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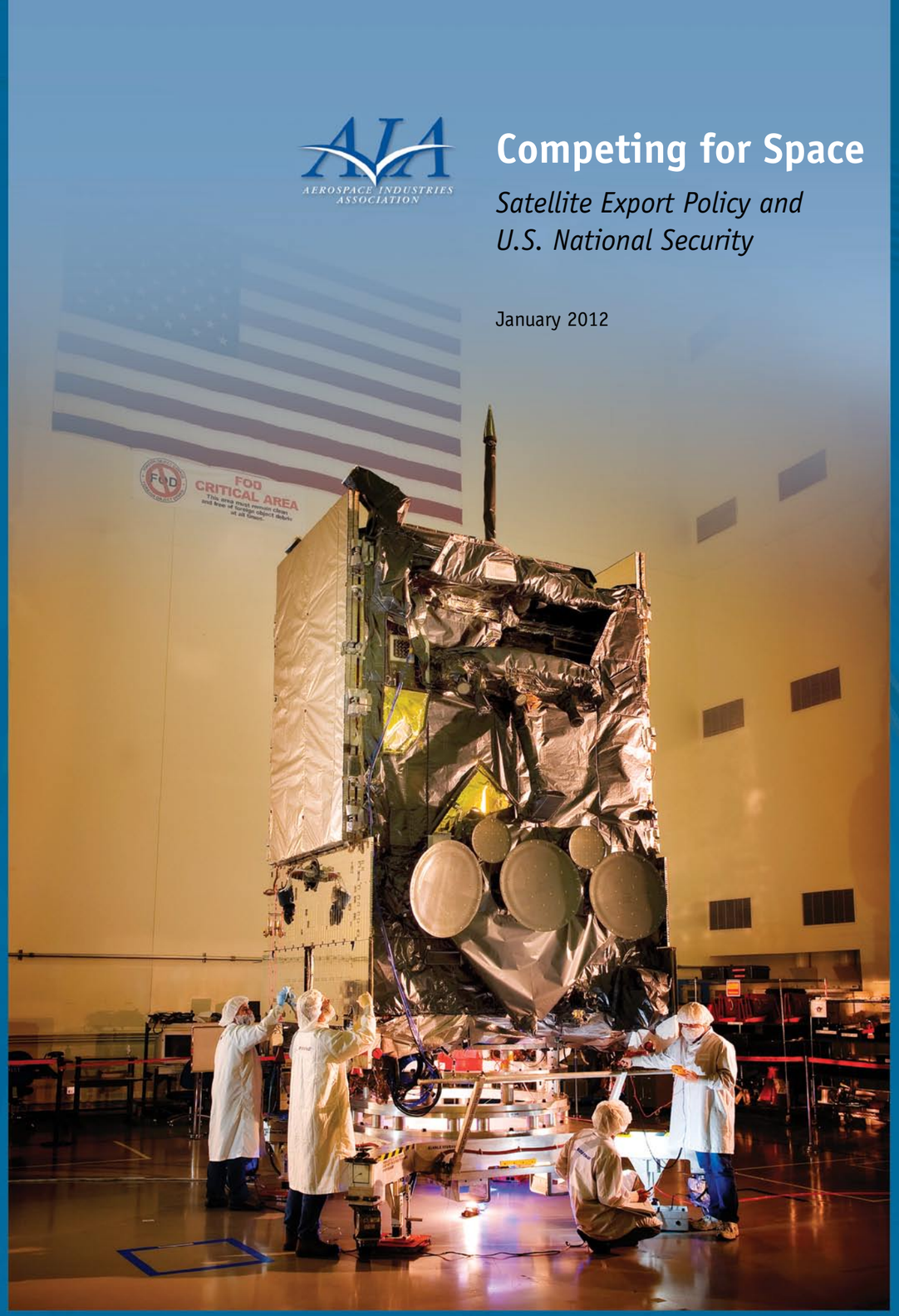
AEROSPACE INDUSTRIES ASSOCIATION

Competing for Space

Satellite Export Policy and U.S. National Security

January 2012



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Boeing WGS communications satellite *(courtesy of The Boeing Company)*

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Competing for Space:
Satellite Export Policy and U.S. National Security

The U.S. space industry currently faces dual threats; major reductions in federal aerospace spending and overly restrictive satellite technology export policies. If we continue on this path, without implementing the right reforms, our nation risks the scenario of a weakened space industrial base that is unable to fully meet U.S. national security needs or sustain our technological edge against foreign competitors.

This new paper, *Competing for Space: Satellite Export Policy and U.S. National Security*, clearly details the impact that inappropriate export controls and inadequate trade policies have had on the U.S. satellite industry. It also offers recommendations that will make U.S. firms more competitive in the global marketplace while at the same time protecting our national security. AIA believes that actions to modernize the export control system and enhance space trade among our allies are long overdue and will build a stronger, more robust U.S. satellite industry and supplier base that are able to meet the challenges associated with budget-constrained government customers.

We surveyed AIA members this year on the topic of export regulations and the message was clear: outdated export controls are hurting U.S. companies. Data supports this view. The U.S. held 73 percent of the worldwide share of satellite exports in 1995 – this fell to a staggering 25 percent by 2005.

Today, U.S. law requires export agencies to still look at a nut, bolt, or screw for a commercial satellite and an anti-tank missile through the same regulatory prism. Clearly, it's time for a change.

This paper sounds an urgent call to our national leaders to bolster opportunities for satellite exports by modernizing the U.S. export control system. AIA's recommendations center on the creation of market conditions that would allow U.S. firms to compete and win their fair share of international commercial space business – nothing more, nothing less.

Maintaining a strong industrial and supplier base is, in itself, a major national security issue; enabling this critical sector to compete internationally will become increasingly important as government spending is constrained. Modernizing the nation's export control system will result in a healthier space industrial base – allowing the United States to better focus on sensitive technologies and safeguard national security while creating high wage, high skill jobs.

For our national policymakers, promotion of satellite exports should rank among the most viable options to aid our economy, reinforcing U.S. preeminence in space and ensuring our aerospace industrial base remains second to none.

Marion C. Blakey

Marion C. Blakey

President and Chief Executive Officer

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Executive Summary

More than a dozen years ago, Section 1513(a) of the Strom Thurmond National Defense Authorization Act for Fiscal Year 1999 shifted export control jurisdiction of all satellites – including commercial communications satellites and their parts and components – from the Commerce Department, the agency responsible for licensing "dual-use" exports, to the State Department, the agency that monitors the licensing of munitions exports. The Section 1513(a) restrictions for satellite exports were put in place after the 1998 Cox Commission investigation that addressed concerns about Chinese access to U.S. high technology.

The shift, intended to protect sensitive space technologies and preserve U.S. preeminence, has since contributed to the loss of U.S. commercial satellite market share and fostered the competitiveness and capabilities of U.S. competitors abroad. Simply put, we have legislated away our nation's dominance in space.

The companies that comprise the domestic space industrial base developed the capabilities and services that have fueled the nation's economy and ensured U.S. technological dominance for generations. U.S. economic and technological leadership enabled the country to prevail in the Cold War and set the stage for U.S. global leadership in the 21st century. As we enter a new era of budget austerity and the threat of draconian sequestration cuts loom, failure to revise export controls could result in an ongoing loss of critical industrial base suppliers and pose an increasing risk to national security.

The Industry Speaks: 2011 AIA Member Survey

In 2011, AIA conducted a survey of its membership to assess the space industry's most recent concerns with current export regulations. Twenty member companies provided detailed responses to the survey, and this resulting report was reviewed and approved by AIA's Space and International Councils. These AIA member firms that provided detailed survey responses are a very comprehensive group accounting for over 75 percent of total 2010 sales by U.S. satellite and component manufacturers as identified by Space News' "Top 50 Space Industry Manufacturing and Services 2011 Report" – totaling more than $30 billion in 2010 sales. Key results include:

- More than 90 percent of respondents indicated a connection between export controls and eroding space industrial base capabilities. Respondents reported that U.S. export controls stand as barriers to domestic companies and create an advantage for foreign competitors.
- A significant number of respondents favor a major overhaul of U.S. export controls. Section 1248 of the Fiscal Year 2010 National Defense Authorization Act (NDAA) tasked the Departments of Defense and State with considering the prospect of moving appropriate space components from the United States Munitions List (USML) to the Commerce Control List (CCL). More than 70 percent of AIA survey respondents voiced concern that the Section 1248 report would help their firms only if it resulted in Congress authorizing the President to make substantial revisions to USML Category XV (space vehicles).
- 100 percent of respondents said that current export control restrictions have at least some adverse impact on their businesses.

