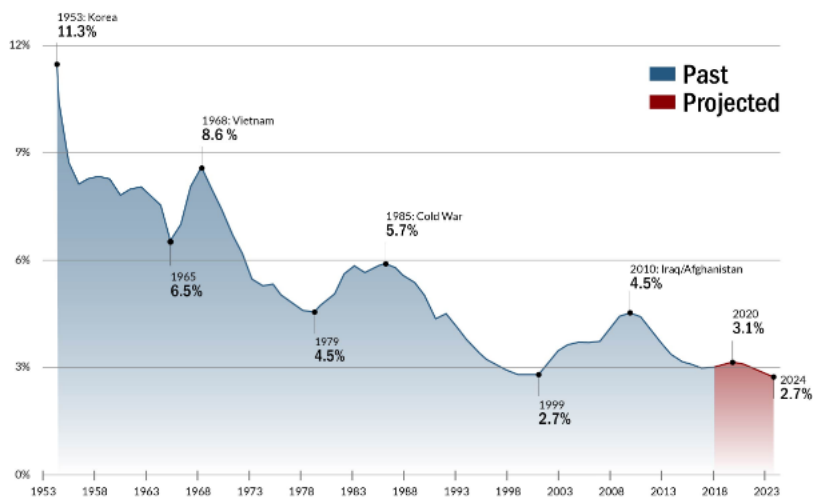
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programs and delaying efforts to rebuild weapons stocks depleted by wars in Ukraine and Israel.”<sup>2</sup> Adjusting for inflation, this reflects an actual *decline* in real purchasing power.

In 2024, the congressional Commission on the National Defense Strategy concluded that, “The threats the United States faces are the most serious and most challenging the nation has encountered since 1945 and include the potential for near-term major war.”<sup>3</sup> It also said that, “The Commission finds that, in many ways, China is *outpacing* the United States and has largely negated the U.S. military advantage in the Western Pacific through two decades of focused military investment. Without significant change by the United States, the balance of power will continue to shift in China’s favor.”<sup>4</sup> (Emphasis in the original.) Thus, there is a real possibility that if the Biden level of defense spending continues it may result in the failure of deterrence, war, and ultimately, a defeat of the United States by China.

As former Secretary of Defense Robert Gates has pointed out, the U.S. “...Army is shrinking, our Navy is decommissioning warships faster than new ones can be built, our Air Force has stagnated in size, and only a fraction of the force is available for combat on any given day.”<sup>5</sup> Unfortunately, the list of problems is much longer and impacts all of the services. The Air Force is particularly hard hit. It is actually declining in aircraft numbers, and the fleet is older and smaller than at any time in its history.<sup>6</sup> The decline in aircraft readiness has been going on since the Obama Administration. According to the Government Accountability Office, “...the Air Force and Navy have struggled for years to maintain their aircraft due to the age of their fleets, a lack of parts, maintenance delays, and other problems. By the Air Force and Navy’s own measures, aircraft readiness has worsened since fiscal year 2015.”<sup>7</sup> After some improvement during the Trump years, Air Force mission capable rates fell during the Biden Administration.<sup>8</sup> The problems are an inevitable result of the current crisis in defense funding, as illustrated in the following Defense Department chart:<sup>9</sup>

**Defense Spending as a % of Gross Domestic Product (GDP)**





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In the late 1970s, President Jimmy Carter's Administration cut defense spending to 4.7% of the U.S. gross national product, resulting in what was then called the "hollow Army."<sup>10</sup> Moreover, in the 1970s, the United States was not fighting wars as it is doing today, which diverts funding from modernization. Under President Biden, even with the unprecedented congressional veto by his own party of some of his proposed defense cuts,<sup>11</sup> the result is much worse. At the current defense spending level of 2.7% of GNP, it is impossible to maintain present U.S. force levels and modernize these forces on a timely basis. As Ben Ollerenshaw of Australia's Macquarie University has pointed out, the U.S. military has "...a force that looks suspiciously unchanged by the last thirty years of technological advancement."<sup>12</sup> Until recently, funding focused on counter-terrorism and low intensity conflict. Bad defense decision making is partially responsible but inadequate funding is much more significant. While spending on force modernization can be increased by further reducing force levels, the results will ultimately likely be the same – a possible devastating war in Europe, the risk of Russian nuclear escalation, and a potential U.S. defeat at the hands of China should Beijing act militarily to control Taiwan and dominate Asia.

