

New Report On Combat Air Force Survivability Calls For New Electronic Attack Aircraft – JED, March 2020

– By John Haystead –

A new report from the Center for Strategic and Budgetary Assessments (CSBA), (Washington DC) titled, “Five Priorities for the Air Force’s Future Combat Air Force,” provides recommendations to help the US Air Force align its combat air forces (CAF) with the 2018 National Defense Strategy (NDS). The report defines the CAF as including the Air Force’s fighters; bombers; electronic warfare; strategic intelligence, surveillance, and reconnaissance (ISR); and battle management and command and control (BMC2) aircraft. The majority of its analysis is focused on the capabilities, mix and capacity of the Air Force’s next-generation fighter and bomber fleets.

Of particular interest is Chapter 2 of the report, which addresses survivability of the CAF. Noting that the future CAF should be prepared to operate in highly-contested areas covered by advanced integrated air defense systems (IADS) that China, Russia and others are fielding to contest US air superiority and increase freedom of maneuver for their own air, land and maritime forces, the report stresses that the CAF should be prepared to continuously counter threats from multiple domains. “This will require the Air Force to modernize its CAF rather than continue to rely on legacy combat aircraft that were originally designed for far more benign threat environments. The current CAF predominately consists of aging, non-stealth aircraft that are not suitable for operations in contested and highly contested threat environments. Except for a small number of low-observable

B-2s, F-22s, and a growing number of F-35As in the force, today's CAF cannot penetrate contested and highly-contested environments without risking significant attrition."



To address this, the report makes a number of observations and recommendations. First among these is that advances in stealth technologies will continue to provide a significant margin of survivability for future CAF capabilities. Noting that the decision to incorporate advanced outer-mold-line (OML-stealth) designs must be made during an aircraft's design phase, the report states that, "this is a key reason why the Air Force should develop and field a new generation of combat aircraft rather than attempt to further modify decades-old aircraft designs as it has been compelled to do for budgetary and other reasons since the end of the Cold War."

The report also points out that, "Although in certain instances low-observable aircraft designs and treatments alone may be sufficient to allow them to penetrate enemy air defenses, these features are most effective when combined with other countermeasures." For example, it notes that F-35 survivability is, in part, the product of its low-observable design combined with automated, multi-spectral sensors that generate highly accurate, real-time threat pictures. An ongoing upgrade to the B-2's Defensive Management System (DMS)

provides that aircraft with similar capabilities. Another recommendation is to use multiple low-observable aircraft to conduct electronic attack against some threats, cycling active emissions between aircraft to reduce the probability they will be detected and engaged by the IADS.

In addition, the report states that next-generation platforms should have Low Probability of Intercept/Low Probability of Detection (LPI/LPD) communications systems that can be directionally focused and have low-power and narrow beamwidths to reduce their risk of detection. Also, it notes that next-generation combat aircraft with multispectral, multi-phenomenology sensor suites with ranges greater than those available on current systems would help ensure they will be able to sense and counter threats before threats can target them. It also highlights the benefits of multidomain interoperability through a distributed, all-domain, self-healing network to improve shared situational awareness and battlespace management and command and control.

Perhaps the most significant recommendation of the report is that the Air Force develop and acquire a Penetrating Counter Air/Penetrating Electronic Attack (PCA/PEA) aircraft (also called a Next Generation Air Dominance or NGAD aircraft). The PCA/PEA aircraft "should be capable of a range of counter-air missions, including defeating airborne threats and conducting suppression of enemy air defenses/destruction of enemy air defenses (SEAD/DEAD) operations. In addition to the above attributes, the PCA/PEA aircraft should have sufficient payload capacity for offensive and defensive weapon systems. Future self-defense capabilities could include mission systems for multispectral electronic attack, the ability to carry multiple air-to-air Small Advanced Capabilities Missiles (SACMs), and on-board directed-energy weapons. The capability to sprint at supersonic speeds to help defeat airborne threats may also be important. Integrating more fuel-efficient adaptive engine technologies into a PCA/PEA design could help

reduce tradeoffs between large weapons payloads, speed, long range and other performance attributes.” ♦

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