"...Canadian TELESAT bought fifteen satellites from U.S. vendors prior to 1999 but acquired the last three from Astrium, stating to the U.S. vendor, 'We will not buy from the United States due to export controls.'"

–Institute for Defense Analysis *Export Controls and the U.S. Defense Industrial Base*

- Respondents noted that current policies have created the unintended consequence of fueling foreign competition for U.S.-dominated market share. The result: a dampening of sales opportunities to boost U.S. space technology innovation.
- More than 70 percent of respondents blamed ITAR for lost sales, with many small businesses characterizing losses as "significant."

AIA Recommendation: Modernize Satellite Export Controls:

- The U.S. government should expeditiously complete and release its review of space systems and components under consideration for removal from the United States Munitions List (USML).
- Congress should return authority to the administration for determining the export control jurisdiction of space system technologies.
- The U.S. government should exercise this renewed authority to remove low/no risk technologies from the USML and designate them for inclusion on the CCL, which allows for greater flexibility while preserving the appropriate technology transfer safeguards.

AIA Recommendation: Promote U.S. Space Industry Exports

- Selected space systems should receive support under the administration's National Export Initiative, which set the goal of doubling U.S. exports over the next five years.
- The Export-Import Bank should develop a greater focus on support for the U.S. satellite manufacturing sector. The use of credit guarantees should be considered for domestic projects if international competitors are backed by government guarantees.
- Additional resources should be provided for the Commerce Department to develop and support space export strategies. With adequate funding, the Commerce Department can help level the playing field for U.S. firms trying to compete and win in the global marketplace.
- International military sales have for decades strengthened the U.S. aerospace industry and enabled allies to cost-effectively acquire new capabilities. The Defense Department should encourage our allies to acquire U.S.-built spacecraft and systems.

Impact of the National Defense Authorization Act for FY 1999

The National Defense Authorization Act for Fiscal Year 1999 placed all satellite technologies on the USML after an investigation known as the Cox Commission. The Cox Commission investigated instances of high technology transfer to China. The Commission's report described instances where Chinese rockets failed during launch while carrying U.S. satellites manufactured by Space Systems/Loral and Hughes Space & Communications International, Inc. The U.S. firms were then asked by the Chinese to provide information relevant to the accident investigation. The Cox report explains how the U.S. firms provided information related to the Chinese rocket fairing and inertial control systems that could have been used to strengthen Chinese rocket – and ballistic missile – design capabilities. Resulting legislation severely restricted the transfer of commercial satellite information and technologies abroad – even to U.S. allies. Subsequently, U.S. global market share of satellite manufacturing revenue dropped precipitously. For more information on the Cox Commission and National Defense Authorization Act, please see the Appendix on page 11.

Introduction

The U.S. space industry currently faces major funding reductions from its core customer – the federal government–and at the same time current export policies limit it from conducting effective commercial business abroad. As small businesses and suppliers respond to this scenario by closing their doors, without reform, a weakened U.S. space industrial base may be unable to meet national security needs or sustain its technological edge against international competitors.

This AIA paper, *Competing for Space: Satellite Export Policy and U.S. National Security*, details the national security risks posed by inappropriate export controls and the absence of export-focused trade policies on the strength and competitiveness of the U.S. space sector. It is AIA's position that addressing both areas will enhance space trade among U.S. allies and lead to a stronger U.S. space industry and supplier base that is better equipped to meet the challenges of budget-constrained government customers.

Representing more than 90 percent of the U.S. aerospace industry, AIA works to educate government decision makers regarding issues critical to the country's economic strength, technological competitiveness and defense readiness.

Prepared by AIA's Space and International Councils, this report makes recommendations and includes findings from an AIA survey that provides new insight regarding the impact of current export restrictions on space industry manufacturers of all sizes.

A multitude of studies have previously provided findings and recommendations on ways to improve the U.S. space industry's competitiveness.*

In particular, a February 2008 study from the Center for Strategic and International Studies (CSIS) found that current export control policies adversely impact U.S. firms – especially in the 2nd and 3rd tier – and their ability to compete for foreign space business.

Today, the call for reform should be urgent. With federal space budgets under pressure and satellite export policies that remain inappropriate, U.S. industry – including many small to medium-sized businesses – may be forced to reduce or eliminate involvement in the space sector. This scenario, described in the AIA's 2010 report *Tipping Point*, could lead to a devastating loss of space capabilities essential to national security. While some commercial satellite prime contractors have found ways to mitigate the impact of current policies, lower tier suppliers remain threatened, along with the overall competitiveness of the U.S. space industry.

An August 2011 Futron analysis of the space industry in 10 countries stated: "Only the United States has shown four straight years of competitiveness declines… By contrast, Russia, China and Japan have improved their own space competitiveness by 12 percent, 27 percent and 45 percent, respectively."[2]

Stable domestic federal budgets are critical to the U.S. space industry – the export market is simply not large enough to assure its health. Without stabilizing government space budgets, developing effective export promotion strategies and modernizing the U.S. export control system, the United States faces the real and daunting possibility of losing its preeminence in space. The goal of this report is to convey the urgency to policymakers about the need for updated export policies that we believe will strengthen the U.S. space industrial base and enhance national security.

"I remain concerned that our own civil and commercial space enterprise, which is essential to the military space industrial base, may be unnecessarily constrained by export control legislation and regulation."

– *Gen. Kevin Chilton, former commander of U.S. Strategic Command and former space shuttle commander, during a 2009 hearing before the House Armed Services Committee.*[1]

* *A list of relevant studies and a brief summary of each can be found on page 18.*

Outdated Export Controls: Dulling Our Security Edge

U.S. defense technology can be a force multiplier on the battlefield–providing our troops with an edge over their opponents. Effective export controls can sharpen that edge. Export controls keep our most advanced technologies, weapons and equipment out of the hands of our adversaries. Unfortunately, the current U.S. export control system is not optimized to protect sensitive technologies while also maximizing the economic and national security benefits of international trade.

International technology trade helps U.S. aerospace and defense companies create jobs and fuel economic growth. The industry supports more than one million American jobs and according to AIA estimates, created a $51.2 billion aerospace trade surplus in 2010.

Global trade also strengthens U.S. alliances and improves our security posture by providing allies and friendly nations with the capabilities they need to work jointly or unilaterally in support of shared security goals.

The current U.S. export control system was designed decades ago to meet the demands of a Cold War-era, bipolar security environment. According to a 2009 report, *Beyond Fortress America*, prepared by the National Research Council of the National Academies, the U.S. export control system has not been updated to reflect post-Cold War conditions. The current system closes off business opportunities with foreign customers and increases costs for U.S. industry and small businesses. This ultimately weakens the industrial base and its ability to support the nation's security and economic interests.

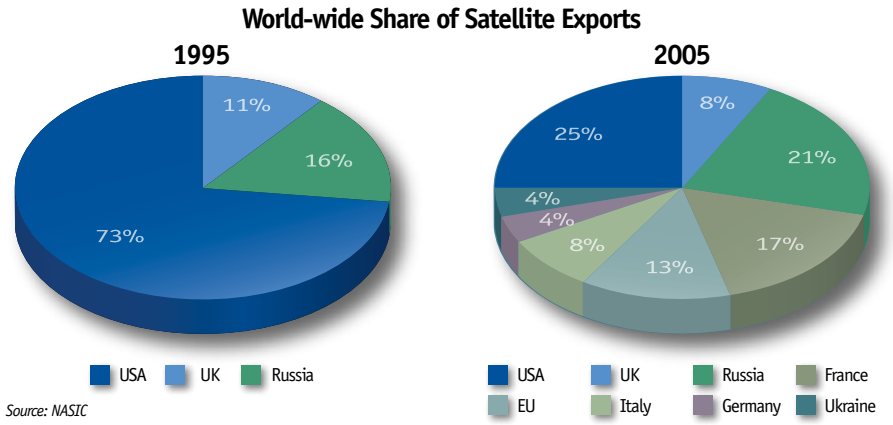


Chart from CSIS Study Showing Declining U.S. Satellite Exports[3]

These challenges are particularly acute in the space sector. Numerous studies have highlighted the negative impact of excessive export controls on the American space industrial base. These studies focus on the impact of Section 1513(a) of the Strom Thurmond National Defense Authorization Act for Fiscal Year 1999. This legislation shifted export control jurisdiction of all satellites–including commercial communications satellites and their parts and components–from the Commerce Department, the agency responsible for licensing "dual-use" exports, to the State Department, the agency that monitors the licensing of munitions exports through the U.S. Munitions List (USML).[4] This move placed satellites under the International Traffic in Arms Regulations (ITAR), government regulations that control the export of defense-related articles. The Section 1513(a) restrictions for satellites export were put in place after the 1998 Cox Commission investigation of Chinese access to high technology.