The 1970s "hollow Army" was less dangerous than the current situation since U.S. force modernization was substantially greater than it is today. In the 1970s, the U.S. nuclear deterrent, while under increasing attack by disarmament advocates, was far more credible than today, where the United States has a much smaller and increasingly obsolete force to deter a larger, more modern Russian nuclear force, nuclear proliferation and a massive Chinese nuclear weapons buildup.<sup>13</sup> The Biden Administration has stated that "...the United States does not need to increase our nuclear forces to outnumber the combined total of our competitors in order to successfully deter them."<sup>14</sup> What it probably really means is that the current administration sees no problem in allowing both Russia and China to exceed U.S. nuclear force levels.

An editorial in *Air and Space Forces Magazine* stated that "...the Air Force is giving up on a next-generation air superiority fighter of its own volition, a self-inflicted wound that again risks an unaffordable long-term impact."<sup>15</sup> It went on to state that Air Force Secretary Frank Kendall's action on NGAD was:

...not because he didn't want it, but because he was out of money. The Sentinel ICBM replacement is non-negotiable because the 50-year-old Minuteman IIIs it's replacing are already beyond reasonable service life. The B-21 is going into production and can't go any slower than the few per year currently planned. The F-35 is short of required numbers as it is. Add overdue T-7 trainers, E-7 AWACS replacements, collaborative combat aircraft, munitions stockpiles, the proliferated space architecture, offensive space, advanced weather, targeting, and GPS satellites, and Kendall's conundrum is clear.<sup>16</sup>

The actual situation is even worse. The Sentinel ICBM program, scheduled to replace the nearly half-century old Minuteman ICBM force, is under serious review by the Air Force and the scope of the ICBM infrastructure modernization effort may be cut.<sup>17</sup> Infrastructure may be



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less glamorous than missiles, but it is quite important. The current infrastructure was built in the 1960s. The capabilities of the Air Force's F-35 Block 4 aircraft have been reduced because the new and revolutionary adaptive cycle engine was not funded.<sup>18</sup> As a result, the planned range and aerodynamic performance of the aircraft have been significantly reduced.<sup>19</sup> A production rate of a "few" B-21 bombers per year means that it will take about two decades to reach the goal of 100 aircraft – still inadequate to meet U.S. defense requirements.<sup>20</sup>

There appears to be little question that the NGAD in its original configuration is dead. Secretary Kendall has stated that, "Ideally, I'd like to get it [the cost] down to less than an F-35, or at least in the ballpark of an F-35. F-35s, as you know, are not cheap airplanes."<sup>21</sup> (They are actually less expensive than most 4.5 generation aircraft.) In the context of the high inflation environment under the Biden Administration, the cost of even the more advanced version of the F-35 produced in the time frame of the NGAD's availability will have to be significantly higher than the current cost of the F-35.

Even before putting the NGAD on hold, the Air Force was reportedly contemplating only a small production run for the NGAD – about 200 aircraft.<sup>22</sup> This means that the price of the NGAD cannot be reduced by economies of scale. It also likely means that the Air Force will be reluctant to invest very much in improving the capabilities of the NGAD once it becomes operational, as was the case with the small F-22 force.<sup>23</sup>

The F-35A costs \$82.5 million each.<sup>24</sup> The first 5<sup>th</sup> generation fighter, the F-22, cost \$137 million at the end of its production run over a decade ago.<sup>25</sup> When adjusted for inflation, the cost in current dollars would be about \$188 million or over twice that of an F-35A.<sup>26</sup> Secretary Kendall has said that the NGAD is "...three times, roughly, the cost of an F-35, and we can only afford it in small numbers."<sup>27</sup> Yet, this is not an unreasonable cost for a 6<sup>th</sup> generation long-range air-dominance fighter with substantial strike capability.

An aircraft called NGAD that is no more costly than the F-35, even augmented by some 6<sup>th</sup> generation technology, is unlikely to be much more capable than an upgraded version of the F-35 built in the same time frame. An air dominance aircraft in the price range of the F-35 will almost certainly not have all the characteristics of a 6<sup>th</sup> generation fighter. Indeed, it may lack most of them. As noted aerospace journalist John A. Tirpak has pointed out, "Making NGAD less costly could mean sacrificing range and payload, possibly going from two engines to one, a counter-intuitive solution that could be possible only if the Air Force had a stealthy Next-Generation Air-refueling System (NGAS) that could evade adversary's missile systems."<sup>28</sup> Secretary Kendall has mentioned a smaller less complex engine<sup>29</sup> (i.e., less power, speed, maneuverability and range). This suggests scrapping the revolutionary adaptive cycle engine because of its cost.<sup>30</sup> If so, performance levels would likely be even closer to an improved F-35. Moreover, China will be given the opportunity to catch up in engine technology, an area in which it has seriously lagged.

