

Background

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Maintaining the Superiority of America's Defense Industrial Base

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America's military strength remains vital to preserving the nation's interests and sustaining international stability. While much of this strength is derived from the professionalism and skills of America's armed forces, the technologically superior military platforms that the U.S. has developed and fielded since World War II are also vital to ensuring a superior fighting force.

In both peace and war, America's defense manufacturing industrial base has allowed the United States to design and build an advanced array of weapons systems and platforms to meet the full spectrum of potential missions the military may be called upon to fulfill. Securing America's military dominance for the decades ahead will require:

- An industrial base that can retain a highly skilled workforce with critical skill sets and
- Sustained investment in platforms that offer future commanders and civilian leaders a vital set of core military capabilities and equipment to respond to any threat.

America's military may also benefit from a more open international defense market. A 2005 Heritage Foundation study examined the effect of globalization on the defense market and concluded that access to foreign suppliers would play a significant and positive role in helping the Pentagon to access a broader industrial base and meet immediate defense needs more efficiently.¹ These findings still hold true today. While remaining focused on the critical technologies, indus-

Talking Points

- America's defense industrial base has allowed the U.S. military to employ an advanced array of weapons systems to prevail in combat and deter would-be aggressors.
- Congress must evaluate President Obama's FY 2010 defense budget request carefully and take a long view when determining how to retain a healthy, highly skilled shipbuilding and aerospace workforce.
- Congress must examine the national security implications of the pending closure of major production lines and the advantages of maintaining more than one fighter production line. Competition encourages innovation, produces better products for the warfighter, and saves taxpayer money.
- Because designing and manufacturing cutting-edge military equipment is a generational task, systemic reforms that foster innovation and improve science, technology, engineering, and mathematics education should be a top priority.
- Congress should seek out foreign military sales opportunities for pending production line closures like the F-22, F-18, and F-15.

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tries, and skills that are not readily available in the global market, Congress should also support increased foreign military sales to help complement America's domestic defense industrial base.

Following the sweeping procurement changes proposed by Secretary of Defense Robert Gates in President Barack Obama's fiscal year (FY) 2010 defense budget, the decisions awaiting congressional review will directly affect America's defense industrial base for years to come. These funding decisions about what the military will and will not buy are a primary factor in determining whether America will retain its military primacy a decade from now.

The critical workforce ingredients in sustaining an industrial base capable of building next-generation systems are specialized design, engineering, and manufacturing skills. The consolidation of the defense industry during the 1990s has placed an increased burden on a small collection of defense companies, and the consolidation of major defense contractors has led to a general reduction in the number of available workers.

Already at a turning point, the potential closure of major defense manufacturing lines in the next five years with no additional scheduled production could shrink this national asset even further. While the manufacturing workforce alone should not dictate congressional defense acquisition decisions, the potential defense "brain drain" must be considered when Congress determines whether or not to permanently shut down major production lines—particularly shipbuilding and aerospace. More often than not, once these highly skilled workers exit the federal workforce, they are difficult to recruit back and more expensive to retrain with significant project gaps.

Given the inherently unpredictable nature of the international security system, Congress must take a long-term perspective for defense planning. More specifically, Congress should closely examine the national security implications of the pending clo-

sure of several major production lines, including the F-22 Raptor, C-17 Globemaster III, F/A-18E/F, F-15E Strike Eagle, High Mobility Artillery Rocket System, Airborne Laser, and various rotary-wing programs when crafting the annual defense bills for FY 2010.

The Foundation of American Military Strength

Since World War II, the United States has benefited from the skills of a robust defense industrial and manufacturing workforce. Over six decades, various U.S. defense strategies have emphasized the benefits of a technologically superior military to help deter and win wars. This "technical overmatch" has been pursued by the U.S. military for decades in an attempt to deter potential enemies from engaging the U.S. in conflict and to reduce risk and the loss of life on the battlefield.

The ability to maintain America's military technological edge reflects the superior efficiency of America's defense industry. America's capital-intensive Air Force and Navy operate the world's best fighter aircraft, long-range bombers, aircraft carriers, destroyers, cruisers, and submarines. Similarly, the Army is building a host of next-generation platforms, including tanks and attack helicopters, that will allow it to complete its missions. This is also the case in platform systems and areas such as low-observable and very-low-observable technologies, submarine quieting, acoustic detection, digital-signal processing for a range of applications, active electronically scanned arrays, near-real-time sensor-to-shooter targeting connectivity, and all-weather guided munitions.²

Although technology alone has not assured American military superiority, the defense industry has nevertheless been a potent enabler of American military might. The base of this power can be found in a series of core capabilities that the U.S. has been able to maintain and continue to modernize over recent decades. These include, among others, air dominance, strategic lift, the ability to project

1. Jack Spencer, ed., *The Military Industrial Base in an Age of Globalization* (Washington D.C.: The Heritage Foundation, 2005).
2. Barry D. Watts, "The U.S. Defense Industrial Base," Center for Strategic and Budgetary Assessments," 2008, at http://www.csbaonline.org/4Publications/PubLibrary/R.20081015._The_US_Defense_In/R.20081015._The_US_Defense_In.pdf (May 18, 2009).

power throughout and beyond the world's oceans, counterinsurgency proficiency, and the ability to seize and control land. Maintaining these capabilities has enabled the soldier, sailor, airman, and Marine to remain adequately prepared for a full spectrum of potential operations.

