

**Performance-based outcomes represent the logical starting point in an environment where the need for efficiency competes with effectiveness in the decisionmaking process. They describe the expectations of performance provided to the lead command (customer) by the system program manager of a given weapon system.**

# contemporary issues

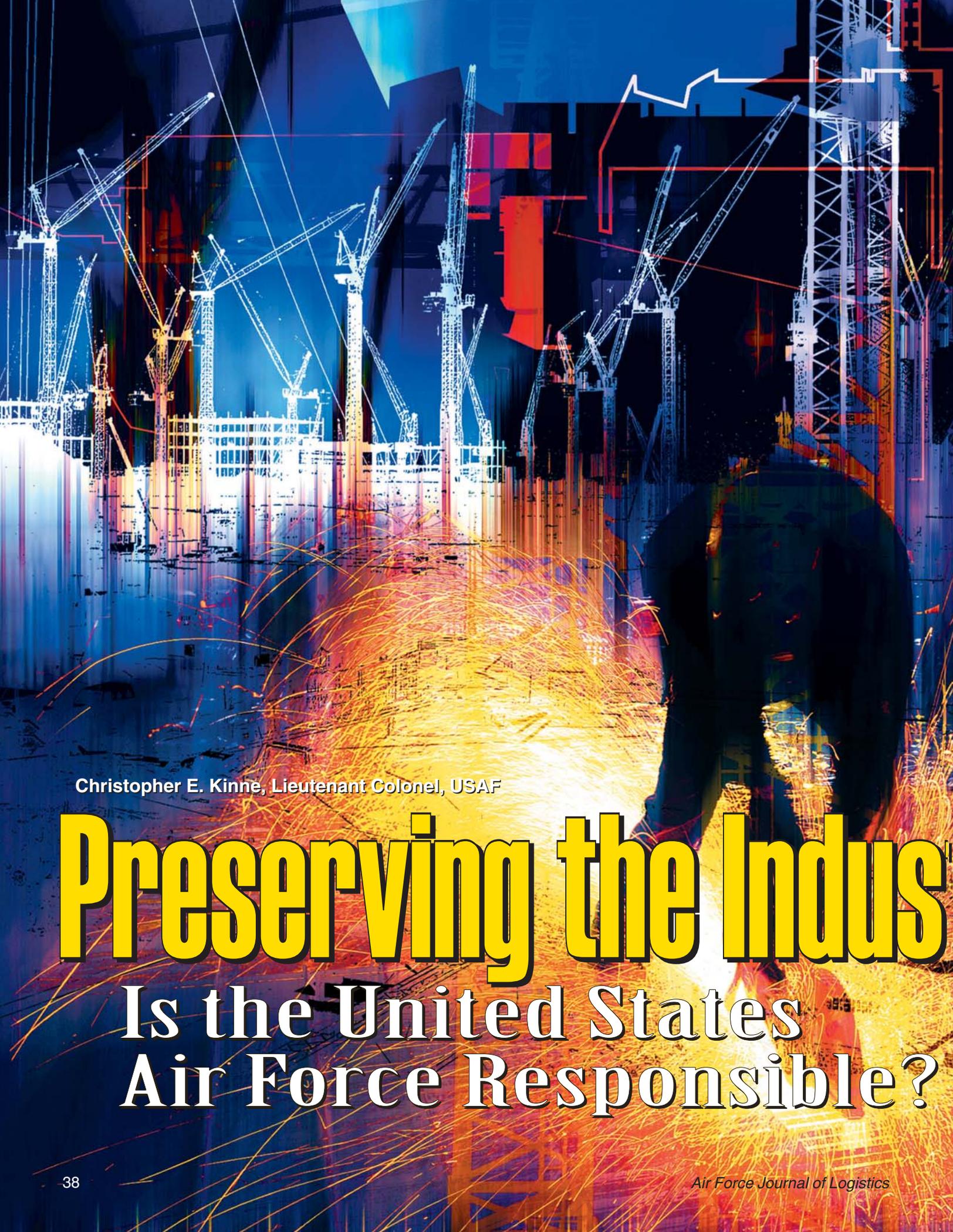
## **Capabilities-Based Resourcing for Air Force Weapon System Sustainment Preserving the Industrial Base: Is the United States Air Force Responsible?**

**C**ontemporary Issues in this edition presents two articles: “Capabilities-Based Resourcing for Air Force Weapon System Sustainment” and “Preserving the Industrial Base: Is the United States Air Force Responsible?”

In “Capabilities-Based Resourcing for Air Force Weapon System Sustainment” Colonel Scott A. Haines makes the case that the Air Force must continue the development of an efficient capabilities-based resourcing strategy for weapon system sustainment. This strategy should entrust the system program manager with the authority and ability to affect key sustainment decisions, centralize funding where possible for all funds holders within Air Force Materiel Command, and provide leadership with a program built on objective measurements. Programmers must effectively maximize risk in support of legacy systems, while identifying opportunities for diverting available resources to assist with vital recapitalization and modernization efforts. In so doing, senior

leadership must openly, and efficiently, communicate Air Force intent to the Department of Defense (DoD) and Congress. The eventual solution for a viable capabilities-based requirements determination approach for weapon system sustainment must provide the flexibility required for responding to an ever-changing strategic environment.