The F-35 is the world's most advanced multirole fighter<sup>31</sup> but it was intended to be a low-end exportable 5<sup>th</sup> generation fighter designed to work in combination with the F-22 air dominance fighter.<sup>32</sup> The premature termination of the F-22 program changed the plan because





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the Air Force does not have sufficient F-22s to operate with the F-35s as originally intended. The current Air Force plan makes this situation worse.

The F-15EX is not a viable substitute for the F-22.<sup>33</sup> Regardless of pilot competence, an F-22 is superior to an F-15.<sup>34</sup> Even the oldest version of the F-22 is more capable in air-to-air warfare than the F-15EX or any of the legacy 4<sup>th</sup> generation fighters, and all F-22s can be upgraded to the level of the most advanced version.<sup>35</sup> General Kenneth Wilsbach, head of Air Combat Command, wants to keep the older F-22 Block 20, saying that, “They give us a lot of training value, and even if we had to in an emergency use the Block 20s in a combat situation, they’re very capable.”<sup>36</sup>

Lacking stealth in high intensity warfare, the F-15EX is fine for long-range interception and as a long-range launcher for various types of long-range strike.<sup>37</sup> Unlike heavy bombers, it can be protected by hardened aircraft shelters.<sup>38</sup> Indeed, Israel reportedly used F-15s to fire air-launched ballistic missiles to destroy an Iranian SA-20 air defense system.<sup>39</sup> While it is a good 4.5 generation fighter, the F-15EX is no longer as dominant in air-to-air combat as it was when it was introduced about 50 years ago. The F-15 is one of the great fighter aircraft in history, but as former Commander of the Air Combat Command General (ret.) John M. Loh incisively observed, “Nostalgia cannot replace innovation. If a fighter can’t penetrate defenses, engage and defeat the enemy, then survive under fire to fight another day, it has little value.”<sup>40</sup>

According to Colonel (ret.) Mark Gunzinger, Director of Future Concepts and Capability Assessments at the Mitchell Institute, “Not only would NGAD’s cancellation risk putting our air superiority forces further behind China, it would have a major impact on all U.S. military operations in the future.”<sup>41</sup> Indeed, the supposed availability of the NGAD was the basis of the controversial Air Force decision (thus far vetoed by Congress) to retire the older F-22s and its longer term plan for early retirement of the entire force, while retaining less costly to operate but much less capable F-15s and F-16s.

In addition to upgrading its 5<sup>th</sup> generation long-range J-20 fighters and producing the new quasi-5<sup>th</sup> generation J-31s/J-35,<sup>42</sup> China is reportedly developing a 6<sup>th</sup> generation fighter.<sup>43</sup> According to *The Diplomat*, “The PLA’s sixth-generation manned fighter, or next-generation manned fighter, is considered to be an established program of record that is under active development and expected to emerge in some form during this decade.”<sup>44</sup> Former Secretary of the Air Force Deborah Lee James has observed that, “The only thing we can say for sure is that China is ruthlessly advancing its NGAD equivalent and does not appear to be slowing down due to budgetary concerns....The 2030s will be upon us in an instant, so we can’t afford to delay NGAD. Doing so would mean risking loss in a future conflict...”<sup>45</sup>

The fate of the NGAD is far from the entire problem. The other services have similar problems in many areas. Increasingly, inadequate budgets are eliminating high-end capabilities through lack of modernization. According to the bipartisan National Defense Strategy Commission, the United States has allowed its industrial base to decline to a level that cannot support a major war.<sup>46</sup> In particular, the U.S. nuclear deterrent faces great problems. The current (but much reduced) U.S. technical superiority over China is a waning asset. To the extent it exists it is a legacy of Cold War budgeting and decision making. If current decision



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making and budgets had prevailed during the Cold War, the United States would likely never have achieved a credible and effective military deterrent.

China seeks to displace the United States as the world's preeminent global power. Its military programs are intended to support this objective.<sup>47</sup> Along with Russia's more aggressive military posture, the current threats the United States faces are arguably more dangerous than those that led to World War II and the Cold War, and include a nuclear dimension. The United States is probably seriously underestimating the size of Russian and Chinese nuclear forces, and the threat they pose to U.S. national security and global stability.<sup>48</sup> The result of past, present, and prospective defense cuts may well be the loss of effective U.S. deterrence and the outbreak of World War III. The NGAD case should be a wake-up call. The United States has the resources to avoid such an outcome. Whether it has the will remains to be seen.

