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## Defense Industrial Base Assessment: United States Space Industry

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# Defense Industrial Base Assessment: United States Space Industry

## Final Report Summary, August 2007

This report focuses on the health and competitiveness of the United States (U.S.) Space Industrial Base, including the associated impacts of U.S. export controls. The Department of Defense, through the Under Secretary of the Air Force and the Space Industrial Base Council directed this study. An Air Force Research Laboratory, Materials and Manufacturing Directorate representative led an industry-government team and integrated the information gathered to prepare the study. The Department of Commerce's Bureau of Industry and Security developed and deployed the survey instrument and verified data provided by companies comprising the U.S. Space Industry. Team contractor support included the Universal Technology Corporation, Booz Allen Hamilton, The Tauri Group, Nortel Government Solutions which operates the Air Force Industrial Base Information Center, and Northrop Grumman Technical Services.

### Executive Summary

In October 2006, the National Security Space Office (NSSO) initiated this space industrial base assessment. The purpose was to assess the health, competitiveness, and ability of the space industrial base to continue support of national security space requirements. Specifically, the goals were to: (1) evaluate the industrial, economic, and financial factors affecting the U.S. Space Industrial Base; (2) determine if U.S. export controls and practices are impacting space prime contractors and 2<sup>nd</sup> / 3<sup>rd</sup> tier subcontractors; and (3) develop findings and conclusions for the Space Industrial Base Council.

A team approach was taken to conduct the study. The government team project lead and integrator was the Air Force Research Laboratory Materials and Manufacturing Directorate (Industrial Base Program). The Department of Commerce, Bureau of Industry and Security (BIS) developed, deployed, and verified data collection from a

survey of space industry companies, and the NSSO served in an oversight capacity.

The study involved a broad look at industrial base indicators and a detailed analysis of the BIS survey inputs. The BIS issued the survey electronically on 2 February 2007 and concluded it on 24 April 2007. The survey was sent to 274 space industry company/business units—the BIS received and verified 202 survey inputs for a 74% response rate. The team used tier levels aligned by typical business supply chain hierarchy to characterize the industry respondents. Prime contractors were Tier 1, subcontractors were Tier 2, and commodity suppliers were Tier 3. The study focused on three analysis streams including Global Marketplace / Competitiveness, U.S. Industry Health, and Export Control Impacts.

### Global Marketplace and Competitiveness

Foreign competition is real and growing. Moreover, there is some evidence that U.S. export controls give foreign competitors a perceived advantage in marketing to non-U.S. customers. Segments of the U.S. space industry feel threatened competitively and see export controls as the main factor undermining their ability to compete for sales in foreign markets.

#### *Sales and Market Share*

Total global and total U.S. space sales have increased, mostly in services, for the 2003-2006 period surveyed. However, the U.S. share of the global market decreased. For example, the U.S. share of satellite manufacturing has decreased 20% for all commercial communication satellites (COMSATs) sales and 10% for geosynchronous orbit COMSATs since 1999. Defense funding, domestic non-defense services, and ground equipment dominate U.S. space industry sales. Export sales represent less than 10% of total U.S. company revenues annually from 2003-2006.

### *Competition*

Industry's view on its competitiveness in the 2008–2012 timeframe is very positive with regard to the domestic market. In the foreign marketplace, there is a broad industry consensus on the difficulty in capturing sales. Industry identified strong foreign competition in spacecraft manufacturing, primarily in Europe, followed by the Asia-Pacific region. Companies also indicated U.S. export control requirements were the number one barrier to selling in foreign markets, followed by indigenous purchase preferences.

### **United States Industry Health**

Overall, financial viability for the U.S. space industry is good based on publicly available company annual reports, with 70% of the companies considered at low risk. Twenty-five percent of the companies were considered at moderate or high risk (primarily commercial space services and manufacturers of materials for launch systems). Aggregate Research and Development expenditures grew an average of 8% per year since 2003, primarily in Tiers 2 and 3 as an investment in innovation by firms to remain competitive. The space workforce has grown 22% over the last 4 years.

### **Export Control Impacts**

The industry survey captured information related to the added financial and labor costs associated with export sales, as well as, trends tied to processing International Traffic in Arms Regulations (ITAR) and Export Administration Regulations licenses. This analysis addressed process issues, cost of compliance, the unintended consequences of export controls, and suggested industry remedies.

### *License Process Issues*

Impacts of export control processes vary by tier with more pronounced impacts at lower tiers. Although less than 1% of ITAR license applications were denied from 2003–2006, the

reported loss of foreign sales due to ITAR was \$2.35 billion, mainly due to lengthy processing times. The average processing time for Technical Assistance Agreements has grown to over three months.

### *Cost of Compliance*

Export control compliance costs averaged \$49 million per year industry-wide. Compliance costs grew 37% during the 2003–2006 period with the burden of compliance significantly higher for firms in the lower tiers.

### *Unintended Consequences*

Foreign competitors leveraged their countries' more relaxed regulatory climate in marketing their products as "ITAR-free"—purportedly directly affecting U.S. companies' ability to compete. Some U.S. companies claimed the European Space Agency (ESA) directed European companies to find non-U.S. sources for space products, and ESA has also funded development of competing products to either avoid ITAR requirements, develop indigenous capabilities, or both.

### *Industry Remedies*

Almost 60% of the recommended industry actions were to update U.S. export control lists more often to accurately reflect current global technology and the competitive environment. Nearly 23% of respondents recommended specific actions for streamlining the U.S. export control licensing process. Some firms also made recommendations to reform the Congressional review process.

### **Findings and Conclusions**

The U.S. space industry has, in general, been healthy for the 2003–2006 period and very competitive domestically for both defense and commercial products and services; however, the global space market has changed significantly since 1998–1999 when the U.S. Government made major modifications to its overall export control

regulations for space-related products and services. The U.S. industry now faces strong and growing competition, primarily from European firms, and is losing market share in allied countries. Reportedly, ITAR has impacted U.S. competitiveness by encouraging other nations, in many cases our allies, to develop indigenous space capabilities and industries that now market globally.

Survey respondents reported that ITAR changes and the cost of export control compliance have directly or indirectly precipitated this increased competition. To maintain and enhance the U.S. position in the global space market, ITAR processes need to be frequently reviewed and adjusted, as appropriate. ITAR staffing at the U.S. Department of State and the Department of Defense's Defense Technology Security Administration should be reviewed and adjusted to ensure that personnel/funding levels align with the number of applications processed. Moreover, restrictions regarding sales to U.S. allies should be re-examined to reflect geopolitical and economic considerations.