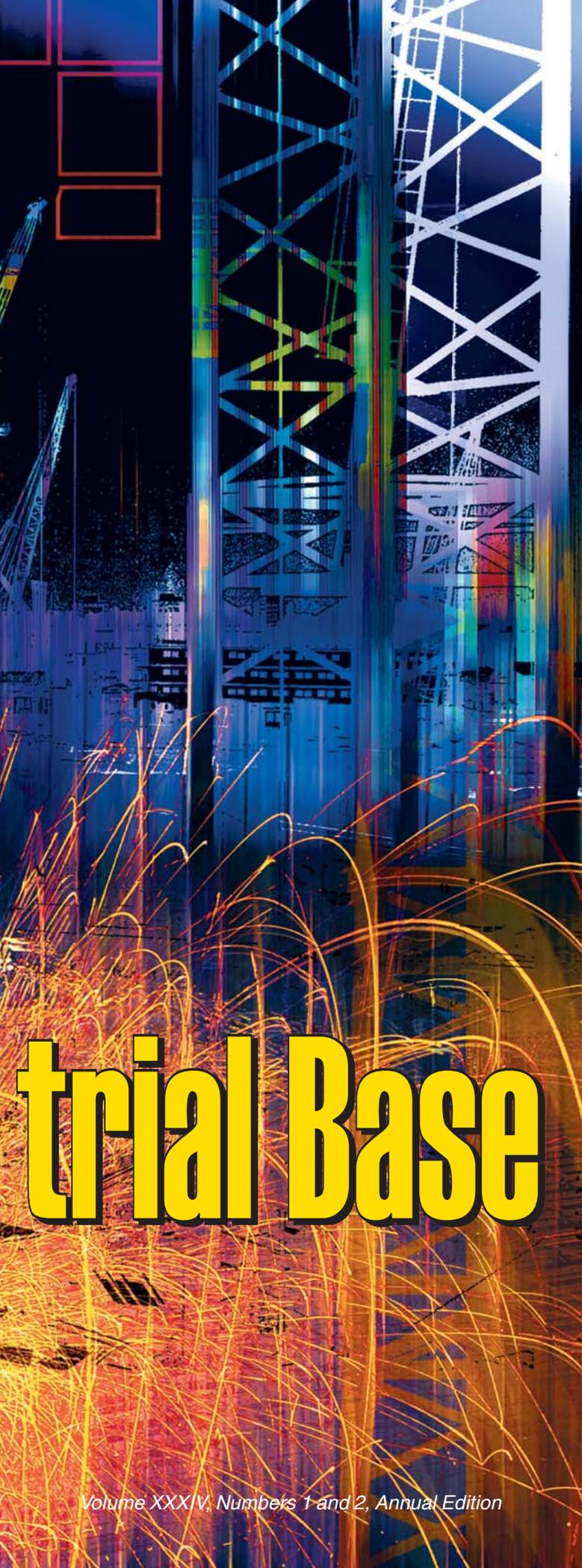
In the second article Lieutenant Colonel Christopher E. Kinne examines the perceived relationship between the DoD, the Air Force, and the US aerospace industry and answers the question, should the Air Force be involved in preserving the US aerospace industrial base? In answering no, he makes the case that the future of the US aerospace industry is a national issue, not an Air Force-unique issue. He also suggests that any action by the Air Force to proactively preserve the US aerospace industrial base would be contrary to the current strategic direction of the Secretary of Defense and established DoD policy.

The background is a complex collage. It features numerous white and yellow construction cranes of various sizes, some with their jibs extended. The scene is set against a dark blue and black background, with bright orange and yellow sparks or light trails radiating from a large, glowing sphere in the center. The overall aesthetic is industrial and high-tech.

Christopher E. Kinne, Lieutenant Colonel, USAF

# Preserving the Indus

Is the United States  
Air Force Responsible?



# trial Base

## Introduction

The United States Air Force should not attempt to proactively manage the US aerospace industrial base for the purpose of preserving a domestic development and manufacturing capability to produce future generations of US military aircraft weapon systems. It is the mission of the Air Force to fly, fight, and win in air, space, and cyberspace.<sup>1</sup> It is not the mission of the Air Force to sustain the US aerospace industry. Preservation of the US aerospace industry is a national policy issue that should be addressed by the President of the United States in partnership with the US Congress. They are the only entities that can appropriately balance the military needs of the Department of Defense (DoD) and the Air Force against the other competing requirements within the United States.

The current Air Force mission—and those that preceded it—are often interpreted by airmen as implying that aircraft and their associated weapon systems are fundamentally required. This perception by airmen reflects a culture of aeronautical innovation that has its roots in the earliest days of the Army Air Corps and the infancy of the Air Force. In his 1997 work, *Architects of American Air Supremacy: General Hap Arnold and Dr Theodore von Karman*, Major Dik Daso observed, “both Arnold and Karman developed a similar vision for military aviation: the United States needed a cooperative aeronautics establishment which coupled civilian scientific and industrial expertise with the practical needs of the Army Air Corps.”<sup>2</sup> Dr von Karman articulated this vision in his December 1945 report to General Arnold entitled, *Toward New Horizons*, which was the first report of the newly formed Army Air Force Scientific Advisory Group. In his cover letter to General Arnold, Dr von Karman says: “The men in charge of the future Air Forces should always remember that problems never have final or universal solutions, and only a constant inquisitive attitude toward science and a ceaseless and swift adaptation to new developments can maintain the security of this nation through world air supremacy.”<sup>3</sup>

The technological push of the Air Force served it well throughout the Cold War. The Service successfully developed and operated many weapon systems, including advanced aircraft that were designed, tested, and manufactured in the United States. However, today, the Air Force is faced with the challenge of continuing to pursue technology advances within the limitation of reduced budget authority and increasing unit costs for each new weapon system. In addition, a myriad of laws, policies, and procedures have evolved to control and regulate the efforts that lead to the fielding of new weapon systems. The defense segment of the US aerospace industry is caught in the middle and has suffered as a result.

The US aerospace industrial base has changed dramatically since the end of the Cold War and the military procurement boom of the 1980s. As Pierre Chao, an analyst with the Center for Strategic and International Studies observes: “the 1990s were the perfect storm of events, which led to defense industry consolidation (70 industry firms became 5 between 1984 and 2004).”<sup>4</sup> While the US defense industry was consolidating, the global marketplace was expanding and aerospace emerged as a major point of international economic competition between the United States and its largest market competitor, the European Union (EU). The fact that “Washington and Brussels currently

## Article Acronyms

CRS – Congressional Research Service  
DoD – Department of Defense  
DoDIG – Department of Defense Inspector General  
EU – European Union  
GAO – Government Accountability Office  
GDP – Gross Domestic Product  
NDIA – National Defense Industrial Association  
PPB – Planning, Programming, and Budgeting  
US – United States

are working to resolve a number of issues, including a dispute between the aerospace manufacturers, Airbus and Boeing,”<sup>5</sup> demonstrates the importance of the issue to both the United States and the EU.

The transatlantic economy dominates the world economy by its sheer size and prosperity. The combined population of the United States and EU now approaches 800 million people who generate a combined gross domestic product (GDP) of \$26.8T (\$13.6T in the EU and \$13.2T in the US). This sum was equivalent to 56 percent of world production or GDP in 2006.<sup>6</sup>

The commercial market place moves on. It does not wait for defense funding if it is not forthcoming. The surviving aircraft companies now look for opportunities to share costs and manage opportunities within the worldwide economy. For example, Boeing has greatly expanded its use of non-US subcontractors and nontraditional funding. A Japanese group will provide approximately 35 percent of the funding for the B-787 design project (\$1.6B). In return this group will produce a large portion of the aircraft’s structure and the wings (this will be the first time that a Boeing commercial product will use a non-US built wing). Alenia of Italy is expected to provide \$600M and produce the rear fuselage of the aircraft.<sup>7</sup>

However, where does the US aerospace defense industry go in the future? The Air Force had very few aircraft in development and production in 2008 and the manufacturing lines are dwindling—a situation that seems out of place for a nation that had a robust aerospace industry throughout much of the 20<sup>th</sup> century.

This article examines the perceived relationship between the DoD, the Air Force, and the US aerospace industry. It also answers the question, should the Air Force be involved in preserving the US aerospace industrial base? In answering no, this article asserts that the future of the US aerospace industry is a national issue, not an Air Force-unique issue. The article also suggests that any action by the Air Force to proactively preserve the US aerospace industrial base would be contrary to the current strategic direction of the Secretary of Defense and established DoD policy.