Defense Industrial Base Challenges

Following the onset of the Cold War, the U.S. examined the intentions of the Soviet Union and determined that “persistent crisis, conflict, and expansion are the essence of the Kremlin’s militancy.”³ Based on this assumption, the U.S. government invested considerable resources in maintaining a large-scale peacetime military force to provide a global military presence that could contain and, if necessary, defeat Soviet aggression. Barry Watts of the Center for Strategic and Budgetary Assessments has outlined how the defense industry has evolved since this time:⁴

- Formation and early growth after World War II (1945–1960);
- Stabilization as a distinct industry during the Cold War (1960–1990); and
- Post–Cold War fundamental restructuring (1990–2007).

The growth of the defense industry after World War II peaked in the late 1950s when defense production became a leading sector of the national economy, a trend that would continue well into the 1980s. An increased focus on the development of advanced defense technologies also occurred during this period. By 1960, the federal government was responsible for 58 percent of the nation’s research and development investments. This emphasis required a new level of engineering skills and capabilities within the industry to help develop

the complex defense systems the government sought to build.⁵

When the Cold War ended in 1991, the sudden supposed dissolution of national security threats launched a period of intense downsizing and consolidation. Whereas more than 50 major defense firms dominated the market in the early 1990s, only six prime contractors remained by the end of the decade.⁶ Although this trend started in 1985 when defense spending began to decline, it became more significant in the 1990s under President Bill Clinton and a sustained period of reduced defense spending.

The effects of the 1990s procurement holiday and the subsequent consolidation were immediate. From 1990 to 2000, both the number of major surface combatant shipbuilders and the number of fixed-wing aircraft developers fell from eight to three; the number of tactical missile producers fell from 13 to three; and the number of tracked-combat vehicle developers fell from three to two.⁷ Today, there are just two companies—Boeing and Lockheed Martin—that build U.S. fighter aircraft.

Because Boeing’s F-18E/F fighter production line is set to shut down in the coming years, it is possible that soon only one fighter manufacturer will exist in the entire United States. Further defense spending reductions and industry consolidations would all but eliminate competition for major programs, depriving the military and taxpayers of the innovative benefits and cost savings that cannot be achieved with sole-source production.

Major Congressional Decisions Pending

Over the next several years, a series of defense programs are scheduled to complete production, either before the original military requirement is completed or without any immediate follow-on

3. “NSC 68: United States Objectives and Programs for National Security: A Report to the President Pursuant to the President’s Directive of January 31, 1950,” *Naval War College Review*, Vol. XXVII (May–June, 1975), pp. 51–108, at <http://www.mtholyoke.edu/acad/intrel/nsc-68/nsc68-1.htm> (May 18, 2009).

4. Watts, “The U.S. Defense Industrial Base,” p. 9.

5. *Ibid.*, p. 17.

6. *Creating an Effective National Security Industrial Base for the 21st Century: An Action Plan to Address the Coming Crisis*, Report of the Defense Science Board Task Force on Defense Industrial Structure for Transformation, U.S. Department of Defense, July 2008, at <http://www.acq.osd.mil/dsb/reports/2008-07-DIST.pdf> (May 18, 2009).

7. Watts, “The U.S. Defense Industrial Base,” p. 38.

program in place to maintain steady workforce levels between programs. The impact that the loss of these programs will have on America's highly skilled defense industrial workforce and the nation's ability to retain core military capabilities and technologies is a significant concern that Congress must address.

In order to assess the significance of these decisions adequately, Congress must evaluate the history of these programs, the national cost of losing critical capabilities when a line closes permanently, and what would be required to restart production or evaluate alternative options to avoid any dip in production levels.

F-22A Raptor. In January 2008, following the grounding of the entire F-15 fleet, General John Corley, head of the U.S. Air Force's Air Combat Command, commented that he "had a fleet that is 100 percent fatigued and 40 percent of that has bad parts. The long-term future of the F-15 is in question."⁸ For decades, the F-15 has served as America's preeminent fourth-generation tactical fighter, ensuring that the nation retains the core capability of air superiority that has served as a cornerstone of its predominant military position. This remarkable capability has also ensured that not a single soldier or Marine has lost his life in combat due to a threat from the air in over half a century.

The Air Force originally planned to purchase 700 F-22As to replace the fleet of 800 F-15A-Ds and the recently retired F-117 *Nighthawk* bomber, but the required number of F-22s was dramatically reduced over the past two decades to 442 in 1993, to 339 in 1997, and finally to 184 in President George W. Bush's FY 2009 defense budget request. Although the Air Force has maintained a requirement for 381 Raptors in recent years, Air Force Chief of Staff General Norton Schwartz recently stated that this level was "too high." He has since noted that the Air

Force requirement is for 243 F-22s, but the service can only afford 187 because of a lack of funds.