<sup>1</sup> Shannon Bugos, "Congress Boosts Defense Budget Beyond Biden's Request," *Arms Control Today*, January/February 2023, available at <https://www.armscontrol.org/act/2023-01/news/congress-boosts-defense-budget-beyond-bidens-request>.

<sup>2</sup> Mike Stone, "Biden's meager 1% US defense budget increase buys fewer ships, jets," *Reuters*, March 11, 2024, available at <https://www.reuters.com/world/us/bidens-meager-1-us-defense-budget-increase-buys-fewer-ships-jets-2024-03-11/>.

<sup>3</sup> Congresswoman Jane Harman, Chair and Ambassador Eric Edelman, Vice Chair, "Commission on the National Defense Strategy," (Washington, D.C.: Commission on the National Defense Strategy, July 2024), p. v, available at [https://www.armed-services.senate.gov/imo/media/doc/nds\\_commission\\_final\\_report.pdf](https://www.armed-services.senate.gov/imo/media/doc/nds_commission_final_report.pdf).

<sup>4</sup> Ibid.

<sup>5</sup> Robert M. Gates, "Opinion - We face unprecedented peril. The Pentagon and Congress must change their ways," *The Washington Post*, September 24, 2024, available at <https://www.washingtonpost.com/opinions/2024/09/24/robert-gates-peril-china-russia-pentagon-congress-defense/>.

<sup>6</sup> "Episode 97 - The Oldest, Smallest U.S. Air Force in its 75 Year History: What Happened?," Mitchell Institute, October 8, 2022, available at <https://mitchellaerospacepower.org/episode-97-the-oldest-smallest-u-s-air-force-in-its-75-year-history-what-happened/>; Stephen Losey, "As the US Air Force fleet keeps shrinking, can it still win wars?," *Defense News.Com*, available at <https://www.defensenews.com/air/2024/04/23/as-the-us-air-force-fleet-keeps-shrinking-can-it-still-win-wars/>.

<sup>7</sup> "Air Force and Navy Aviation: Actions Needed to Address Persistent Sustainment Risks," GAO-22-104533, June 15, 2022, available at <https://www.gao.gov/products/gao-22-104533>.

<sup>8</sup> John A. Tirpak, "Air Force Confirms Its F-35As Were Mission Capable About Half the Time in 2023," *Air and Space Forces.com*, June 27, 2024, available at <https://www.airandspaceforces.com/air-force-f-35as-mission-capable-2023/>; John A. Tirpak, "Air Force Mission Capable Rates Fall in 2023, Led by Declines for F-15C and B-1," *Air and Space Forces.com*, May 29, 2024, available at <https://www.airandspaceforces.com/air-force-mission-capable-rates-2023/>.

<sup>9</sup> National Defense Budget Estimates for FY 2019 (Table 6-13); historical and projected GDP from both the FY 2019 and FY 2020 Budget of the United States Government, as cited in Department of Defense, "Defense Spending as a % of Gross Domestic Product (GDP)," Department of Defense, no date, available at <https://media.defense.gov/2019/Mar/12/2002099941/-1/-1/0/190312-D-ZZ999-001.JPG>



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<sup>10</sup> “The ‘hollow military’ 2.0: How cultural Marxists are taking down America’s armed forces,” Center for Security Policy, September 7, 2023, available at <https://centerforsecuritypolicy.org/the-hollow-military-2-0-how-cultural-marxists-are-taking-down-americas-armed-forces/>.

<sup>11</sup> “Rep. Calvert Praises Defense Bill That Rejects President Biden’s Military Spending Cuts,” Press Release, September 23, 2021, available at <https://calvert.house.gov/media/press-releases/rep-calvert-praises-defense-bill-rejects-president-bidens-military-spending>.

<sup>12</sup> Ben Ollerenshaw, “The NGAD Flop Is Not Excusable,” *Real Clear Defense*, October 18, 2024, available at [https://www.realcleardefense.com/articles/2024/10/05/the\\_ngad\\_flop\\_is\\_not\\_excusable\\_1063143.html](https://www.realcleardefense.com/articles/2024/10/05/the_ngad_flop_is_not_excusable_1063143.html).