## Background

There is no shortage of interest in the US aerospace industry. By one recent count, there are more than 400 different US-based Web sites that represent elements of the US aerospace industry.<sup>8</sup> The scope of these Web sites range from colleges and universities to national academies, from aerospace workers’ associations to airline carriers and airports, and from state and national government agencies to corporate industry. Each individual Web

site serves a group that has a vested interest in the future of the aerospace industry. The purpose of this background section is to present perspectives from five US defense-related constituencies that represent a broad spectrum of ideas, with a particular focus on the issues that are most related to US national security and the question of the Air Force’s role in preserving the aerospace industry. The five constituencies considered are as follows.

- The Office of the President of the United States
- The United States Congress
- The Department of Defense (DoD)
- The DoD acquisition community
- The US defense and aerospace industry.

## Perspectives from a Recent Presidential Commission

Early in his first term, President George W. Bush established a bipartisan presidential commission to examine the future of the US aerospace industry.<sup>9</sup> To ensure a broad, bipartisan effort, the President only appointed 6 of the 12-member commission. The other six were appointed by the leadership of the US House of Representatives and the US Senate. The commission was chartered on July 19, 2001, to “study the issues associated with the future of the United States aerospace industry in the global economy, particularly in relationship to United States national security. [They were also chartered to] *assess the future importance of the domestic aerospace industry for the economic and national security of the United States* (emphasis added).”<sup>10</sup> The commission was asked to study a broad spectrum of topics.

- The budget process of the US government
- The acquisition process of the government
- The financing and payment of government contracts
- International trade and the export of technology
- Taxation
- The national space launch infrastructure
- Science and engineering education<sup>11</sup>

The commission had a great deal to say about these topics. After months of meetings and discussions covering the broad spectrum of topics, the commission published its final 300-plus page report in November 2002. The commission report begins with a positive statement about the US aerospace industry and claims in its opening sentences that “the role of aerospace in establishing America’s global leadership was incontrovertibly proved in the last century...[and] aerospace will be at the core of America’s leadership and strength in the twenty-first century.”<sup>12</sup> However, the report also includes nine recommendations that address many concerns of the aerospace industry and the panel members themselves. The commission identified several trends it believed must be corrected to both preserve the US aerospace industry and to improve US national security. Most importantly, the commission observed: “The contributions of aerospace to our global leadership have been so successful that it is assumed US preeminence in aerospace remains assured. Yet the evidence would indicate this to be far from the case.”<sup>13</sup>

In highlighting its concern about the future preeminence of the US aerospace industry, the commission observed: “The US aerospace industry has consolidated to a handful of players—

what was once more than 70 suppliers in 1980 is down to 5 prime contractors today. Only one US commercial prime aircraft manufacturer remains. Not all of these surviving companies are in strong business health.”<sup>14</sup> The commission also noted: “New entrants to the industry have dropped precipitously to historical lows...[and] the industry is confronted with a graying workforce in science, engineering, and manufacturing...[and] the US K-12 education system [is failing] to properly equip US students with the math, science, and technological skills needed to advance the US aerospace industry.”<sup>15</sup>

Addressing part of the national security issue, the commission noted:

Other countries [specifically in Europe and Asia] that aspire for a great global role are directing intense attention and resources to foster an indigenous aerospace industry. This is in contrast to the attitude present here in the United States. We stand dangerously close to *squandering the advantage* bequeathed to us by prior generations of aerospace leaders.... *A healthy aerospace industry is a national imperative*. The administration and the Congress must heed our warning call and act promptly to implement the recommendations in this report (emphasis added).<sup>16</sup>

Among the nine recommendations of the commission, one stands out as particularly relevant to the question of the Air Force

constitutional obligations. When issues suddenly become current events, it can be useful to examine the history of the issue—where the issue came from and who cared about it when. As a case in point, the status of the US aerospace industry became an issue during the July 22, 2008 Senate confirmation hearings for the secretary of Air Force and Air Force Chief of Staff nominees. During a line of questioning about the KC-X tanker source selection activity, Secretary of the Air Force nominee Michael Donley asserted: “aerospace is an international business.”<sup>19</sup> In response, Senator Hillary Clinton responded:

I’m very well aware that we live in an international economy, but I’m also extremely conscious of the impact of decisions made by our government with taxpayer dollars that undermine our competitiveness for the long run and eliminate jobs and thereby undermine technical skill acquisition in a way that I think will come back to haunt us. So this is something that I take very seriously.<sup>20</sup>

Senator Clinton did not reveal the motivation for her expression of concern, but it is likely that her thoughts and opinions had been shaped by the GAO and the CRS. In an April 2008 CRS report entitled *Air Force Air Refueling: The KC-X Aircraft Acquisition Program*, William Knight and Christopher Bolkom reported that

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role in preserving the US aerospace industrial base. The commission recommended “the nation adopt a policy that invigorates and sustains the US aerospace industrial base.”<sup>17</sup> The panel essentially recommends the US government take a much more direct and overt role in the future of the aerospace industry. The recommendation includes such steps as:

- Tasking the Defense Science Board to develop a national policy that will invigorate and sustain the US aerospace industrial base
- Continuously developing new experimental systems, with or without a requirement for production
- Maintaining and enhancing critical national infrastructure when it is in the nation’s interest
- Revising procurement policies to include prototyping, spiral development, and other techniques, which allow the continuous exercise of design and production skills<sup>18</sup>

### **Perspectives from the US Congress**

Members of the US Congress use both the Government Accountability Office (GAO) and the Congressional Research Service (CRS) to help understand issues while fulfilling their

...the commercial aircraft industry, like the personal computer and automobile industries, has globalized, drawing on the relative strengths of specialized suppliers of components and expertise from around the world. As a result, the two primary manufacturers, Boeing and Airbus, have both outsourced key parts of their production processes to overseas firms.<sup>21</sup>

Senator Clinton’s expression of concern was not new or unique. As early as 1993, national security risks related to the US aerospace industry were being identified by the GAO in reports to congressional requestors concerned with the trend of defense industry mergers and acquisitions. In a report entitled *Defense Industrial Base: An Overview of an Emerging Issue*, the GAO reported:

DoD has taken the position that free market forces generally will guide the restructuring of the defense industrial base. We believe that this is *not a realistic strategy* for ensuring that government decisions and industry adjustments will result in the industrial and technological capabilities needed to meet *future national security requirements*. A key reason for this is that *defense company officials* are understandably concerned with maximizing the returns for investors and *are not specifically accountable for how the long-term changes in the defense industrial base affect national security* (emphasis added).<sup>22</sup>

The same GAO report also states:

DoD has not taken a strong proactive role in assessing US reliance on foreign sources and foreign investment relating to the defense industrial base...[and] consequently, DoD generally does not know whether and to what extent it relies on foreign technology and products to meet its critical needs. *Such information is necessary to assess national security risks* (emphasis added).<sup>23</sup>

By 1997 the focus of the GAO regarding defense industry consolidation seemed to be evolving from the issue of national security to the risks to competition potentially caused by fewer vendors in the marketplace. In a report entitled *Defense Industry: Trends in DoD Spending, Industrial Productivity, and Competition*, the GAO shifted the discussion from a concern about national security and implied that consolidation in the defense industry is an acceptable outcome resulting from a natural cycle of events. The 1997 report states:

The business environment for defense industry has also changed over the years. Since the end of World War II the number of aircraft contractors dropped from 26 to 7 in 1994. The size and nature of the defense industrial base is critically shaped by the amount and emphasis of US defense outlays. *Recent debate has centered on the effect of the post-Cold War reduction in defense spending and its effect on the viability of the industrial base.* Although this downward trend in budget outlays and particularly in procurement spending is sizable, *it is one of four times in post-World War II history that the industrial base has had to adjust to changes in national security requirements.* In historical perspective, *defense funding drawdowns are not unique* (emphasis added).<sup>24</sup>

In 1998 GAO did not address national security concerns at all. In a report titled *Defense Industry: Consolidation and Options for Preserving Competition*, the entire discussion had moved to concerns about the potential risk to competition between contractors. For instance, the report states:

The sharp decline in spending by DoD since 1985 has resulted in a dramatic consolidation of the defense industry, which is now more concentrated than at any time in more than half a century. As the single customer for many products of the defense industry, DoD must have the ability to identify and address potential harmful effects of mergers and acquisitions. *Questions have been raised about whether the consolidation has gone too far—adversely affecting competition in the industry.* Many defense industry mergers and acquisitions are recent, so there is little evidence that the increased consolidation has adversely affected current DoD programs. Antitrust reviews have identified some problems, and remedies have been implemented. However, *the consolidation could pose future problems unless DoD improves its ability to identify problem areas and devises alternative ways to maintain competition* in defense acquisition programs (emphasis added).<sup>25</sup>

Clearly, the tone of the GAO reporting suggests the interest in the US Congress trended toward the state of competition in the US aerospace industry. Perhaps the statement from (then) Senator Clinton indicates national security issues are part of the discussion again. If so, the national security issues might be partly addressed by Secretary Clinton in her new role as the US Secretary of State in the Obama administration.

## Perspectives from the Department of Defense

### Secretary of Defense

Secretary of Defense Robert Gates, who served in the Bush administration and continues to serve in the Obama

administration, recently published an article in *Foreign Affairs* outlining his strategy for the DoD and his philosophy and intent for the department. Secretary Gates asserted: “The defining principle of the Pentagon’s new National Defense Strategy is *balance* (emphasis added).”<sup>26</sup> In Secretary Gates’ vision, balance means striking equilibrium between the urgent need to recapitalize the DoD weapon system inventory and the immediate need to support current conflicts in the global war on terrorism. Secretary Gates proposed:

It would be irresponsible not to think about and prepare for the future, and the overwhelming majority of people in the Pentagon, the Services, and the defense industry do just that. But, we must not be so preoccupied with preparing for future conventional and strategic conflicts that we neglect to provide all the capabilities necessary to fight and win conflicts such as those the United States is in today.<sup>27</sup>

Secretary Gates recognized that balance means some modernization efforts will have to be slowed down or stopped outright. He suggested

...that although US predominance in conventional warfare is not unchallenged, it is sustainable for the medium term given current trends...[and acknowledged the] current strategy knowingly assumes some additional risk...[that] is prudent and manageable.<sup>28</sup>

Secretary Gates also recognized that implementation of the National Defense Strategy will require a partnership between the DoD, Congress, and the President. He asserted:

The country’s national security capabilities are still coping with the consequences of the 1990s, when, with the complicity of both ends of Pennsylvania Avenue, key instruments of US power abroad were reduced or allowed to wither on the bureaucratic vine. The National Defense Strategy offers a slow, steady, balanced approach to recovery.<sup>29</sup>

### DoD Policy

In accordance with Section 2504 of Title 10, United States Code, the DoD submits an annual report on US industrial capability to the Committees on Armed Services of the Senate and the House of Representatives. Among other things, the annual report includes statements of DoD policy and

...a description of the methods and analyses being undertaken by the Department of Defense alone or in cooperation with other federal agencies, to identify and address concerns regarding technological and industrial capabilities of the national technology and industrial base...[and] a description of the assessments”<sup>30</sup>

conducted by the DoD.

The March 2008 report, submitted by the Office of the Under Secretary of Defense for Acquisition, Technology and Logistics (Industrial Policy), defines DoD national security industrial policy as based on *ideal* industry characteristics. An infinitely robust industrial base is not the ultimate objective of the Department (emphasis in the original).<sup>31</sup> The ideal industry characteristics define an industry that is *reliable*, *cost-effective*, and *sufficient* to meet strategic objectives. The annual report is a carefully worded policy statement. The definitions of *reliable*, *cost-effective*, and *sufficient* never explicitly suggest that DoD is responsible for sustainability of the US defense industry.<sup>32</sup> However, the March 2008 report does recognize that, “DoD research, development, acquisition, and logistics policies, analyses, and decisions guide and influence industry in four

fundamental ways.”<sup>33</sup> The report makes special note of the fact that DoD incorporates industrial base-related policies into its acquisition regulations to protect national security [and to] preserve critical defense industrial and technological capabilities”<sup>34</sup> when necessary. DoD acknowledges that it can use a “variety of means including funding innovation in science and technology, and encouraging competition through acquisition strategies and contract provisions to preserve industrial capability.” DoD also asserts that adequate regulations exist to preserve industrial capabilities vital to national security on a case-by-case basis, but that the standard for intervention into the industrial base is high in order to ensure that limited DoD resources are not expended unnecessarily.<sup>35</sup>

On the specific topic of globalization and international competition, the stated DoD objective is to “leverage globalization benefits and commercial markets while minimizing risks.”<sup>36</sup> Furthermore, the DoD states:

Even if the Department could afford to rely only on domestic sources, it would not want to. The United States does not own all the good ideas, nor make all the best products. Many of them come to us from our allies and trading partners.... The Department does not, and cannot, drive global commercial markets. Instead of hoping that global commercial markets will adapt to the Department, the Department must adapt its practices to be more of a conventional customer wherever possible.<sup>37</sup>

With respect to the risk of foreign sources of supply, the 2008 report asserts the following.