While the move was intended to protect sensitive space technologies and preserve American preeminence, what resulted was a widespread loss of commercial satellite market

share among U.S. manufacturers as illustrated by a 2008 report by CSIS (see chart on page 2). During a 2009 hearing before the House Armed Services Committee, General Kevin Chilton, former commander of U.S. Strategic Command and NASA astronaut stated, "I remain concerned that our own civil and commercial space enterprise, which is essential to the military space industrial base, may be unnecessarily constrained by export control legislation and regulation."[5]

In addition, an unclassified 2010 study by the National Reconnaissance Office (NRO), the U.S. agency that operates many of America's most sensitive satellites, found that smaller second and third-tier satellite vendors have "insufficiently diverse business"–likely due in part to current export restrictions. The NRO study found that such a limited market impacts the supplier base most severely, ultimately with a negative impact on U.S. security programs. Specifically, the study pointed out that, "The limited supplier base may compromise long-term availability of some critical components and can negatively affect current program schedules."[6]

Other cases of a weakening space industrial base can be found by reviewing the Defense Production Act (DPA) Title III Program (Title III), a program that provides funding streams in order to preserve domestic military supply chain capability. It is worrisome to note that at least 13 out of 20 current DPA Title III projects are aimed at supply chain materials necessary for the U.S. space program.[7] Current Title III programs related to the space sector include: readout integrated circuits that support sensitive U.S. surveillance satellites; radiation hardened electronics that are used for missile defense and space applications; and Lithium Ion batteries required for satellite power.[8]

"The (current export control) system has the effect of discouraging exporters from approaching the process as intended. Multinational companies can move production offshore, eroding our defense industrial base, undermining our control regimes in the process, not to mention losing American jobs. Some European satellite manufacturers even market their products as being not subject to U.S. export controls, thus drawing overseas not only potential customers, but some of the best scientists and engineers as well."

– *Former U.S. Secretary of Defense Robert Gates. Speech on Export Control Reform before Business Executives for National Security. April 20, 2010.*[9]

Supporting the Industrial Base

The U.S. space and defense industrial base–a collection of specialized manufacturing firms and innovative small businesses–is responsible for the design and development of space systems and components for commercial customers and the U.S. government. These companies are unique: their major customers are agencies of the U.S. government such as NASA, the Defense Department and those in the intelligence community. With relatively few opportunities to compete on contracts that can take years to complete, the industry's high-stakes business development paradigm has been referred to as "betting the ranch on winning in Vegas."[10] But as government spending on space and security programs decreases, contraction within industry is inevitable. The result will mean less competition and innovation, and reduced capabilities to produce systems needed by the government. Ultimately, some firms may fail outright. U.S. policymakers can counteract this trend by removing existing barriers to new commercial opportunities for American space and defense manufacturers.

"...there is a danger here that export controls, if not reviewed and refined, can in fact create the opposite kind of a situation here, where our industry is no longer competitive; therefore our industry is declining; therefore their ability to provide for us is also declining."

– *General C. Robert "Bob" Kehler, Commander, United States Strategic Command*[11]

One major barrier to U.S. export competitiveness is the presence of all satellites and related components (however innocuous) on the USML, which forces industry and its suppliers to rely more and more on diminishing domestic federal programs in order to remain alive. Foreign competitors have used our own policies against us by marketing their satellites as devoid of U.S. parts and components – "ITAR Free." Meanwhile, efforts to promote exports within the Obama administration, like the National Export Initiative, are not adequately optimized to support exports of commercial U.S. satellite technology.

AIA Survey Results

"In the process of protecting technology, the United States has created an incentive for foreign suppliers of space systems hardware to develop competing technology. In addition, other space agencies are motivated to develop their own technologies, rather than buying U.S. technology, when their source for technology in the United States is not always available due to ITAR licensing issues."

– AIA Member

The 2011 AIA member survey referenced in the Executive Summary offers new insights about the challenges associated with the current export regime. The survey provides a valuable snapshot regarding the cost of the status quo for the industry, U.S. jobs and our security and economic interests.

Do you see a connection between export controls and space industrial base capabilities?

More than 90 percent of respondents saw some connection between export controls and eroding space industrial base capabilities. Respondents reported that export controls present barriers to U.S. companies, which our foreign competitors do not face.

One small U.S. space business stated that due to ITAR barriers, their "market share and profitability has been reduced significantly."

Another firm cited that "ITAR controls are hurting the competitiveness of U.S. suppliers in areas where there is similar technology available in other parts of the world." One business cited ITAR controls as restricting firms from selling to international satellite builders and also added that foreign market protection exacerbates the challenge.

Their statements reflect a threat to the profitability and investment environment that encourages U.S. companies to research and develop new capabilities.

How would the U.S. government's interim report on NDAA Section 1248 help your business?

The Fiscal Year 2010 National Defense Authorization Act (NDAA) – signed into law in 2009 – included Section 1248, which tasked the State Department and the Defense Department to evaluate the national security risks of removing space components from the USML. An interim report was released in 2011.

More than 70 percent of respondents voiced concern that the 1248 report would only help if it results in Congress authorizing the President to make substantial revisions with the USML Category XV (space vehicles). Among space system suppliers, the predominant interest was to address inappropriate restrictions on "specifically designed or modified systems, or subsystems, components, parts, and accessories."

The current export regime results in firms treating small components with the same level of scrutiny as the completed full assembly of a space system. For example, the full extent of

export control scrutiny must be applied to items such as special fasteners, sheet metal brackets, composite molds and other components. Although unique for space, these items are not critical technologies and their export does not warrant USML level pre- and post-shipment compliance measures.

Do current ITAR regulations adversely impact your business?

All respondents mentioned that current export control restrictions had some adverse impact on their businesses.

One AIA member noted, "The impact of the ITAR upon business operations is ever-present. Nearly all program data provided to nearly any country requires some ITAR authorization. Accordingly, nearly all of the literally thousands of exchanges/exports necessary in the course of an average satellite program must be conducted under a license or agreement. Even routine, non-sensitive low-level exchanges with the closest allies, because they relate to what is considered a 'defense article,' become defined as 'technical data.'"

ITAR licenses, recordkeeping requirements and increased potential for delays magnify the risk and cost of competition for U.S. businesses. Ultimately, these circumstances damage the reputation of U.S. industry, and reduce predictability and profitability for the U.S. exporter, thus threatening the health of the domestic space industrial base.

Another firm stated, "The transfer of commercial communications satellite components to the CCL would provide welcome relief to the U.S. commercial satellite sector and increase our firm's competitiveness. Such a shift would reduce our European competitors' significant marketing advantage of being able to offer 'ITAR-Free' satellites free of U.S. components."

A variety of firms cited instances where, due to ITAR satellite, component restrictions and the cost of compliance, they made the decision to avoid certain non-U.S. markets.

Opportunities Lost to Non-U.S. Competitors:

- Germany currently operates TerraSAR-X, a commercial Earth observation radar satellite for which there is no U.S. equivalent. According to a 2009 *Space News* report, the U.S. National Geospatial-Intelligence Agency (NGA) awarded contracts to three companies to provide commercial radar satellite data, each of which will rely on foreign-owned satellites because no U.S. firm operates spacecraft collecting the imagery sought by the NGA.
- U.S. policy currently limits commercial earth imagery sales to those offering a resolution of no less than 0.5 meter Ground Sample Distance, while foreign competitors are developing the commercial capability to exceed that resolution for systems that will be offered to the global marketplace.

Do you see a connection between foreign competition and the current state of U.S. space industrial base capabilities?

Respondents noted that current policy clearly had the unintended consequence of fueling the development of foreign competition for what had previously been U.S.-dominated market share.

One respondent firm noted that in the past 10 years, the European Space Agency (ESA) has attempted to develop a European unfurlable mesh antenna reflector. While the effort has yet to be successful, the motivation for ESA still exists as long as the United States restricts exports of its own mesh antenna technology.

Has your company lost sales due to ITAR-free marketing by foreign competitors? Could you quantify the value of the lost sale?

More than 70 percent of respondents described lost sales due to ITAR. Specific sales opportunities in Europe, Canada, Asia and other parts of the world were described. Many small businesses cited a "significant" loss of sales.