Admiral Michael Mullen, Chairman of the Joint Chiefs of Staff, also recently stated that the Air Force would like 243 F-22As, approximately 60 more than currently budgeted.⁹ On April 6, however, Secretary of Defense Robert Gates announced the Administration's intention to end production of the F-22 at 187 aircraft.¹⁰ Two weeks later, Air Force Secretary Michael Donley and Air Force Chief Norton Schwartz followed suit by concluding that they agreed with Gates's plans and assumptions given the zero-sum budget quandary they face.¹¹

In fact, unless Congress intervenes, the F-22 program will end production at 186 fighters as opposed to the 187 program of record. This is because the March 2009 crash of an F-22 at Edwards Air Force Base in California involved a test aircraft that was "not part of the official program of record," according to Air Force spokesman Karen Platt.¹²

Building the F-22A fifth-generation fighter takes three years. During the first year, long-lead items, including the radar and electronic warfare subsystems, are funded through advanced procurement. In the second year of production, the subsystems are completed and the major sub-assemblies of the aircraft are built. Finally, assembly of the aircraft occurs in Marietta, Georgia, in the third year.

The FY 2009 defense authorization and appropriations bills provided funding for Lot 7 through Lot 9, with Lot 9 beginning the second year of production in 2010. Congress also provided an additional \$523 million to the Air Force either for long-lead items for an additional 20 aircraft in Lot 10 or to begin permanently closing the production line. Only \$140 million of this was to be made available until President Obama chose whether to

8. Carlo Kopp, "Pacific Raptors: F-22A Based in Alaska," *Defence Today* (January–February 2008), pp. 6–7.
9. Jason Sherman, "Pentagon Seeks F-22A Cost Proposals to Extend Production into FY-10," *InsideDefense.com*, March 5, 2009.
10. Robert M. Gates, "Defense Budget Recommendation Statement," U.S. Department of Defense, April 6, 2009, at <http://www.defenselink.mil/speeches/speech.aspx?speechid=1341> (May 18, 2009).
11. Michael Donley and Norton Schwartz, "Moving Beyond the F-22," *The Washington Post*, April 13, 2009, at http://www.washingtonpost.com/wp-dyn/content/article/2009/04/12/AR2009041202268_pf.html (May 18, 2009).
12. Michael C. Sirak, "Daily Report: 187 Really Means 186," *AirForce-Magazine.com*, May 6, 2009, at <http://www.airforce-magazine.com/DRArchive/Pages/default.aspx> (May 18, 2009).

continue or terminate the program. Given that President Obama's FY 2010 budget request ends production at 186 aircraft, the long-lead production that generally takes place in the first year will not occur in 2010, and the entire line will be closed by December 2011.¹³

Not releasing the funds for the long-lead production items approved last year has serious implications for America's defense industrial base. There are more than 25,000 direct American jobs with 1,000 suppliers in 44 states that help build these advanced fighter jets, and more than 70,000 other jobs are tied indirectly to the program. The highly technical jobs that make up the program form the basis for America's specialized aerospace industry. Many of the smaller companies involved in the initial long-lead production phase rely on the program for the bulk of their business and will be the first to be negatively affected if Congress does not reverse President Obama's proposal and fund Lot 10. Indeed, work for third- and fourth-tier F-22 suppliers is "already drying up."¹⁴

Shutting down the F-22 production line while also potentially closing other lines in the next few years—including the F-18, F-16, and C-17, as well as full-rate production of the F-35, which is not expected to commence until 2012—could further affect America's aerospace workforce as the market for highly skilled aerospace jobs continues to diminish. The gap between F-22 and F-35 production is of particular concern. Because these programs share approximately 75 percent of suppliers who have specialized in fifth-generation platforms, a two- or three-year gap in production would threaten the supply base and truncate the next generation of aerospace designers, engineers, and manufacturers.¹⁵

Indeed, the supplier base may be most affected by the Pentagon's decisions to end programs with no follow-on production, yet suppliers are often lost in the shadow of the larger defense firms that are critical to the health of the defense industrial base. The 2009 *Annual Industrial Capabilities Report to Congress* cautions that:

[T]he lower-tier supplier industrial base continues to consolidate. Suppliers not associated with future production programs (for example, suppliers not participating in the F-35 or UH-60M) will be impacted the most. These suppliers will be forced to either exit the business or find new DoD or non-DoD programs for their survival.¹⁶

The deterioration of the supplier base, even if it is determined that, as Secretary Gates has said, "U.S. predominance in conventional warfare... is sustainable for the medium term given current trends,"¹⁷ is sure to have a lasting impact on the nation's ability to maintain its predominant position in the decades ahead as U.S. military power inevitably diminishes.