Foreign dependence usually does not equate to foreign vulnerability. The Department is not vulnerable if it is dependent on reliable foreign suppliers, just as it is not vulnerable when it is dependent on reliable domestic suppliers. Foreign vulnerability would occur only if the Department was dependent upon suppliers from a single or small group of countries that had the capability and political will to halt shipments to DoD in time of need, and when such delivery denial would cause direct and unacceptable impact to operations.<sup>38</sup>

To demonstrate the minimal risk of this vulnerability, the report offers the fact that:

The Department procures very few defense items and components from foreign suppliers. In fiscal year (FY) 2006, the Department awarded contracts to foreign suppliers for defense items and components totaling approximately \$1.9B, less than 1 percent of all DoD contracts; and only about 2.4 percent of all DoD contracts for defense items and components. This report concludes that the Department employs foreign contractors and subcontractors judiciously, and in a manner consistent with national security requirements.<sup>39</sup>

On the subject of domestic source restrictions, the report states, “the Department generally opposes statutory domestic preference proposals that preclude or impede its ability to procure world class products and capabilities on a *best value* basis or when it impairs effective Defense cooperation with friends and Allies.”<sup>40</sup> At the same time, DoD recognizes “the availability of domestic production capabilities for critical defense technologies is an essential element of national security [and asserts] that in calendar year 2007, the DoD had 23 projects underway specifically designed to establish, expand, maintain, or modernize industrial capabilities required for national defense.”<sup>41</sup>

Commenting on the effect of mergers and consolidation, the same 2008 report states:

The DoD’s decisions take a long view on competition. In the case of potential last-of-type platforms such as Joint Strike Fighter, for example, DoD selected from one industry team in order to minimize costs and maximize program efficiency. Its winner-take-all acquisition strategy decision was not anticompetitive. Rather, it reaffirmed DoD’s recognition of the need to focus the resources of the tactical fighter industry on unmanned and other futuristic systems. While market forces and a strong budget normally sustain credible competitive sources, for some critical defense products the number of suppliers may be limited.<sup>42</sup>

A final interesting perspective comes from the DoD input to a Department of Homeland Security report in May 2007 entitled *Defense Industrial Base: Critical Infrastructure and Key Resources Sector-Specific Plan as Input to the National Infrastructure Protection Plan*. This report presumes that the US defense industrial base exists and does not focus on preserving the economic enterprise itself as a matter of national security. Rather, it is focused on the infrastructure that supports the industry. The report strives to “identify those assets, systems, networks, and functions that, if damaged, would result in unacceptable consequences to the DoD mission, national economic security, public health and safety, or public confidence.”<sup>43</sup>

### Formal DoD Assessments

DoD assessments of the US defense industrial base evolved and became more sophisticated and nuanced during the George W. Bush administration. Perhaps this increasing level of sophistication reflects a greater level of attention to the subject out of concern for national security, or perhaps it mostly reflects recognition of the subject’s political sensitivity. The changes in reporting between 2005 and 2008 illustrate the apparent political sensitivity.

In 2005, a broad statement of the defense industrial environment asserted, “The Department does not concur with concerns raised by some that the US defense industrial base is in crisis.”<sup>44</sup> The 2005 report also asserted “The overall economic outlook for the US aerospace/defense industry is positive [because] aerospace sales...increased 8 percent [in the last year].”<sup>45</sup> The report concludes as follows.

The Department of Defense is a relatively small player in the overall US economy (about 3.75 percent of the gross domestic product) and Department leverage within the overall US manufacturing sector is limited. Many US industries once dominated by DoD demand now are focused on, and dependent on, commercial markets. . . . Nevertheless, it is desirable—and absolutely necessary—that the Department take whatever steps are necessary to ensure the industrial base on which it depends remains sufficiently reliable, innovative, and cost-effective to meet the nation’s national defense requirements. The Department is doing so and will continue to do so.<sup>46</sup>

The 2006 and 2007 reports included assessments of the aerospace sector that are similar to those included in the 2005 report. In addition, the 2006 and 2007 reports started to shift the focus of discussion toward second and third tier suppliers and raw material rather than prime contractors. As one example, the 2006 report discusses aircraft structures design and manufacturing capabilities, as well as the castings and forgings market. As another example, the 2007 report highlighted titanium availability as a significant issue within the aerospace industrial base.

The 2008 report continued the themes from 2007, with a particular emphasis on the titanium issue within the aerospace industry. However, the tone of the reporting seemed to change. The previous reports generally presented only facts and information. The assessments did not make specific changes or even recommendations based on the circumstances. Rather than simply stating facts or providing facts, the 2008 report was written in such a way that the reader is left with unanswered questions. The 2008 report discussed the status of a variety of aircraft production lines as well as research and development funding streams, but the report never actually advocated for any change. It is left to the reader to reach a positive or negative conclusion. The same report referred to an internal Air Force report entitled *Annual 2007 Air Force Industrial Base Assessment* (December 2007), which stated that

The overall outlook for the industry is positive primarily due to increased commercial aircraft orders and increases in US defense spending...[but] over the next 10 years multiple military aircraft production lines will go cold precipitating the need for a new round of consolidation in order to reduce infrastructure costs.<sup>47</sup>

Rather than make specific assessments or recommendations, the report included open-ended statements noting that many of

solutions to efficiently and effectively provide required capabilities and guaranteed best value for the government. Our assessment is that the consolidation of the industrial base, caused by unstable defense demand, has reduced the benefits of competition, introduced industrial organizational conflict of interest issues, and made every defense contract a “must win” situation for the prime contractors. The net result is that *the US industrial base is fragile*. It will relearn very expensive lessons with every program and *will require the rebuilding of infrastructure*, tailored to each new program.<sup>50</sup>

Despite this assessment of a fragile industrial base, acquisition policy has not changed. Defense acquisition programs continue to deal with the issue, sometimes as an intentional element of the procurement strategy. For instance, Assistant Secretary of the Air Force, Ms Sue Payton, stated “during testimony to Congress [about the KC-X tanker source selection effort], ‘job creation, location of assembly and manufacturing were not part of this evaluation criteria, according to the law’ and that ‘industrial capacity was not part of the evaluation criteria.’”<sup>51</sup>

An additional factor the acquisition community struggles with is the *Buy American Act*. In 1999, Colonel Joe Smythe suggested:

The *Buy American Act* and its subsequent modifications represent one of the most visible and egregious remnants of US protectionism. Its very existence refutes the US desire to only level the playing

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the issues faced by the military aircraft sector involve budgetary and recapitalization tradeoffs. Examples of these tradeoffs include:

- Continuing C-17 production or upgrading the C-5 fleet and maintaining two development teams for fighter engines
- Competing domestic and foreign aircraft designs
- Determining the mix of manned versus unmanned systems<sup>48</sup>

### **Perspectives from the Acquisition Community**

In June 2005, Acting Deputy Secretary of Defense Gordon England established an *Acquisition Action Plan* to respond to the “growing and deep concern within the Congress and within the Department of Defense (DoD) leadership team about the DoD acquisition processes.”<sup>49</sup> The resulting *Defense Acquisition Performance Assessment* (published in January 2006) included assessments and recommended performance improvements. Among these assessments was the following commentary about the defense industry.