One small firm attributed annual sales losses of $5 million annually to the current export control regime. While other companies found the losses difficult to quantify, most agreed that the current export regime was hurting their competitive posture. They also stated that they are forced to dedicate significant resources to managing ITAR compliance that would otherwise go toward reinvestment.

Another mid-size firm remarked that the ITAR-free positioning of potential customers in Europe and Israel for their components results in lost revenue of between $500,000 and $2 million for every ITAR-free satellite manufactured. Their customers are also beginning to identify ITAR control in writing as a negative consideration in the bid and proposal process

One respondent specifically referenced a lost sale opportunity of satellite components – non-sensitive components available on the global market – where ITAR delays and restrictions resulted in a foreign firm deciding to do business with a non-U.S. competitor

According to the Kyodo news agency, in early 2011 the Japanese government was considering the purchase of a U.S. missile warning satellite. This capability would be useful to monitor missile launches from North Korea as well as for disaster monitoring purposes. With the right export reforms and U.S. government backing, such a move would bolster both U.S. and Japanese security while also supporting a healthy U.S. industrial base.

– *Associated Press, "Japan mulling purchase of defense satellite from U.S.," July 9, 2011.*[12]

Recommendations

Revise Satellite Export Controls

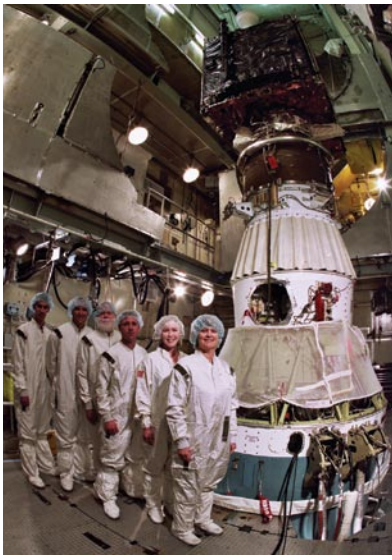
Instead of preventing other countries from developing space capabilities, barriers to export for U.S. satellite products have prompted numerous countries to create indigenous space capabilities and leverage their growing market share to support research, development and innovation. As U.S. global market share declines, many domestic companies – particularly second and third-tier suppliers – are increasingly reliant on sales to the U.S. government, or are considering abandoning their space business altogether. In the absence of a healthy, cutting-edge, space industrial base in the United States, our government may be forced to rely on non-U.S. suppliers for key space system components.

Without meaningful steps to stabilize government space budgets, modernize the export control system generally and enhance space trade among our allies, the United States faces a real and daunting possibility of losing its preeminence in space, along with its ability to compete in the global space industry. In order to prevent the loss of space industrial capabilities needed for U.S. security, AIA urges the Departments of Defense and State to complete expeditiously a final response to the National Defense Authorization Act's Section 1248 that directs a review of moving satellite and space-related items off the USML.

AIA strongly urges Congress to pass legislation that would return discretion to the President for the removal of satellites and related components from the USML – subject to restrictions, Congressional oversight and other measures appropriate for safeguarding U.S. national security.

AIA Recommendations:

- **Promptly complete and release the U.S. government review of the space systems and components considered for removal from the USML.**
- **Congress should return authority to the President for determining the appropriate U.S. agency for export control jurisdiction over satellite and space technologies.**
- **The U.S. government should use this renewed authority to review and approve the movement of low/no-risk technologies from the USML to the Commerce Control List (CCL). The CCL, maintained by the U.S. Commerce Department's Bureau of Industry and Security, is the more appropriate regulator for low-risk commercial technology exports.**



Preparing a GPS satellite for launch *(courtesy of U.S. Air Force)*

Support the U.S. Space Industry by Promoting Exports

While the Obama administration's 2010 National Space Policy recognizes the importance of international space collaboration, it lacks a focus on the space and satellite industries that contribute to an "increased transparency and stability among nations and provide a vital communications path for avoiding potential conflicts."[13]

AIA believes that a stronger partnership between the industry and government would create new opportunities for U.S. exporters. During an AIA-sponsored government and industry forum in 2011, one of the most repeated requests from industry was for reform of the U.S. export control system. There were also calls from industry for the U.S. government to advocate more aggressively in support of American space industry exports, toward the goal of a level playing field in the global marketplace.

International competitors today can count on government resources and advocacy for critical business pursuits. In 2010, the French-Italian firm Thales Alenia Space won a $2 billion contract to build more than 60 satellites for U.S.-based Iridium after aggressive action from the French export credit agency, COFACE. COFACE agreed to cover 95 percent of a $1.8 billion facility that would ensure most of the financing for the project.[14] It was reported that because the U.S. manufacturer competing against Thales was technically making a domestic sale, it was ineligible for U.S. Export-Import Bank credit guarantees.

As a bulwark against foreign government influence, some in industry have advocated the development of a U.S. government-wide strategic plan for federal export promotion and export financing programs for space systems. This type of plan would encourage international space cooperation in a way that sustains U.S. market leadership while giving international customers access to the best technology at the best available price.

The Wideband Global SATCOM (WGS) is a useful model for understanding how this type of cooperation can work. The WGS is a satellite communications system planned for use in partnership by the U.S. Defense Department and the Australian Department of Defence. The Australian government is currently funding a sixth WGS satellite in return for a portion of the satellite's bandwidth. The U.S. Air Force is also seeking a ninth WGS satellite to be financed in part through international agreements.

Additional cooperation of this type can support a robust U.S. space industrial base, strengthen the capacity of our global partners and is ultimately a win-win for both the United States and its allies.

AIA Recommendations:

- **Selected space systems should receive attention under the administration's National Export Initiative, which set the goal of doubling U.S. exports over the next five years.**
- **The Export-Import Bank should be activated to support more effectively the U.S. space manufacturing sector. The use of credit guarantees should be considered for domestic projects if international competitors are backed by government guarantees.**
- **Additional resources should be provided for the Commerce Department. With adequate funding, the Commerce Department can help level the playing field with additional support to U.S. firms trying to compete and win in the global marketplace.**
- **International military sales have for decades strengthened the U.S. aerospace industry and enabled allies to acquire new capabilities cost-effectively. The U.S. Defense Department should encourage our allies to utilize U.S. spacecraft and systems.**

ATK ORS-1 satellite *(courtesy of ATK)*

Conclusion

The U.S. space industry and its supplier base, which provides our nation with critical national security capabilities, survive in large part because of U.S. government programs. In light of significant spending constraints faced by the federal government, there is a renewed sense of urgency that the United States should reevaluate its export control system and trade promotion strategies in order to strengthen both our space industrial base and national security.

Numerous government, industry and research institutions have found that current export control policies negatively impact our U.S. businesses and national security.

While many members of Congress remain rightly concerned about ensuring sensitive U.S. satellite technology not fall into the wrong hands, many are also beginning to recognize the flaws in the current system that hamstrings the U.S. space industrial base. Members of Congress including long-time champion of export control modernization Rep. Howard Berman (D-Calif.), have become more and more interested in trying to find a new approach that balances technology protection while also allowing U.S. firms to compete abroad.

As Rep. Michael Turner (R-Ohio) put it during a 2009 House Armed Services Committee Strategic Forces Subcommittee hearing, "I hope, in a bipartisan way, our committee can work together on a pragmatic approach that strikes a balance between protecting our unique, advanced space technology and capabilities and promoting a viable defense industry that competes in the global marketplace."[16]

Other members of Congress have called for changes as well. Rep. C. A. "Dutch" Ruppersberger (D-Md.), Ranking Member on the House Permanent Select Committee on Intelligence, has been an outspoken advocate for satellite export reform, stating that "Now our American manufacturers are limited in what they can sell anywhere, and it's really become a huge business in Europe to circumvent ITAR... And consequently we're at a great disadvantage. We can't sell what we need to, and right now Europe is taking advantage of this and it's hurting us."[17]

"It is time we undo the damage this restriction has unintentionally created for U.S. business, U.S. competitiveness, and U.S. national security. It is critical that we resolve this matter and prevent China from overtaking U.S. satellite manufacturers. I'm proud to have worked with my colleagues on both sides of the aisle to develop this common sense solution..."

– Rep. Howard Berman (D-Calif.)[15]

U.S. satellite communications ground station *(courtesy of Department of Defense)*

"The United States is on the verge of ceasing to be a space superpower. And most of the damage that has brought us to this point has been self-inflicted by our own excessive laws and regulations."