During his April 6 press conference, Secretary Gates addressed the transition between F-22 and F-35 production and how it will affect the workforce. Noting that F-22 jobs will decline to 19,000 in FY 2010 and 13,000 in FY 2011, he emphasized that the F-35 program already directly employs 38,000 people. This number will increase to 64,000 in FY 2010 and 82,000 in FY 2011.

What Secretary Gates failed to mention, however, is that these production lines are in different states. The implicit assumption that the production workforce in Marietta, Georgia, will be willing or able to move to Fort Worth, Texas, in order to work there is flawed. There is no Pentagon guarantee that

13. Lockheed Martin documents obtained by e-mail, February 5, 2009. Also see Christopher Bolkcom, "F-22A Raptor," Congressional Research Service *Report for Congress*, December 19, 2008, p. 12, at http://assets.opencrs.com/rpts/RL31673_20081219.pdf (May 18, 2009).

14. Michael C. Sirak, "Daily Report: Closing Thoughts," *AirForce-Magazine.com*, May 21, 2009, at <http://www.airforce-magazine.com/Pages/default.aspx> (May 21, 2009).

15. Lockheed Martin documents.

16. *Annual Industrial Capabilities Report to Congress*, U.S. Department of Defense, Office of Under Secretary of Defense for Acquisition, Technology, and Logistics Industrial Policy, March 2009, p. 5, at http://www.acq.osd.mil/ip/docs/annual_ind_cap_rpt_to_congress-2009.pdf (May 18, 2009).

17. Gates, "Defense Budget Recommendation Statement."

these jobs can even be shifted on a one-to-one basis. Even if there was a guarantee that no net job losses would occur, there is no reason to believe that workers in Georgia would uproot their families and that they could sell their homes in order to move even if they wanted to do so.

For the past three decades, the United States has maintained two or three active production lines of fighter aircraft at all times. Given the potential closure of the F-18 and F-15 lines, combined with the three-year gap before full-rate production of the F-35, prematurely closing the F-22 line could jeopardize America's ability to hedge against potential miscalculations of the future threat environment. Over the past decade, Congress has put its money where its mouth is by repeatedly emphasizing the importance of competition in defense production. If additional annual funding for an alternate engine for the Joint Strike Fighter is important to Congress, there is no doubt that Congress should care deeply about maintaining more than a single fighter production line. Competition encourages contractor innovation and produces better products for the warfighter while saving taxpayer money in the long term.

If Congress allows President Obama to prevail with the decision to cap F-22s at 186, in reality, this translates to only roughly 100 "combat-coded" F-22s available for operations at any one time.¹⁸ Yet more than 30 air campaign studies over the past 15 years have confirmed a minimum requirement for 260 Raptors. Even when considering the Air Force's current F-22 and F-35 procurement plans, a likely gap of up to 800 fighters is projected to occur around 2024.¹⁹ Although the F-22A is the world's sole fifth-generation fighter, numerous studies have concluded that the quality of the platform can be stretched only so far in making up for a lack of quantity, specifically in a Chinese anti-access sce-

nario in the Taiwan Strait.²⁰ A shortfall of aircraft would also prevent the Air Force from filling out the service's 10 Air Expeditionary Forces (AEFs), undermining the stability of the AEFs by ensuring the need to rotate F-22s on an as-needed basis.²¹

The considerable investment the U.S. has made in the F-22 program over the past two decades has brought the program to a point where it is now at its most affordable level. After a development cost of \$40 billion, the flyaway cost of one plane has been reduced by 35 percent, to about \$191 million per aircraft.²² There is also an additional and significant cost burden to America's taxpayers to fund new production at a future date if Congress ever chose to reopen the line.

As a substitute for the F-22, Secretary Gates and others in the defense and think tank community have advocated purchasing more F-35s. Any such equation is insufficient, however, because the aircraft are complementary with only some overlapping capabilities. These two fighters are designed and built to complete many unique missions.

The F-22, a larger and more maneuverable aircraft, was meant to fulfill air dominance missions, thereby clearing the skies for the multi-role strike mission of the F-35. Indeed, this complementary mission set specifically assumed that the F-22 would be available in sufficient quantity to provide air cover for the F-35. Without enough F-22s to eliminate any air-to-air and surface-to-air threats, the F-35 will become increasingly and unnecessarily vulnerable. The F-22 also clears the skies for intelligence, surveillance, and reconnaissance platforms otherwise threatened by advanced surface-to-air missiles placed along border regions during combat to provide critical information to commanders on the ground.²³

18. Marc V. Schanz, "Daily Report: The Air Superiority Gamble," *AirForce-Magazine.com*, May 7, 2009, at <http://www.airforce-magazine.com/DRArchive/Pages/default.aspx> (May 18, 2009).

19. Bolkcom, "F-22A Raptor," p. 7.

20. John Stillion and Scott Perdue, "Air Combat Past, Present and Future," RAND Project Air Force, August 2008, at http://www.defenseindustrydaily.com/files/2008_RAND_Pacific_View_Air_Combat_Briefing.pdf (May 18, 2009).

21. Bolkcom, "F-22A Raptor," p. 6.

22. *Ibid.*, pp. 3-4.