Successful acquisition requires a stable environment of trust and confidence between government and an industrial base that is responsive and healthy. This fosters competition for ideas and

field in international trade. It has been used in the past to justify congressional protection of specific industries with an associated burden to DoD.<sup>52</sup>

### **Perspective from the Defense and Aerospace Industry**

The National Defense Industrial Association (NDIA) publishes an annual white paper entitled, *Top Issues*. The top issues evolve annually as trends in the industry evolve. The 2004 version of the white paper labeled sustainment of the US industrial base a top issue. In that paper NDIA noted:

The adequacy of a viable US defense industry to provide the equipment needed by warfighters in performance of their national security responsibilities is critical for the ultimate success of the transformational programs of the DoD...It is NDIA’s position that the US defense industrial base needs to review and reassess its ability to domestically produce critical items necessary for the timely support of the Armed Forces.<sup>53</sup>

This position began to evolve in 2005 with the association’s assertion that “broad based protectionism does not benefit the US defense industrial base.”<sup>54</sup> In 2006, the report suggested that globalization was good for the US industrial base,<sup>55</sup> and by 2008 there was no discussion of the US aerospace industrial base at all.

Two white papers produced by the Aerospace Industries Association of America, Inc, in late 2008 suggested that the US aerospace industry is healthy and doing well “following four years of remarkable expansion...[and] continued growth in 2008.”<sup>56</sup> The same analysis also stated, “As the global financial crisis continues to bring many industries to their knees, aerospace is largely flying above the storm.”<sup>57</sup> Although much of this success is attributable to civil aircraft sales, defense sales are also doing well. But much of the defense spending is attributable to “supplemental spending to support troops in Iraq and Afghanistan. . . . [which has] led to large increases in procurement for additional equipment, spares, and maintenance.”<sup>58</sup>

The supplemental funding has not helped with the growing modernization requirements. The 2008 Aerospace Industries Association white paper stated that “defense modernization is not optional.... America has deferred defense and aerospace modernization to the point that modernization and recapitalization are increasingly lengthy and expensive. The bill is now due.”<sup>59</sup>

## Analysis

The fate of the US aerospace industry is a national security issue that should be determined by the President of the United States in partnership with the US Congress. Working together, the President and Congress should decide whether the US government will proactively engage in preservation of the industry or whether free market forces will be allowed to decide the outcome of this historically critical element of the US economy and defense establishment. The President and Congress have sufficient information with which to make the necessary national security decisions. The *Final Report of the Commission on the Future of the United States Aerospace Industry* lays out nine detailed recommendations for consideration. The recommendations cover a wide range of aerospace issues, including education reform, military research and development, commercial aviation, and space systems and launch. Well considered and bipartisan, the commission report and its recommendations should form the basis for decisions made by the President and the Congress about the future of the US aerospace industry.

The Air Force is not responsible for the future of the US aerospace industry. The Air Force is responsible for organizing, training, and equipping a force capable of accomplishing the missions assigned by the President and the Secretary of Defense. There is no legislative or policy basis for the Air Force to attempt to proactively manage the US aerospace industrial base for the purpose of preserving a domestic capability for producing future generations of US military aircraft weapon systems. In the absence of any specific national security policy regarding the defense industrial base, DoD has decided to allow free market forces to determine the general fate of the defense industry while preserving the possibility of acting when necessary to protect certain segments of the critical technology infrastructure. In general, these segments are second- and third-tier suppliers of subcomponents and raw materials. The DoD has generally decided not to act to preserve domestic US prime contractors.

There is no requirement for additional information about the state of the US aerospace industry and the associated risks of a dwindling industrial infrastructure. These issues have been well

documented by many groups, public and private. The important issue is for the senior leadership of the United States—the President of the United States and the US Congress—to deal with the risk assessment and make some critical decisions about how the United States will develop and manufacture aerospace systems while also assuring national security. DoD is responsible for providing the military instrument of power to the country. It is the responsibility of the President of the United States and the US Congress to determine how best to acquire and sustain the military instrument of power.

Pierre Chao observed in 2008 that the US industrial policy debate is usually focused on the spectrum of sourcing options ranging between global and national markets, with the key issue being how to get technology to the US warfighter while preserving US jobs and assuring a source of supply.<sup>60</sup> Unfortunately, this policy dilemma is not well served by the current state of the US military acquisition system because, as Chao also noted, the military is primarily in a sustainment mode where costs are increasing to maintain the same capability. The defense industry, however, is positioned earlier in the acquisition cycle—system development—where there is more opportunity for competition, new ideas, and profit.<sup>61</sup> As a result, the defense industry, which is considered a candidate for government intervention, is not necessarily interested in the current business being offered by DoD. A national security policy decision needs to be made—sustain the old systems with whatever part of the industrial base wants to do the work, or develop new systems and encourage innovation across the defense and aerospace industries.

Unfortunately, the national security establishment often fails to make this kind of key national security decision. Members of Congress and the President, recognizing that the defense and aerospace industry represents a significant number of jobs in the US as well as a significant portion of the gross domestic product, continue to focus on competition when competition is not the issue. With a few notable exceptions—most recently, the Darleen Druyun scandal comes to mind—DoD and the Air Force play by the rules and procure military systems through robust competitive processes. In 1998, David Cooper of the Government Accountability Office submitted testimony before the Senate Subcommittee on Acquisition and Technology, Committee on Armed Services that stated “there is little evidence that the increased consolidation has adversely affected current DoD programs.”<sup>62</sup> Mr Cooper’s testimony included a table that showed the number of contractors providing fixed-wing aircraft reduced from eight to two between 1990 and 1998 (only Boeing and Lockheed Martin remained).<sup>63</sup>

Two of the six contractors identified in Mr Cooper’s testimony who left the fixed-wing aircraft market in the reported period (Northrop and Grumman) later merged and attempted to reenter the aerospace market with a European partner as a global competitor for the KC-X tanker program. In 2007, Senator John McCain’s staff asked the DoD Inspector General (DoDIG) to independently review the KC-X program and advise him on whether the Air Force request for proposal for the Air Force KC-X Aerial Refueling Tanker Aircraft Program contained impediments to competition.<sup>64</sup> The DoDIG concluded that with minor modifications to acquisition strategy (nonmaterial findings), the Air Force effort was sufficient in assuring

competition and fair prices.<sup>65</sup> This was a positive finding for DoD and the Air Force, but it ignored the larger issue. What was the right decision for US national security? Are there risks associated with international participation in the tanker program?