– *James Carafano, Senior research fellow for national security at the Heritage Foundation*[18]

Rep. Dana Rohrabacher (R-Calif.), who has backed legislation in support of satellite ITAR reform, has said, "America needs a vibrant aerospace and space technology industry. Everyone agrees ITAR reform needs to happen. We need to make sure that our high tech exports aren't strangled by regulations."[19] In addition, in an August 2011 op-ed in the Washington Examiner, James Jay Carafano of the conservative Heritage Foundation argued that America was "forfeiting" its leadership in space due to excessive export controls. Carafano states that when satellites were moved to the USML, "In one stroke, Congress had managed to boost both our foreign satellite manufacturing competitors and China's commercial space industry."

American satellite manufacturers produce some of the most advanced technologies and highest quality products on the planet. Unfortunately, superior products alone will not enable U.S. industry to be the unquestioned market leader if industry's ability to compete is constrained by inappropriate regulations and is not supported by U.S. trade policies. It is the recommendation of AIA and many others that removing inappropriate market restrictions and providing critical U.S. government export promotion will position our satellite and space sector manufacturers to once again be second to none.

Appendix

Background and current status of export reform efforts

As former Defense Secretary Robert Gates remarked in an April 2010 speech, "The problem we face is that the current system – which has not been significantly altered since the end of the Cold War – originated and evolved in a very different era, with a very different array of concerns in mind."[20] During his 2011 Senate Armed Services Committee confirmation hearing, current Defense Secretary Leon Panetta also expressed similar views on export controls.[21] To help policymakers more fully understand the current landscape of export control policies, it is important to review what led us to this point.

The current export control system was designed in the Cold War era when the United States was ramping up spending in order to become the global leader in innovation and high technology. During this period, from 1961 to 1989, U.S. spending on national security space alone rose from under $10 billion annually to over $40 billion.[22] For much of this time it was a bi-polar world – the United States and the Soviet Union had the only major space programs, and stringent controls were essential to preventing our adversaries from benefiting from U.S. technological innovation. U.S. industry did not require exports for their survival as government spending provided ample business for both large and small firms.

With the end of the Cold War near, U.S. leaders – representing both Republican and Democratic administrations – began to consider changes to the export framework that had dominated the post-war era. Presidents Ronald Reagan, George H.W. Bush and Bill Clinton all took steps to facilitate the export of U.S. commercial satellites, providing growth opportunities for the U.S. space industry.

In 1988, President Ronald Reagan lifted a ban on the use of Chinese launch vehicles for U.S. commercial communications satellites. In 1992, during the administration of George H.W. Bush, the State Department transferred jurisdiction of some commercial communications satellites to the Commerce Department. From 1989 through 1996 Presidents Bush and Clinton made multiple "national interest" determinations allowing launches of commercial communications satellites on Chinese rockets and, eventually, Russian and Ukrainian launch vehicles.[23]

1998 Cox Commission Investigation

After a series of scandals related to allegations of Chinese access to U.S. high technology were uncovered in the mid-1990s, Congress created a committee in 1998 known as the Select Committee on U.S. National Security and Military/Commercial Concerns with the People's Republic of China, commonly referred to as the "Cox Commission" in reference to its chairman, Rep. Christopher Cox.

The Cox Commission was responsible for investigating these incidents and ultimately

Excerpt from Cox Commission Report on Intelsat Satellite Loss:

The following excerpt from the Cox Commission shows that the loss of the Intelsat 708 satellite in a Chinese rocket crash had a minimal impact on U.S. security. In fact, what the Cox Commission was most concerned about was that U.S. firms gave the Chinese advice on rocket technology after the mishap.

The Intelsat 708 Encryption Boards Were Never Recovered

http://www.house.gov/coxreport/pdf/ch6.pdf

The Intelsat 708 satellite carried two FAC-3R encryption boards, one in each of its command processor units. These boards are considered Controlled Cryptographic Items by the Department of Defense, and the algorithm is classified "Secret." Encryption boards are used to protect the command and control links between the ground station and satellite. They are required even on satellites that carry unclassified U.S. Government communications traffic. These devices do not encrypt the communications traffic that is otherwise processed by the satellite payload.

Shortly after the Intelsat 708 launch failure, Loral's Communications Security custodian reported to the Department of Defense that the status of the encryption boards was being changed to "destroyed." This was not seen as unusual by Department of Defense, however, because its prescribed policy requires that encryption boards be reported as "destroyed" when they are launched into orbit. The Department of Defense did not require Loral to produce any evidence that the FAC-3R boards were in fact destroyed.

After recovering debris from the crash site, Loral engineers grossly estimated the percentages of various subsystems and components that had been recovered. In that estimate, Loral engineer Muhammad Wahdy estimated that 30 percent of the command processors were recovered. Loral personnel then packaged the debris and shipped it to Palo Alto, where engineers examined the debris to specifically determine if the encryption boards were recovered. That examination determined that the FAC-3R boards were not, in fact, recovered from the crash site.

The two FAC-3R encryption boards used on the Intelsat 708 satellite were mounted near the hydrazine propellant tanks and most likely were destroyed in the explosion. Additionally, the two FAC-3R boards had no distinguishing markings other than a serial number, making it extremely difficult to locate them amongst the crash debris. It is not known, however, whether the FAC-3R boards were recovered by the PRC. If they were, it would be difficult for the PRC to determine the cryptographic algorithm that was imprinted on them. Reverse-engineering of a damaged board would be even more difficult. Any successful reverse-engineering would be resource intensive for the PRC. If the PRC were able to determine the cryptographic algorithm contained on the FAC-3R board, it would gain insight into the state of the U.S. military in the 1960s, although such algorithms remain in use today.

When the National Security Agency designs and recommends algorithms for use in equipment, it assumes that the equipment will be lost or compromised sometime during its operational lifetime. The National Security Agency relies on unique cryptographic keys for each separate satellite to keep command and control links secure. Because the FAC-3R boards on Intelsat 708 were uniquely keyed, the National Security Agency remains convinced that there is no risk to other satellite systems, now or in the future, resulting from having not recovering the FAC-3R boards from the PRC.

produced a bipartisan report (a declassified version was released in May 1999). The report detailed instances of Chinese espionage and attempts to obtain information on U.S. nuclear weapons.

The report also examined Chinese launch failures during the Bush and Clinton administrations. In these instances, Chinese rockets carrying U.S. commercial communications satellites failed and the U.S. firms that manufactured the satellites were asked to provide information in support of the Chinese accident investigation. The report explains how the U.S. firms provided information related to the Chinese rocket fairings and inertial control systems that could have been used to strengthen Chinese rocket – and ICBM – design capabilities.

The Cox Commission's investigation led to the inclusion of a provision – Section 1513 – in the Strom Thurmond National Defense Authorization Act for Fiscal Year 1999. Section 1513 moved control of all satellites and related technologies to the State Department's United States Munitions List (USML), thereby making their export subject to more stringent controls as required under section 38 of the Arms Export Control Act.[24]

The report details that after the 1996 Chinese launch failure with the Intelsat 708 satellite on board, the commercial communications satellite's electronic encryption boards were not recovered. It concludes that these boards were mounted close to the satellite's hydrazine propellant tanks and were likely completely destroyed. The Commission specifically noted that, "…the National Security Agency remains convinced that there is no risk to other satellite systems, now or in the future, resulting from having not recovering the FAC-3R boards from the PRC.382."[25]

The Strom Thurmond National Defense Authorization Act sought to ensure that U.S. space business activity not harm national security and most of its provisions related to the Cox Commission aimed to restrict the proliferation of missile technology to China. While the intent of those involved in the Cox Commission was to prevent export of missile and militarily sensitive technologies to China, the result was that all satellites – even commercial communications satellites and their component parts – are now part of an outdated system of export controls that hampers export even to close allies…a system that former Defense Secretary Gates has described as failing at the "critical task of preventing harmful exports while facilitating useful ones."[26]

Impact of the National Defense Authorization Act for FY 1999

Not long after all satellite technologies were placed on the USML, the U.S. global market share of satellite manufacturing revenue dropped precipitously.[27] Many began to argue that changes in the law had gone too far. The Cox Commission was largely concerned about the transfer of sensitive high technology to China. However the resulting legislation ended up severely restricting the transfer of commercial satellite information and technologies abroad – even to U.S. allies.