23. Rebecca Grant, "Global Deterrence: The Role of the F-22," Lexington Institute *Research Study*, February 2009, pp. 3-4, at <http://lexingtoninstitute.org/docs/839.pdf> (May 18, 2009).

C-17 Globemaster III. The Pentagon relies on the C-17 Globemaster III, C-5 Galaxy, and C-130 Hercules aircraft to perform the inter-theater airlift mission.²⁴ Along with the traditional roles that airlift has played, expanded ground operations as part of global counterterrorism and counterinsurgency missions have placed a renewed emphasis on the airlift mission.

Strategic airlift has become so important that “preserving global reach in the air,” specifically by the C-17 aircraft, was singled out by President Obama as a defense priority on his presidential campaign Web site and then again on the White House Web site after his inauguration.²⁵ In direct contradiction to this stated priority, President Obama’s first budget request for FY 2010 recommends ending production of the C-17 at 205 aircraft.²⁶

The C-17—the only remaining military wide-body aircraft still in production in the U.S.—is manufactured by Boeing to carry 169,000 pounds of equipment, including the Abrams tank and Apache helicopter. Although it comprises 60 percent of the airlift fleet, it flies more than 80 percent of all strategic airlift missions.²⁷ It has been used in military operations everywhere from Bosnia and Kosovo to Iraq and Afghanistan.²⁸

The C-17 benefits from its ability to operate from austere airfields, including dirt runways, making it invaluable in the tactical airlift role as well.²⁹ Fol-

lowing an increase in attacks on U.S. and coalition convoys in Iraq in 2004, for instance, the C-17 was used alongside the C-130 to relieve 350 vehicles per week.³⁰ Just this week, two C-17s were used to deliver aid to Pakistan as part of a humanitarian relief effort. The C-17’s performance characteristics are also significantly better than those of other cargo-transport aircraft.³¹

The C-17 is built by more than 30,000 workers and supported by an additional 700 suppliers. From reaching initial operating capability in 1995 through the FY 2008 emergency supplemental spending bill for Iraq and Afghanistan, 205 C-17s have been purchased.³² Canada, the United Kingdom, and Qatar have already placed orders, and the United Arab Emirates has entered negotiations to purchase the aircraft. However, if Congress does not fund the procurement of additional C-17s in the current pending supplemental for the second half of FY 2009 or the FY 2010 defense budget, this line will begin closing this year due to the 34-month supplier lead time to build a C-17.³³

The costs of choosing to restart the line after it has already been closed are immense. A 2006 U.S. Department of Commerce study on the C-17 found that “the cost of closing down the Long Beach [California] site, restarting at a new site in the United States, and then having to close it down again after a short production run—is about \$5.7 billion.”³⁴

24. Baker Spring and Mackenzie M. Eaglen, “Quadrennial Defense Review: Building Blocks for National Defense,” Heritage Foundation *Background* No. 2294, January 28, 2009, at <http://www.heritage.org/Research/NationalSecurity/bg2234.cfm>.
25. “Issues: Defense,” The White House, 2009, at <http://www.whitehouse.gov/agenda/defense/> (May 18, 2009).
26. Gates, “Defense Budget Recommendation Statement.”
27. Boeing documents on the C-17, obtained by e-mail, January 30, 2009.
28. Christopher Bolkcom and William Knight, “Military Airlift: C-17 Program Background,” Congressional Research Service *Report for Congress*, October 22, 2008, at <http://digital.library.unt.edu/govdocs/crs/permalink/meta-crs-10719:1> (May 18, 2009).
29. Loren B. Thompson, “The Military Needs Many More C-17 Airlifters,” Lexington Institute *Issue Brief*, March 17, 2008, at <http://lexingtoninstitute.org/1384.shtml> (May 18, 2009).
30. TSgt Don Nelson, “Increased C-130, C-17 Flights Relieve Army Ground Convoys,” *Air Force Print News*, December 15, 2004.
31. Christopher Bolkcom, “Military Airlift: C-17 Program Background,” Congressional Research Service *Report for Congress*, updated June 5, 2007, at <http://fas.org/sgp/crs/weapons/RL30685.pdf> (May 19, 2009).
32. “FY2009 Unfunded Requirements List,” U.S. Air Force, SAF/FMB, Budget and Appropriations Liaison Office, February 2008, p. 2.
33. Boeing documents on the C-17.
34. *Ibid.*

Restart costs for any line are significant and are another consideration Congress must take into account when making critical funding decisions in this year's defense bills.

F/A-18E/F Super Hornet and F-15E Strike Eagle. One of the main consequences of the 1990s defense consolidation has been the increased sensitivity of defense contractors to minor fluctuations in the industrial base. The defense industrial base is indeed interconnected and dependent on multiple programs. Ending the C-17 and F-18 production lines within one year of each other would have a dramatic impact on the defense industrial base.