The DoD appears to have concluded that it is an acceptable national security risk for the defense industry to continue to consolidate when driven by free market forces. The DoD industrial policy 2008 report to Congress stated:

The DoD's decisions take a long view on competition. In the case of potential last-of-type platforms such as Joint Strike Fighter, for example, DoD selected from one industry team in order to minimize costs and maximize program efficiency. Its winner-take-all acquisition strategy decision was not anticompetitive. Rather, it reaffirmed DoD's recognition of the need to focus the resources of the tactical fighter industry on unmanned and other futuristic systems.<sup>66</sup>

In other words, the DoD is focused on new ideas (read transformation). It does not want to be stuck preserving an industry base that may no longer be fully relevant to the elements of military instrument of power it wishes to procure.

The DoD position also appears unconcerned with issues such as the limited supply of some materials, even when the

Global titanium demand also is increasing. However, there is limited information available on projected worldwide titanium production or production capacity. It is not clear whether titanium prices are likely to increase, stabilize, or decline. DoD weapon systems primarily use specialty metals which are produced by the same US suppliers that produce metals for the commercial markets. The Department is a very small consumer of commercial grade metals. However, tight commercial markets could negatively impact the viability of US metals suppliers, and ultimately DoD weapon system programs.<sup>68</sup>

However, "The Department's smaller share of the market for raw materials lessens its ability to influence the market...in a global marketplace it is more difficult to separate defense and commercial needs and trends."<sup>69</sup>

Perhaps industry consolidation and reduced access to materials are issues, but DoD doesn't know how to deal with them—or is unwilling to. Anthony Cordesman, of the Center for Strategic and International Studies, has suggested a lack of leadership is the fundamental issue. He says the senior leadership of the national security establishment should be asking the critical national security questions, but isn't. According to Cordesman:

The problem does not lie in defense industry, program managers, mid-level officers and officials, or in the procurement process. It

**The problem does not lie in defense industry, program managers, mid-level officers and officials, or in the procurement process. It lies in a fundamental failure to take hard decisions and force the overall defense procurement process to become realistic in making easily foreseeable judgments about risk and feasibility, to contain costs, and to create a mix of program objective memorandum and PPB goals that the nation can actually afford.**

competition for those materials is international and other nations are considered in a risk assessment. In the case of titanium, the DoD analysis is primarily focused on price impacts of global demand, concluding:

Specialty metals as a percentage of the unit recurring flyaway cost represent a small portion of military aircraft prices. Although additional steel and aluminum price increases appear unlikely, the potential for future titanium price increases remain. Significant future titanium price increases could lead to aircraft price increases for which the Department would have to plan. For example, a 50 percent titanium price increase would increase the unit price of an F-22A by \$1,274,000 and the FY05-11 buy (104 aircraft) by \$132,454,000.<sup>67</sup>

This price analysis, although interesting, only blithely addresses the real national security issue that price is irrelevant if you cannot get any of the material in the first place. The same DoD report states:

lies in a fundamental failure to take hard decisions and force the overall defense procurement process to become realistic in making easily foreseeable judgments about risk and feasibility, to contain costs, and to create a mix of program objective memorandum and PPB [planning, programming, and budgeting] goals that the nation can actually afford.<sup>70</sup>

If some fundamental national security policy decisions were made, the acquisition system could respond accordingly. As the 2006 Defense Acquisition Performance Assessment observed, "the current acquisition system delivered the foundation of our military power; [it] is, and must remain, our strategic advantage"<sup>71</sup> The question is how to get to those decisions. Cordesman, citing Loren Thompson from the Lexington Institute, noted that the

Pentagon doesn't have a coherent plan for how it will sustain global air dominance over the next 30 years without a sufficient number of F-22s, because it has convinced itself that unconventional warfare is the wave of the future. Making decisions by default is not leadership; it is an abdication of responsibility.<sup>72</sup>

Cordesman goes on to say:

Recent statements in Congress have failed to address any of the real issues affecting national security and the future of the Air Force, but they have defended the program [F-22] on the narrow ground of constituent interest.<sup>73</sup>

Existing DoD acquisition policies covering the development and production of weapon systems are sufficient to implement the current DoD policy and the de facto national security decision that has been made. The government acquisition community can work with those elements of the worldwide industrial base who choose to participate in the procurement process. Consistent with existing policy, the Air Force will provide annual assessments of the status of domestic and foreign sources of supply, which will support a risk assessment that will be integrated into an overall defense capability risk assessment and reported to Congress. When, or if, the President and Congress choose to react to these risk assessments, the Air Force will be ready.

## Conclusion

The Air Force is dependent upon, but is not responsible for the aerospace industrial base that supports it. The Air Force should not attempt to proactively manage the US aerospace industrial base for the purpose of preserving a domestic capability of producing future generations of US military aircraft weapon systems. There are well-established policies and procedures for informing DoD, the US Congress, and the President of the United States when the Air Force is concerned that limitations in the aerospace industry might threaten the Air Force's ability to execute its mission and thus threaten US national security. The Air Force should use these policies and procedures to report the health of the aerospace industrial base when necessary, but it should not make decisions about how to react to the status unilaterally.

The Air Force needs to concentrate on executing its mission today—to fly, fight, and win in air, space, and cyberspace. This mission fulfills the objective of balance established by the Secretary of Defense who has determined that significant focus needs to be placed on the current war on terrorism and not modernization. If the Secretary of Defense's strategy has a detrimental effect on the US aerospace industry then that is a national issue that needs to be addressed by the President of the United States in partnership with the US Congress. These two national security institutions are the only entities with the responsibility of balancing the military needs of the DoD and the Air Force against other competing requirements in the United States.

The Air Force should advise DoD and national leadership what capabilities it requires in order to execute the missions assigned. The Air Force also should advise DoD and national leadership about the risks associated with the global aerospace marketplace. It should do nothing more, nothing less.

The way ahead for the United States is not as clear. In the wake of the 2008-2009 economic crises, the two most recent US presidential administrations, in partnership with the US Congress, have provided significant financial bailouts to two very different, but fundamental elements of the US economy—the banking community and the auto manufacturing industry. Clearly, President Bush and President Obama, as well as their

partners in the US Congress, concluded that these bailouts were necessary to support the economic well-being of the country and therefore the national security of the United States. Perhaps it is time for the aerospace industry to be considered part of the conversation as well. The nine recommendations included in *Final Report of the Commission on the Future of the United States Aerospace Industry* would be a good place to start.