<sup>13</sup> See Mark B. Schneider, *Current and Projected Growth of China’s Nuclear Arsenal, Occasional Paper*, Vol. 4, No. 10 (Fairfax, VA: National Institute Press, October 2024); and Mark B. Schneider, *How Many Nuclear Weapons Does Russia Have?*, *Occasional Paper*, Vol. 3, No. 8 (Fairfax, VA: National Institute Press, August 2023); Senator Roger Wicker, “America’s Nuclear Weapons Are Dangerously Out of Date,” January 19, 2024, available at <https://www.wicker.senate.gov/2024/1/america-s-nuclear-weapons-are-dangerously-out-of-date>; Office of Nuclear Matters, Office of the Secretary of Defense, “Overview of the U.S. Nuclear Deterrent,” *Nuclear Matters Handbook 2020 (Revised)*, available at <https://www.acq.osd.mil/ncbdp/nm/NMHB2020rev/chapters/chapter1.html>.

<sup>14</sup> “Remarks by National Security Advisor Jake Sullivan for the Arms Control Association (ACA) Annual Forum,” White House.gov, June 2, 2024, available at <https://www.whitehouse.gov/briefing-room/speeches-remarks/2023/06/02/remarks-by-national-security-advisor-jake-sullivan-for-the-arms-control-association-aca-annual-forum/>.

<sup>15</sup> Tobias Naegele, “Editorial: Relearning Old Lessons,” *Air and Space Forces.com*, Sept. 6, 2024, available at <https://www.airandspaceforces.com/article/editorial-relearning-old-lessons/>.

<sup>16</sup> Ibid.

<sup>17</sup> John A. Tirpak, “Sentinel ICBM Survives Pentagon Review, But Cost Jumps 81%,” *Air and Space Forces.com*, July 8, 2024, available at <https://www.airandspaceforces.com/sentinel-icbm-pentagon-review-result-cost/>; Greg Hadley, “USAF Going ‘Line by Line’ to Slash Sentinel’s Rocketing Costs,” *Air and Space Forces.com*, September 5, 2024, available at <https://www.airandspaceforces.com/air-force-leaders-cut-down-sentinel-infrastructure-costs/>; C. Todd Lopez, “Sentinel Land-Based Nuclear Modernization Program Will Continue, With Changes,” *DOD News*, July 10, 2024, available at <https://www.defense.gov/News/News-Stories/Article/Article/3834502/sentinel-land-based-nuclear-modernization-program-will-continue-with-changes/>.

<sup>18</sup> Stephen Losey, “Pentagon rethinks F-35 engine program, will upgrade F135,” *Defense News.com*, March 13, 2023, available at <https://www.defensenews.com/air/2023/03/13/pentagon-rethinks-f-35-engine-program-will-upgrade-f135/>.

<sup>19</sup> Sébastien Roblin, “The Messy Battle to Build the F-35’s Next Engine,” *Popular Mechanics*, March 1, 2023, available at <https://www.popularmechanics.com/military/aviation/a43128883/f-35-needs-new-engine/>; “GE Adaptive Engine Technology Advances,” *American Machinist*, May 13, 2024, available at <https://www.americanmachinist.com/news/article/55039146/combat-aircraft-adaptive-engine-technology-advances-ge-aerospace>.

<sup>20</sup> Greg Hadley, “Northrop: USAF Weighs Buying More B-21 Bombers,” *Air and Space Forces.com*, October 25, 2024, available at <https://www.airandspaceforces.com/northrop-ceo-more-air-force-b-21-force-structure/>.

<sup>21</sup> Stephen Losey, “Next-gen fighter not dead, but needs cheaper redesign, Kendall says,” *Defense News.com*, July 1, 2024, available at <https://www.defensenews.com/air/2024/07/01/next-gen-fighter-not-dead-but-needs-cheaper-redesign-kendall-says/>.

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- <sup>35</sup> *F-22 Raptor* (Stamford, UK: Key Publishing, 2023), p. 35.
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- <sup>37</sup> Schneider, "Flying to the Little Big Horn?," op. cit.
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<sup>46</sup> Tom Jurkowsky. "National Defense Strategy Commission: We Are Not Prepared," *Real Clear Defense*, October 21, 2024, available at [https://www.realcleardefense.com/articles/2024/10/21/national\\_defense\\_strategy\\_commission\\_we\\_are\\_not\\_prepared\\_1066457.html](https://www.realcleardefense.com/articles/2024/10/21/national_defense_strategy_commission_we_are_not_prepared_1066457.html); Harman, and Edelman, "Commission on the National Defense Strategy," op. cit., p. v.

<sup>47</sup> Gordon G. Chang, *Plan Red – China's Project to Destroy America*, (West Palm Beach, Florida: Humanix Books, 2024).

<sup>48</sup> Schneider, *Current and Projected Growth of China's Nuclear Arsenal*, op. cit.; Schneider, *How Many Nuclear Weapons Does Russia Have?*, op. cit.

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