The 2009 *Annual Industrial Capabilities Report to Congress* warned that “with the announcement of the C-17 program shutdown, coupled with the end of domestic F/A-18E/F production in FY 2012, the industrial base infrastructure at Long Beach, CA, and St. Louis, MO (solely supporting foreign military sales) may have insufficient business to continue in place.”³⁵ The negative consequences of closing even the C-17 line—both for this highly skilled workforce and for U.S. national security—clearly run deeper than the cancellation of a single program.

“Over the next 10 years,” warned the 2008 *Industrial Capabilities Report*, “multiple military aircraft production lines will go cold precipitating the need for a new round of consolidation in order to reduce infrastructure costs.”³⁶ According to Darryl Davis, President of Boeing's Advance Systems unit, “The technology base is eroding for Boeing as [the company] moves late into the next decade.”³⁷ Losing any defense-related technology base within the next year while defense strategies are being crafted internally at the Pentagon makes little sense. Congress

should consider the cost savings that result from leaving the country's options open while additional major defense procurement decisions are made throughout this year.

The combined impact of reduced procurement budgets, a dwindling number of aircraft programs, and the delay of new programs like a sixth-generation fighter or long-range bomber places further pressure on Boeing and its workforce. This is why Congress should be concerned about the potential closure of even just one or two lines and how these closures will relate to Boeing's ability to compete for military aircraft contracts in the future. “While Lockheed Martin and Sikorsky have current programs that will remain in production for the next 20 years, Boeing's future participation in the fighter/attack and transport segments is more problematic without the support of foreign military sales to keep existing production lines open.”³⁸

Congress has repeatedly demonstrated its preference for competition for major programs like destroyers. It should consider the potential for increased costs due to lack of competition with only one remaining fighter production company left in America, which will be the result if these recommendations are approved.

Under current defense authorization plans, the F/A-18E/F production line will shut down in 2013, with long-lead production items and their suppliers affected as early as next year. The F-18 program employs 100,000 people and depends on 1,900 suppliers across 46 states.³⁹ The F-15 production line, which employs 55,000 people and has a total of 383 suppliers, also faces potential closure depending on the outcome of a pending sale to Saudi Arabia.⁴⁰

35. *Annual Industrial Capabilities Report to Congress*, March 2009, p. 5, at http://www.acq.osd.mil/ip/docs/annual_ind_cap_rpt_to_congress-2009.pdf (May 18, 2009).

36. *Annual Industrial Capabilities Report to Congress*, U.S. Department of Defense, Office of Under Secretary of Defense for Acquisition, Technology and Logistics Industrial Policy, March 2008, p. 43, at http://www.acq.osd.mil/ip/docs/annual_ind_cap_rpt_to_congress-2008.pdf (May 18, 2009).

37. Andrea Shalal-Esa, “Boeing Sees Industrial Base Worry If Programs Stall,” Reuters, September 15, 2008, at <http://www.reuters.com/article/ousiv/idUSN1551688520080915> (May 18, 2009).

38. *Annual Industrial Capabilities Report to Congress*, March 2009.

39. “Super Hornet Program Nationwide Total Economic Impact,” Boeing documents.

40. *Ibid.*

When the potential Lockheed–Northrop merger threatened to reduce the number of tactical aircraft providers from two to one in the late 1990s, Congress wisely opposed the plan. Why should today be any different? The end of the F/A-18E/F and various F-15 lines in the coming years would translate into a deliberate consolidation of the tactical aircraft industrial base to just one manufacturer. A projected gap in tactical aircraft in the next decade, coupled with the potential for instability in the F-35 production program, enhances the prudence of maintaining the current “hot” tactical aircraft production lines, at least into the middle of the decade.

High Mobility Artillery Rocket System. The High Mobility Artillery Rocket System (HIMARS) is a wheeled, indirect-fire platform capable of firing the guided multiple-launch rocket system and Army tactical missiles. It is currently used by both the Army and Marine Corps and has been deployed as part of Operation Iraqi Freedom.

HIMARS is built in Camden, Arkansas, by a workforce of 125 personnel. Other components are produced in Texas, New Jersey, Florida, and Alabama. Although the program is expected to remain in the field until 2050, funding for additional platforms is set to end in FY 2011, with full closure of the production facility in Arkansas scheduled for 2013.⁴¹ Congress should consider the potential costs of maintaining and repairing a system that will be used by U.S. troops for 40 more years when the line and its spare parts are out of production.

Airborne Laser. President Obama’s FY 2010 defense budget also cancels the second Airborne Laser (ABL) prototype aircraft and keeps the existing aircraft while shifting the focus of the program to research and development. In the future, these technologies could provide the U.S. with capabilities in boost-phase missile defense, as well as area-wide anti-air warfare for the Navy, and even function as an anti-satellite system.