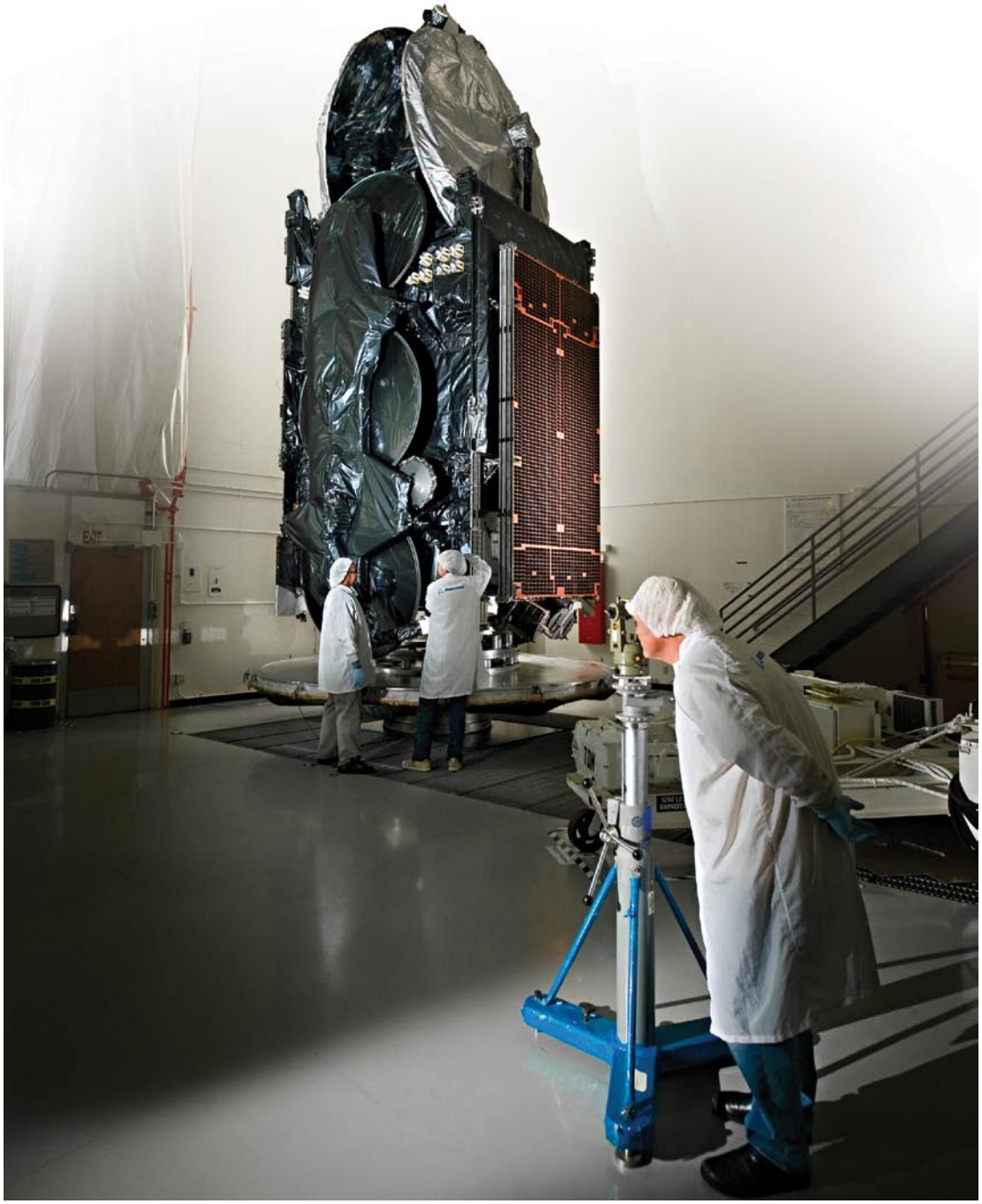
Like all technologies captured on the USML, commercial satellites and related components are subject to a "one size fits all" control regime. Nuts, bolts, screws, hoses and other components indistinguishable from their commercial counterparts now require a State Department export license that prohibits retransfer to any party not accounted for in the

original license and requires ongoing tracking of access to such items, no matter how innocuous. In contrast, foreign competitors are able to ship parts and components under minimal or no scrutiny because their governments treat them as commercial commodities. This lack of a level playing field creates compliance costs and delays that affect the competitiveness of U.S. manufacturers without commensurate benefit to U.S. national security interests.

Such drastic measures may have even been unintentional to many in Congress responding to the Cox Commission. In fact, a review of the Congressional Record during the passage of the Strom Thurmond National Defense Authorization Act shows that Congress was mainly concerned about protecting sensitive nuclear, missile and intelligence satellite technology. Yet, by placing commercial satellite technology on the USML, Congress inadvertently put a clamp on the ability of U.S. industry to compete overseas for non-sensitive commercial satellite sales. Today, such outdated restrictions have unintentionally damaged U.S. security by impairing the vitality of the U.S. space industrial base.

In 2008, after years of concern voiced by the space industry that the law required unnecessary regulation of benign technology, the Center for Strategic and International Studies (CSIS) released a report that laid out how U.S. space firms were struggling under needlessly restrictive export regulations. According to the report, the United States is the only country today that classifies commercial communications satellites as munitions. Further, outdated export controls were cited as the number one barrier to foreign markets by industry. In the report CSIS shows that the United States held 73 percent of the worldwide share of satellite exports in 1995 – this fell to a staggering 25 percent by 2005.

Lockheed Martin communications satellite *(courtesy of Lockheed Martin Corporation)*



Boeing DirecTV-12 satellite
(courtesy of The Boeing Company)

One of the most disturbing trends identified by the CSIS study was that export controls are particularly suffocating to the 2nd and 3rd tier of the space industry. The study detailed hundreds of millions of dollars in lost sales attributed to ITAR licensing.

Multiple reports and other public statements on satellite export restrictions paint a clear and comprehensive picture that the National Defense Authorization Act for Fiscal Year 1999 went too far (for a comprehensive guide to these studies, see the appendix section of this report).

As U.S. firms became restricted by heavy export control restrictions, their ability to access global markets decreased, thereby limiting available funds to invest in new commercial systems. At the same time, European space investments actually increased to develop new commercial satellite systems. According to the Commerce Department, "there has been little innovation in satellite busses by U.S. manufacturers after the change in export controls in 1999."[28] While some of this data may reflect fluctuations in the market for GEO satellites, it is possible to argue a relationship between changes in the law and U.S. satellite market share.

The impact on the industrial base may have not been realized due to a post-9/11 increase in government funding for space programs that sustained much of the industrial base. However, with current federal budgets projected to be flat or declining in many areas, the need to find ways to strengthen our commercial satellite sector while maintaining stable investments in federal space programs could not be greater.

Congress has begun to recognize the necessity of legislative action. In 2010, Rep. Howard Berman (D-Calif.) introduced H.R. 2410 with the goal of providing flexibility to commercial satellites and related components under the USML. In 2011, Rep. Berman also introduced H.R. 3288, Safeguarding United States Satellite Leadership and Security Act of 2011, to continue efforts to strengthen and modernize satellite export controls.

Export Reform in the Obama Administration

Calls to reform the export control system are made not just by the space industry, but by a broad range of technology sectors. To help modernize what most regard as an antiquated and largely ineffective system, President Barack Obama, in August 2009, directed an interagency review of the U.S. export control system writ large. This review would take a comprehensive look at weapons and dual-use technologies. The administration's goal was to determine how to strengthen national security and competitiveness of key U.S. manufacturing and technology sectors by focusing on current threats, as well as adapting to the changing economic and technological landscape that provides security, economic and foreign policy benefits from technology trade.

The administration's review determined that the current U.S. export control system – for all technology sectors – is "overly complicated, contains too many redundancies, and, in trying to protect too much, diminishes our ability to focus our efforts on the most critical national security priorities."[29] As a result, the administration launched an effort known as the Export Control Reform Initiative (ECR). This ongoing effort will review the current U.S. export control system and make changes that are "designed to enhance U.S. national security and strengthen the United States' ability to counter threats such as the proliferation of weapons of mass destruction."[30]

The U.S. government currently maintains two different primary control lists, the Commerce Control List (CCL) and the United States Munitions List (USML). The lists are administered by two different departments and hold different structures, different levels of specificity and different definitions. The CCL notably offers varying levels of control requirements while the USML has a "one size fits all" approach demanding significant pre- and post-shipment compliance activity. The CCL also itemizes technologies on the list while the USML uses broad definitions of what is captured on it.

The administration plans to conduct the ECR Initiative in three phases. Phase I seeks to develop the methodology for building new control lists that are "positive lists," which describe controlled items using objective criteria (horsepower, speed, accuracy, or other precise descriptions). In phase II, the administration will restructure the USML and CCL into lists that apply varying degrees of control depending on the item. A new section of the CCL will be established to hold essentially commercial/dual-use formerly USML items. A "bright line" process will end jurisdictional disputes over an item by clearly identifying

whether that item should be on the USML or CCL. These initial phases will be conducted by the Executive branch with Congressional consultation.