## Notes

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31. The statements of DoD policy are derived and quoted from the Department of Defense Report, *Annual Industrial Capabilities Report to Congress*, February 2008.
32. The DoD definitions of *reliable*, *cost-effective*, and *sufficient* are included in the *Annual Industrial Capabilities Report to Congress*, February 2008.
33. The four ways DoD influences industry are reported in the *Annual Industrial Capabilities Report to Congress*, February 2008 as:
 

First, DoD evaluations and assessments of industry segments or specific industry-related issues help identify future budgetary and programmatic issues and inform policy-making and requirements generation. Second, DoD defense system acquisition strategies and decisions shape the technological and programmatic focus of industry. Third, the Department incorporates industrial base-related policies into its acquisition regulations to protect national security, promote competition and innovation, and, in certain specific cases, preserve critical defense industrial and technological capabilities. Finally, decisions made on mergers and acquisitions involving defense firms directly shape the structure of the industry.
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*Lieutenant Colonel Christopher Kinne has served in a variety of acquisition corps assignments, including munitions development, directed energy development, electronic systems development, and aircraft sustainment. He has served on the staff of the Assistant Secretary of the Air Force (Acquisition) and has commanded two squadrons—the 631<sup>st</sup> Electronic Systems Squadron at Hanscom Air Force Base, Massachusetts and the 546<sup>th</sup> Aircraft Sustainment Squadron at Tinker Air Force Base, Oklahoma. He earned a bachelor of science degree in systems engineering from the University of Virginia and a master of engineering degree in industrial and systems engineering from the University of Florida. He is a 2002 graduate of the Air Command and Staff College at Maxwell AFB, Alabama. At the time of writing he was a student at the Air War College, Maxwell Air Force Base, Alabama.*

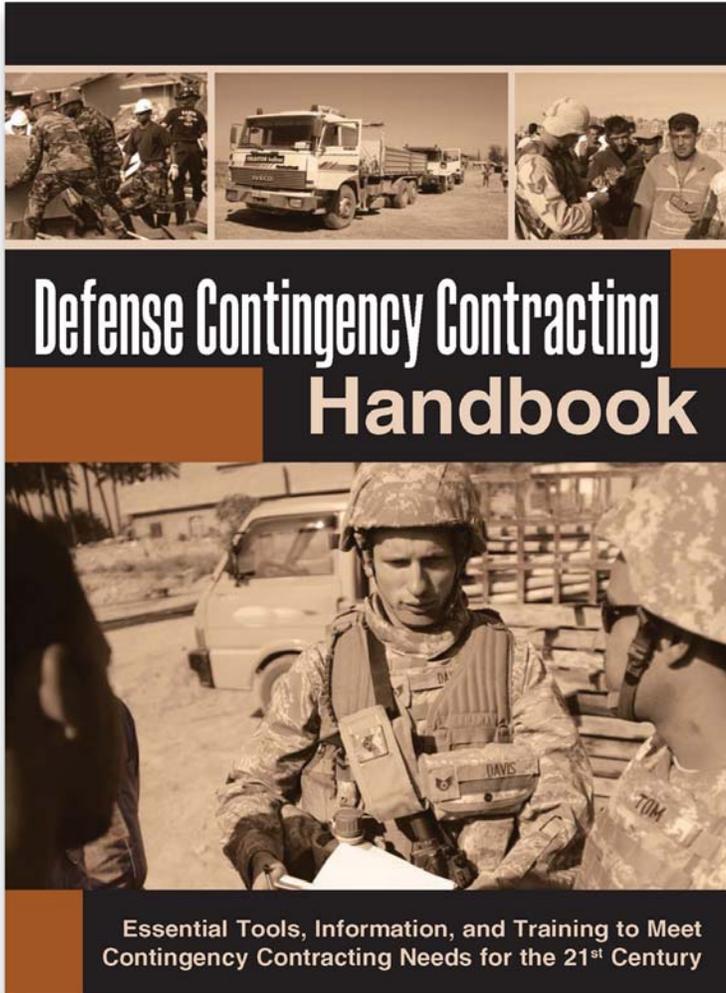


*If I had to sum up in a word what makes a good manager, I'd say decisiveness. You can use the fanciest computers to gather the numbers, but in the end you have to set a timetable and act.*

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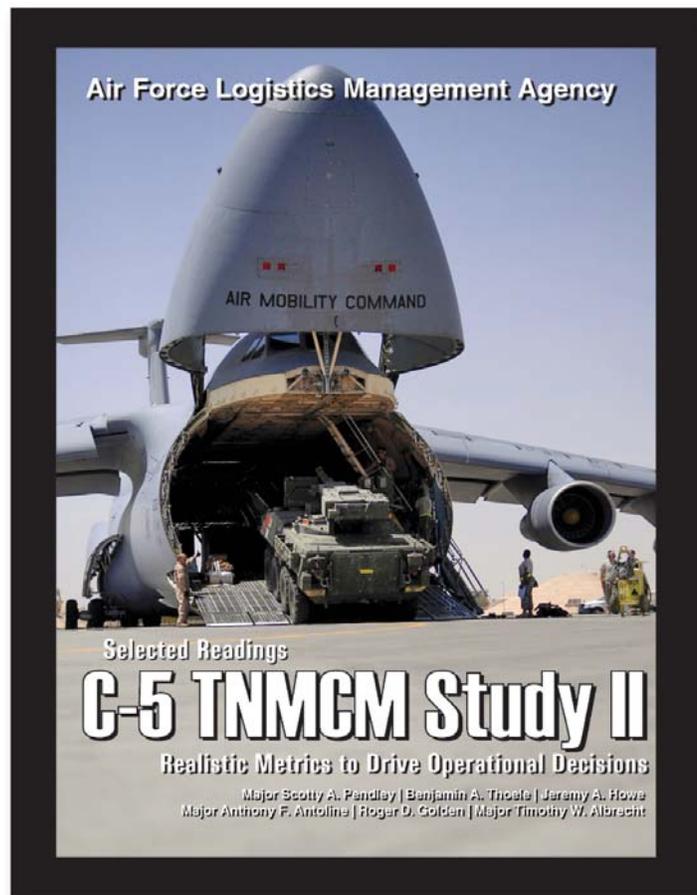
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In the article, Colonel Raymond P. O’Mara notes that in just one century, airpower has proven to be a tremendously valuable tool for decisionmakers. Early airpower theorists recognized that airpower was different than other forms of power and that, if used correctly, could decisively affect a conflict. The access it provides makes it a faster, more flexible, and more precise than any other form of military power. Airpower has redefined persistence and ability to mass through technological advances, further increasing airpower’s strengths.

Airpower’s greatest strength is its flexibility in application. Air forces can perform missions from strike to humanitarian relief, rapidly and precisely. The forces themselves are flexible

across the spectrum, able to shift from sanction enforcement to strike and back, using the same aircraft and aircrew. Airpower makes the best use of the human ability to adapt to a situation. Economically, these facts make air forces a tremendous value. Airpower provides the best return for every dollar spent across the defense spectrum. However, airpower is not a substitute for all other forms of power. It is best used in combination with the other tools available to decisionmakers in order to meet policy objectives. Each form of military power has strengths based upon its command of its physical medium. We are most effective when we employ each branch of our force to its strengths, with each supporting as necessary.

He concludes, airmen need to control airpower. Only airmen can truly understand the strengths and, equally important, the limitations of airpower. The danger of the limitations is that, if not minimized, they can severely reduce the advantages of airpower’s strengths. Airmen must be able to understand this, and express it to our decisionmakers.