In addition to its operational role, the ABL program represents one of the primary efforts by the Pentagon to move development of directed-energy technology forward. The ABL program supports more than 1,000 high-tech jobs.⁴² A Defense Science Board Task Force report from 2007 found that of the \$961 million that was allocated for high-energy laser funding in FY 2007, ABL accounted for \$629 million, or 65 percent.⁴³ The report also found that a “lack of directed energy production programs or the serious prospect of significant production programs has jeopardized the supporting industrial base.”⁴⁴

Congress must carefully consider the development investment made to date through this program. This is essential because the directed-energy applications of this effort reach far beyond missile defense to include counter-mortar and counter-artillery applications, making direct-energy technology relevant to winning on today’s battlefield.

Rotary Wing Programs. President Obama’s FY 2010 defense budget proposes terminating both the Combat Search and Rescue helicopter (CSAR-X) and the VH-71 presidential helicopter. Both helicopters are manufactured by Lockheed Martin. The potential cancellation of these platforms—with the chance of a follow-on program contingent on further review of requirements—will only bring additional disruptions to the already troubled helicopter industry. Rotary-wing aircraft represent the type of counter-insurgency and irregular warfare capability shift that President Obama seeks in his 2010 budget request. Eliminating these two programs with nothing else in the pipeline appears preemptive in nature.

Congress should carefully consider the elimination of the U.S. Air Force’s program “to replace HH-60G helicopters that are deficient in range, speed, carrying capacity and other features. The Air Force is the only service that maintains a fleet of search and rescue helicopters, which retrieve an

41. Lockheed Martin documents on the HIMARS, obtained by e-mail, February 5, 2009.

42. “Airborne Laser Critical to Directed Energy Industrial Base,” Boeing Briefing Slides, obtained by e-mail, April 15, 2009.

43. Defense Science Board Task Force, *Directed Energy Weapons*, Office of the Under Secretary of Defense for Acquisition, Technology, and Logistics, December 2007, pp. 9–10, at http://www.acq.osd.mil/dsb/reports/2007-12-Directed_Energy_Report.pdf (May 18, 2009).

44. *Ibid.*

average of 100 warfighters per year from dangerous locations.”⁴⁵ The open question of whether the mission has been eliminated without a system to operate is a valid one left unanswered by Pentagon officials. Congress must demand answers quickly while figuring out how to ensure that there is no gap in the ability of the U.S. Air Force to conduct its search and rescue mission.

A Strong Defense Industrial Base, Now and in the Future

The military is in a crucial phase of recapitalization. The war-related bills will be due for years after a majority of U.S. forces are withdrawn from Iraq, yet supplemental spending bills are disappearing. There is no appetite for absorbing the entire supplemental spending topline into the larger defense budget.

In the long term, continuing to underfund defense and then allowing wild fluctuations in defense budgets during times of war will only cost the country more and compromise security at home and on the battlefield, including reducing the defense industrial base to an unacceptably low level. An undercapitalized industrial base is less competitive, which increases costs for the government and the U.S. taxpayer.⁴⁶

Congress must carefully and fully evaluate President Obama’s FY 2010 defense budget request, taking the long view when determining what is needed to retain a healthy and highly skilled national defense workforce. While the Pentagon budget is by no means a jobs program, Congress should evaluate the costs to American taxpayers and the cost measured in risk to the warfighter when it considers shuttering manufacturing production lines with no follow-on work—as proposed in this year’s defense budget.

Specifically, taking a holistic approach, Congress should:

- **Retain cutting-edge national security skill sets and technologies.** Regardless of the specific weapons system purchased, maintaining a national defense industrial base capable of continuously offering technologically superior products at equitable cost will remain a primary challenge for policymakers. Although Congress should refrain from decisions focused solely on the impact they may have on American jobs, ensuring the health and viability of America’s highly skilled workforce is a central component of retaining many of America’s technological advantages and ultimately saves lives on the battlefield.
- **Reinvigorate science, technology, engineering, and math (STEM) education.** Because designing and manufacturing cutting-edge military equipment is a generational task, the future stability of the defense industrial base depends on the development of tomorrow’s defense manufacturing workforce. Implementing systemic education reform—particularly in science, technology, engineering, and mathematics—to foster innovation and increase the number of students completing secondary and post-secondary education who may join this professional workforce should therefore be a top priority for Congress. Such an effort would require encouraging and adopting new models for strengthening teacher quality and effectiveness while also designing a system that rewards teachers who emphasize these subject areas. This renewed focus would also benefit from nationwide reforms in America’s school system, including charter schools that emphasize STEM education.⁴⁷
- **Promote additional foreign military sales.** America’s defense industrial base also serves an important role in helping to build the military capacity of foreign allies while enhancing their interoperability with the U.S. military. These

45. Loren B. Thompson, “Helicopter Troubles Traceable to Government Mistakes,” *Lexington Institute Issue Brief*, August 18, 2008, at <http://lexingtoninstitute.org/1305.shtml> (May 18, 2009).

46. Mackenzie Eaglen, “Balancing Strategy and Budgets,” *Armed Forces Journal*, October 2008, at <http://www.armedforcesjournal.com/2008/10/3666455/> (May 18, 2009).