As part of phase III both the USML and the CCL will be combined into one list falling under the jurisdiction of a Single Licensing Agency (SLA). An SLA will streamline the review processes and ensure export decisions are predictable, efficient and transparent.

As part of ECR phase I and II, the administration is looking to find ways to focus controls around those technologies that pose the most significant threat to national security. In the words of the administration, the aim is to build "higher fences around fewer items."[31] In addition, as part of these reviews, U.S. government departments and agencies are looking at all the categories of the USML to determine which items should be subject to USML or CCL control. Spacecraft systems and associated equipment are part of USML Category XV. Adjustments to Category XV, unlike every other category on the USML, will require legislative action to amend the Strom Thurmond National Defense Authorization Act and return discretion to determine the jurisdiction of this technology to the administration.

Boeing GPS Block IIF satellite *(courtesy of The Boeing Company)*

Largely due to the growing chorus of concern that overly restrictive export controls were impacting U.S. security, the Fiscal Year 2010 National Defense Authorization Act – signed into law in 2009 – included Section 1248, which tasked the Departments of Defense and State to evaluate the national security risks of removing space components from the USML.

The report will better inform Congress regarding the commercial space technologies that would be appropriately controlled under the CCL.

The 1248 report will be incorporated into the Obama adminstration's National Space Policy. The Policy contains a section on export modernization, stating that departments and agencies should "seek to enhance the competitiveness of the U.S. space industrial base" consistent with the results of the ECR Initiative. By taking such a position, the White House and its National Security Council staff were deferring to the ECR Initiative for final word on export control recommendations related to space. Former National Security Council director of space policy, Peter Marquez, stated that "When that export policy gets announced, it will supersede the portions of this space policy dealing with export control."[32] When this AIA report went to publication, the results from the ECR Initiative's Category XV review or the 1248 report had not yet been publicly released.

What the interim 1248 report does provide is an initial conservative assessment of satellite systems and components that could be removed from the USML. The interim study did find that commercial communications satellites, along with most of their components, could be appropriately moved from the USML to the CCL without posing an unacceptable national security risk.

In addition, the interim study concluded that the President of the United States should be provided "with the authority and flexibility to determine the export licensing jurisdiction of satellites and related components".[33] It is important to note that in the preliminary 1248 report and in proposed rules supporting the ECR Initiative, the administration is not advocating any changes to current technology transfer policies with respect to China.

ATK satellite component manufacturing *(courtesy of ATK)*

National Export Initiative

On March 11, 2010, President Obama signed an executive order creating the "National Export Initiative (NEI)."[34] This initiative recognizes the loss of jobs incurred by the recent economic and financial crisis and is designed to help stimulate job growth by bolstering the private sector's ability to export, with the goal of doubling exports over five years. In order to accomplish this goal, the administration's initiative seeks to remove trade barriers by helping U.S. firms—especially small businesses—conduct business abroad.

The administration's NEI represents a potential opportunity for many small U.S. space firms to take advantage of trade missions and U.S. government advocacy. Currently, space firms have not been a prominent component of the NEI due largely to the export restrictions that remain in place. However, if the right reforms were made to the current export control system, a variety of small space industry suppliers would be better able to utilize the government resources offered through the NEI.

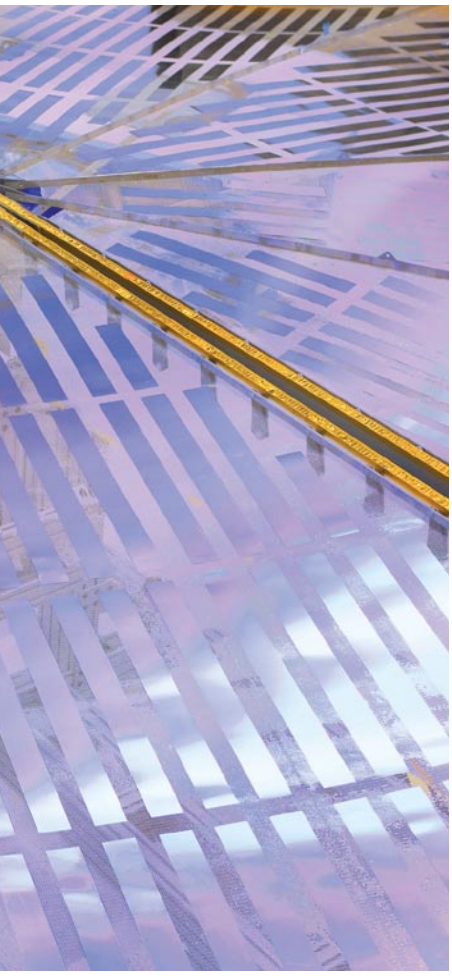
Some aspects of the NEI may even be appropriate to advance with selected space firms under the current export controls system. For example, if a U.S. firm is able to identify an export opportunity, the NEI has created a task force directed to work with lenders to deliver financing to small business exporters and expand business counseling on export finance programs. The NEI also seeks to educate small business exporters on market access issues, tools that could be used by some small space supplier firms to identify areas for exports.

A Synopsis of Major Studies Calling for Satellite Export Reform

Numerous officials and reports have documented the impact of export restrictions on the U.S. space industrial base. Since the Strom Thurmond National Defense Authorization Act for Fiscal Year 1999 moved satellites to the USML, the following reports and groups have either captured the disastrous consequences of ITAR licensing on commercial satellites or have recommended changes to satellite export control regulations:

- **2000 Booz Allen & Hamilton Report; U.S. Defense Industry Under Siege – An Agenda for Change:** "We estimate that this particular U.S. industry (communications satellite manufacturers) could lose up to $1 billion of sales annually if the export controls issues are not resolved."[35]
- **2007 Institute for Defense Analysis Study; Export Controls and the U.S. Defense Industrial Base:** "In interviews with individual firms it is apparent that U.S. companies are already being constrained in supply chain choices by export control restrictions. In some cases export control measures are actually encouraging R&D and capital investment overseas, as well as discouraging R&D partnerships with U.S. firms and the DOD." The report goes on to cite the case of Canadian TELESAT as an example of a major customer permanently moving away from U.S. manufacturers after the change in export jurisdiction from CCL to ITAR.[36]

- **2007 U.S. Air Force and Commerce Department Defense Industrial Base Assessment – U.S. Space Industry:** "…the U.S. share of satellite manufacturing has decreased 20 recent for all commercial communication satellites (COMMSATs) sales and 10 percent for geosynchronous orbit (GEO) COMMSATs since 1999." "A Tier 2 company commented, 'ITAR restrictions and limits are a major impediment to be able to respond to proposal requests and subsequently sell products in foreign markets.' A Tier 3 company '…is withdrawing from the space business due to a sustained absence of profitability and a refusal of some foreign customers to procure equipment that requires U.S. ITAR licensing.'"[37]
- **2008 National Security Space Office Survey**: A survey by the Defense Department's National Security Space Office of nearly 200 small U.S. space companies found that 70 percent of those companies surveyed stated that ITAR restrictions inhibited their ability to compete for foreign business. More than 40 percent of companies cited ITAR restrictions for hiring difficulties. Many of the survey's findings show that our U.S. small space businesses are the most vulnerable to fluctuations in government funding and compliance burdens.[38]
- **2008 Report to Congress of the Independent Assessment Panel on the Organization and Management of National Security Space:** "A critical factor in the developing threat to U.S. space supremacy is the accelerating proliferation of space technology. The growth in international space design, production, and operations spurred in part by U.S. restrictions on the export of space technology [under the International Traffic in Arms Regulation (ITAR)] is leveling the playing field so that many nations now compete with the United States in space."[39]
- **2008 Space Foundation Paper on ITAR and the U.S. Space Industry:** "ITAR restricts the ability of U.S. firms to compete because foreign companies do not operate under equal restrictions. Technology remains on the USML, even when it is commercially available in other countries, because lists of critical U.S. military technologies are seldom updated."[40]
- **2008 House Permanent Select Committee on Intelligence Report on Overhead Architecture:** "Government and industry participants described how ITAR has motivated European companies to establish an international (non-U.S) collaborative R&D environment where ITAR-banned technologies are produced indigenously, thereby defeating the premise of ITAR."[41]
- **2008 Center for Strategic and International Studies Study on the Space Industrial Base and Export Controls:** "Export controls are adversely affecting U.S. companies' ability to compete for foreign space business, particularly the 2nd and 3rd tier. And it is the second- and third- tier of the industry that is the source of much innovation, and is normally the most engaged in the global market place in the aerospace/defense sector."[42]



