

Pentagon Budget Aftershocks

by John Vaughan

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There is a striking similarity between earthquakes and military budgets. An earthquake is the result of a sudden release of energy in the earth's crust that creates seismic waves. The Pentagon budget is the result of fiscal realities, protracted negotiations and balancing priorities, combined with a good dose of lobbying and politics, that culminates in a sudden release of program funding data that creates seismic waves in the military electronics business community. Welcome to the aftershock.

Presented with a two-year forward DoD budget in mid-March, we now at last have firm funding guidance and are in a position to evaluate the aftershocks of the appropriation decisions and apply that reality to our businesses and formulate a game plan moving forward.

To state the obvious, in this post-war and

post-sequestration era, the defense industry is in the midst of a major reshaping with federal defense spending far below recent levels. This is a huge consideration for defense contractors such as Northrop Grumman, Lockheed Martin, BAE Systems, Boeing, and Raytheon (any of your customers in that list?). Most of these military prime contractors derive 70–90% of their annual revenue from federal contracts. Fewer contracts at the prime contractor level results in less electronics manufacturing at the PCB and contract electronics manufacturing levels.

Clearly, the military electronics market is still a very large market, but it would be prudent for each of us—on both the business development and senior management sides of the equation— to take a few moments to reflect on the customers and programs we have been



supporting, their current funding status, and future funding allocations. Equally important, we need to learn the funding status on newer programs we may have supported through engineering and prototype engagements that now may be slated for increased funding.

Given that much of my activity is centered on C4ISR related programs (command, control, computers, communications, intelligence, surveillance, reconnaissance), I turn first to an overview analysis of the budget impacts to that technology set. Clearly, with the drawdown of troops from both Iraq and Afghanistan post-war, there was an expectation that our troop levels would be greatly reduced overall, and that the associated electronics manufacturing to support soldiers on the ground would be impacted. Both expectations proved to be true. Without exception, every single Army program my business is supporting has pushed out to the right at least into Q3, and in several instances into Q4, for procurement activity.

However, it may surprise many to learn that the cost of the wars is not accounted for in the defense budget. These funds are contained in the Overseas Contingency Operations budget (I still prefer the original name under President Bush—the Global War on Terror). At its current level, that budget contains nearly \$80 billion for military operations in Iraq and Afghanistan in 2015. Negotiable with Congress, this could potentially yield funding for small systems and technology upgrades.

A clear budget winner from a program standpoint is the Joint Strike Fighter (F-35 Lightning II) manufactured by Lockheed Martin. Easily the most costly and ambitious acquisition in Pentagon history, Lockheed Martin and engine-maker Pratt and Whitney are developing multiple versions for the U.S. military and our international partners. The F-35 is funded in FY 2015 at \$8.4 billion for twenty-nine aircraft and

an additional \$31.7 billion for additional units over the next several years. This program touches all service branches, as the Marines plan to replace F/A-18 Hornets and AV-8B Harriers with a vertically landing F-35B. The Navy is onboard with an F-35C tail-hook version, and the Air Force will fly a conventional version. From an electronics content standpoint, the F-35's sensor and communications suite is said

to possess situational awareness, command-and-control and network-centric warfare capabilities. The main sensor on board is the AN/APG-81 AESA-radar, designed by Northrop Grumman. It is augmented by a nose-mounted Electro-Optical Targeting System (EOTS). The AN/ASQ-239 (Barracuda) Electronic Warfare suite (BAE Systems) provides sensor fusion of RF and IR tracking functions, basic radar warning, multi-spectral countermeasures for self-defense against missiles, situational awareness and electronic surveillance. Translation: lots of printed circuit boards.

In a major win for Northrop Grumman, the Air Force's venerable U-2 spy planes will be retired and will be replaced with Northrop's Global Hawk Unmanned Aerial Vehicles (UAVs). While the two aircraft perform similar high-altitude ISR (intelligence, surveillance and reconnaissance) missions, the Global Hawks will need upgrades to its electronic suites to handle the mission to the tune of around \$1.77 billion over the next 10 years. Approximately \$500 million of that funding is marked for a universal payload adapter that would allow U-2 sensors to be attached to the RQ-4 Global Hawk.

Electronic warfare (E/W) is both elegantly and simply defined by Alan Shaffer, U.S. Secretary of Defense for Research and Engineering as, "the defense of spectrum and systems used by U.S forces and the attack of spectrum and systems used by our enemies." To at least keep pace near term with the E/W capabilities

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of our adversaries, most notably China, there is a strong commitment to E/W capabilities across all service branches. In 2012, the Air Force announced the Advanced Components for Electronic Warfare (ACE) program. The program is focused on developing some of the world's most advanced integrated photonic circuits, millimeter wave and electro-optical infrared (EOIR) systems and reconfigurable, highly adaptive radio frequency (RF) electronics. In the current Science and Technology budget, both E/W and anti-access/area-denial (A2AD) initiatives are well-funded, as is the continued rebalance to the Asia-Pacific region. Additionally, counter weapons of mass destruction (WMD) funding is at \$1 billion, high-speed kinetic strike vehicles (\$300 million), effective cyber and space operations are at \$900 million, E/W at \$500 million and the aforementioned A2AD at \$2 billion. These are all leading-edge solutions to protect our country and they require leading-edge PCB manufacturing and contract electronics manufacturing solutions.

We are above ground at the epicenter, the aftershocks and the tremors can be understood—and exciting opportunities are identifiable through your close review of the budget as it relates to your business.

Armed with this information, it's time to form a plan, allocate resources to programs with funding, provide innovative solutions, grow your business, and support our U.S. Department of Defense, our war fighters and our country. **PCB**



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