47. Dan Lips and Jena Baker McNeill, “A New Approach to Improving Science, Technology, Engineering, and Math Education,” *Heritage Foundation Backgrounder* No. 2259, April 15, 2009, at <http://www.heritage.org/Research/Education/bg2259.cfm>.

efforts indirectly save U.S. taxpayer funds over time and include the advantage of reducing wear and tear on U.S. equipment.

Congress should seek out and evaluate foreign military sales opportunities for pending production line closures like the F-22, F-18, and F-15. This could create economies of scale, bring further stability to the industrial base workload, and reduce the per-unit costs of individual systems. When weighing its decision on the F-22 production line and the impact of closing the line in 2011, Congress should also consider the interest expressed in the aircraft by Japan in particular. Along with the obvious benefits for the industrial base, allowing the building and sale of an allied variant of this fighter jet to a close American ally like Japan would offer sound geostrategic benefits.⁴⁸ Congress would have to waive the Obey Amendment this year in order to allow this potential F-22 variant sale to move forward.

Increasing international sales between the U.S. and its allies and partner nations will require either limiting the restrictions placed on the defense sector by the U.S. International Trade in Arms Regulations (ITAR), which are both time-consuming and confusing, or, in the case of America's closest allies, negotiating bilateral defense trade cooperation treaties to help facilitate easier market access with America's closest allies.⁴⁹ While the concern that sensitive defense technologies may fall into the wrong hands without proper oversight is valid, the archaic ITAR regulations remain insufficient in today's globalizing defense market. Congress should pursue these opportunities to deregulate the defense market as opposed to adding more

layers and rules to an already risk-averse and weighed-down process.

- **Implement performance-based life-cycle management practices at the Pentagon.** In 2001, Pentagon officials began performance-based logistics to reduce the operating costs of systems by focusing on performance outcomes as opposed to the acquisition of individual parts or particular repair actions.⁵⁰ One research study notes that:

[P]erformance outcomes can include delivery time, work-in-progress, and most important, availability of systems and material to the warfighter. Specific contracts to implement PBL, termed Performance-Based Agreements, are structured to meet warfighters' particular needs. Government oversight is still maintained through the program office, but at reduced cost.⁵¹

Former Under Secretary of Defense for Acquisition, Technology and Logistics John Young issued guidance in July 2008 to reduce acquisition costs within the Department of Defense by establishing life-cycle metrics early in the process and monitoring them throughout the development and deployment of weapons systems and programs.⁵²

The new Administration should continue to support the two-year pilot program that is underway to "determine the feasibility of annually assessing the attainment of the life cycle metrics... as part of the Planning, Programming, Budgeting and Execution System activities."⁵³ The benefits of using performance-based agreements include the increased "availability of equipment and systems to our military in combat...[which] translates

48. Jack Spencer and Kathy Gudgel, "The U.S. Should Consider F/A-22 Sales to Select Allies," Heritage Foundation *Executive Memorandum* No. 970, May 13, 2005, at <http://www.heritage.org/Research/NationalSecurity/em970.cfm>.

49. Baker Spring, "Defense Trade Cooperation Treaties with Australia and the U.K. Will Improve Security," Heritage Foundation *Background* No. 2107, February 8, 2008, at <http://www.heritage.org/Research/NationalSecurity/bg2107.cfm>.

50. Daniel Gouré, "Performance-Based Logistics: A Primer for the New Administration," Lexington Institute *Research Study*, April 24, 2009, at <http://lexingtoninstitute.org/docs/848.pdf> (May 18, 2009).

51. *Ibid.*

52. John J. Young, Jr., "Implementing Life Cycle Management Framework," Department of Defense Memorandum for Secretaries of the Military Services, July 31, 2008.

53. *Ibid.*

into increased combat power. Performance-based agreements also appear to be saving the government money. A study of 23 performance-based agreements showed an average annual savings of \$21 million.”⁵⁴

Conclusion

America’s defense industrial base plays a fundamental role in providing the U.S. military with the equipment and platforms necessary to achieve its objectives with the highest efficiency. While the industrial base has gone through many fluctuations over the past 60 years, this national workforce has continued to produce the most technologically advanced systems available, thereby helping to ensure America’s military superiority.

Imminent funding decisions about whether to continue production of several major aerospace, shipbuilding, munitions, directed-energy, and helicopter lines present Congress with a dilemma that it must consider carefully before proceeding further. Although there will be pressure to focus on the number of jobs that stand to be lost during difficult economic times if certain decisions are made, what is

needed is a more holistic examination that accounts for the entirety of the U.S. defense industrial base and its long-term ability to continue to develop and produce the capabilities required to defend the United States and its interests. This must begin with an assessment that properly weighs the benefits of keeping various production lines open against the strategic and actual costs of closing them.

Congress must also think and plan for the long term by addressing the deterioration of national STEM education skills and streamlining the foreign acquisition and sales process to help reap the concurrent benefits of free and accessible defense markets. A healthy defense industrial base is important both because it helps to protect the country and its men and women in uniform and because it saves taxpayer dollars through competition.

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54. Gouré, “Performance-Based Logistics,” p. 8.