ATK's spacecraft solar array
(courtesy of ATK)

- **2009 House Committee on Foreign Affairs Subcommittee on Terrorism, Nonproliferation and Trade; Hearing on Export Controls on Satellite Technology:** "Now, the space industry has made credible arguments that the International Traffic in Arms Regulations, known as ITAR, has hurt business and the space industrial base. This claim is echoed in private at least by the Intelligence Community who sometimes find it more and more difficult to source satellite-related equipment domestically."[43]
- **2009 National Academies' Beyond 'Fortress America' Report:** "…the export control system enforced in the United States today has failed to evolve with changing global conditions, and now produces significant harm to U.S. military capability, to homeland security, and to the nation's economic competitiveness."[44]
- **2010 Annual DOD Industrial Capabilities Report To Congress:** "In the vacuum left by U.S. companies in international markets, foreign firms have been energized to fill the void and even create "ITAR-free" products that have no U.S. components that might prevent exporting to third countries. The cost and difficulty of export licensing becomes a competitive disadvantage to lower-tier U.S. firms with fewer financial resources."[45]
- **2010 Aerospace Industries Association Report, Tipping Point:** "At a time when the U.S. government should be encouraging growth across all sectors of the economy, export controls are limiting growth in the space sector, especially among component suppliers. In the absence of a healthy, cutting-edge U.S. space industrial base our government may be forced into reliance on foreign suppliers for key components, accelerating the loss of U.S. leadership in space."[46]
- **2011 Joint Defense Department and Director of National Intelligence National Security Space Strategy:** "Export controls, however, can also affect the health and welfare of the industrial base, in particular second- and third-tier suppliers. Reforming export controls will facilitate U.S. firms' ability to compete to become providers-of-choice in the international marketplace for capabilities that are, or will soon become, widely available globally, while strengthening our ability to protect the most significant U.S. technology advantages."[47]
- **2011 Heritage Foundation Report "China's Space Program: A Growing Factor in U.S. Security Planning":** "(The United States) is seeking to reform export controls and the International Trade in Arms Regulations, which have harmed the international competitiveness of American satellite manufacturers. These efforts, as long as they continue to address specific security concerns and do not slight the continued need to protect key American technology advantages, deserve support from Congress and Secretary of Defense Leon Panetta."[48]

Satellite Export Reform: Myths & Facts

MYTH: A recent uptick in U.S. satellite manufacturing revenue is a trend that clearly shows that the current export control system does not need to be changed.

FACT: The U.S. space industry – from top tier firms to suppliers – remains competitively disadvantaged by the current satellite export regime. The overall trend is clear – the United States held 73 percent of the worldwide share of satellite exports in 1995 – this fell to a staggering 25 percent by 2005. This study and a myriad of others have shown that the current system is not optimized to allow U.S. firms to compete against their international counterparts. A 2011 review of the U.S. space industry by Futron clearly showed that the United States is falling behind in space competitiveness. As the space industry's main customer – the U.S. government – reassesses its spending priorities, many space and defense firms will require stronger international and commercial sales in order to survive. It is more important than ever for national leaders to address export control modernization.

MYTH: Removing satellites and related components from the USML will harm U.S. national security.

FACT: Sensitive satellite and launch technologies will certainly need to remain under strict export control of the USML. However there are a variety of low/no risk commercial satellite systems and components – many of which are already available on the international market – that should be considered for control under the less restrictive CCL. Because the National Defense Authorization Act for Fiscal Year 1999 moved all satellites and components to the USML, even commercial communications satellites and widely available subcomponents remain under munitions list export control. Preventing export of non-sensitive technologies actually results in damage to the U.S. industrial base, making our small businesses less competitive and potentially less able to meet the national security needs of the U.S. government. Clearly, we need a more nuanced export system for today's space technologies.

MYTH: Why modernize export controls for satellites now? The Europeans have now developed their own capabilities and would not buy our space products even if U.S. export controls were changed.

FACT: There are a variety of U.S. manufacturers that currently do business with European countries. These firms have unequivocally stated that the right changes to the current export control system would benefit their business in Europe. Other companies are looking elsewhere for business – especially in the Middle East where many countries' budgets remain stable and interest in technology is increasing. In South America, the Chinese have been reported to be aggressively pursuing satellite sales to Brazil, a country in which U.S. companies lack a substantial presence.

MYTH: Why should we be concerned about satellite export control modernization? Won't it just help large companies who win billions of dollars in U.S. government contracts anyway?

FACT: The large and small U.S. companies that comprise our space and defense industrial base are critical to U.S. national and economic security. Without these companies, we would not be able to lead the world in technology and would be unable to produce the systems needed to provide our warfighters with an edge on the battlefield. It is imperative that we protect sensitive technology from export, but it is similarly important for our security that we provide these firms with the tools needed to win export business against their foreign competitors. Export control modernization could arguably help U.S. second- and third-tier suppliers the most. These small businesses often lack the resources to manage the complicated and challenging export control regime. This causes many small firms to make the decision to stay out of the space market entirely or can cause significant sales losses among small firms that remain in space markets. A reinvigorated export control system would have immense benefits for the U.S. space industry, especially second- and third-tier small businesses.

Glossary of Terms & Acronyms

AIA	*Aerospace Industries Association*
CSIS	*Center for Strategic and International Studies*
CCL	*Commerce Control List*
ESA	*European Space Agency*
ITAR	*International Traffic in Arms Regulations*
NASA	*National Aeronautics and Space Administration*
NDAA	*National Defense Authorization Act*
NRO	*National Reconnaissance Office*
USML	*United States Munitions List*
WGS	*Wideband Global SATCOM*

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Aerospace Industries Association

The Aerospace Industries Association was founded in 1919, only a few years after the birth of flight. The nation's most authoritative and influential voice of the aerospace and defense industry, AIA represents more than 150 leading aerospace and defense manufacturers, along with a supplier base close to 200 associate members.

AIA represents the nation's leading designers, manufacturers and providers of:

- Civil, military and business aircraft
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- Helicopters
- Materiel and related components
- Unmanned aerial systems
- Equipment services
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- Aircraft engines
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HP Enterprise Services, Aerospace
Hydra Electric Company
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Emhart Teknologies
Black & Decker Company
ENSCO, Inc.
Essner Manufacturing, L.P.
ETA Global, Inc.
Exotic Metals Forming Company LLC
Fluor Corporation
Freedom Alloys
Frontier Electronic Systems Corporation
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General Products
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Industrial Metals Intl. Ltd.
Infotech Enterprises America Inc.
InfoTrust Group
Ingenium
Inmedius
InterConnect Wiring
International Technegroup Inc. (TranscenData Division)
Intrepid Learning Solutions
ITW CIP
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Kubotek USA
Kulite Semiconductor Products, Inc.
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Loos & Co., Inc.
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Maine Machine Products Co., Inc.
Materion
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Meyer Tool Inc.
Microsemi Corporation
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Monogram Aerospace Fasteners
Montana Metal Products, LLC
Morris Machine Company, Inc.
Morton Manufacturing
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New Breed Corporation
Norfil Manufacturing, Inc.
North Shore Components, Inc.
O'Neil & Associates, Inc.
Oceanit
Ohio Aerospace Institute
Orion Industries
P3 - North America Consulting Limited
Parkway Products, Inc.
PCC Airfoils, LLC
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Perillo Industries, Inc.
Phillips Screw Company
Plymouth Engineered Shapes
Precision Gear
Precision Tube Bending
Premier Precision Group
RAM Company
Renaissance Services
Renaissance Strategic Advisors II, LLC
Rocker Industries
Rubbercraft
Safran USA
Samuel Aerospace Metals
Scot Forge Corporation
SDL (formerly XyEnterprise)
Sea Air Space Machining & Molding (Formerly named North Cape RIM Manufacturing)
SEAKR Engineering
Seal Science, Inc.
Sechan Electronics, Inc.
SELEX Galileo Inc.
Senior Aerospace
Serco Inc.
Service Steel Aerospace
Servotronics, Inc.
Shapes Aerospace International
Sigma Metals, Inc.
SMT Corp
Southern Manufacturing Technologies
Spincraft
Spirit Electronics, Inc.
SPX Precision Components
Sugasawa Corporation
Sulzer Metco (US) Inc.
Sunshine Metals, Inc.
Swift Engineering
Synchronous Aerospace Group
Sypris Electronics
Systec
Tactair Fluid Controls
TCS America
TechSolve, Inc.
TEK Precision Co. Ltd.
Telephonics Corporation
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