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Remarks as Prepared for Delivery

“The Heavens Are Our Sandbox”

Good morning. I'm delighted to participate in the second annual Aviation and Aerospace Manufacturing Summit. Embry-Riddle is an institution where energy, resilience and innovation happen. It's where tomorrow's aerospace leaders get the dirt of our industry under their fingernails. Whether it's fast recovery from a devastating hurricane or the new Next Generation ERAU Advanced Research Lab, the school always renews my faith in the future of the aerospace industry.

AIA has a new and special relationship with Embry-Riddle this year. We've teamed up to produce an important and improved economic and statistical resource book. It brings together AIA's *Facts and Figures*, published for more than 50 years, with Embry-Riddle's *Aero*. I can assure you that this new tool will be valuable to the needs of both our organizations and the industry.

Before I get into the main topic of my speech, I did want to address the civil aviation market, which Bob and his team asked me to cover since you heard about the defense, space and general aviation sectors yesterday.

Now civil aviation sales dropped nearly six percent in 2010, to \$48.2 billion, with the culprits being the pace of recovery in the overall economy, as well as fuel costs and environmental regulations, but orders for civil aircraft and parts – always an important economic harbinger – increased a whopping 65-percent over 2009 levels. So, we believe that we'll see a small uptick for our manufacturers next year with growth pacing steadily upward over the longer term.

Last week I read an article about one of yesterday's speakers – General Norton Schwartz, the Air Force Chief of Staff – who talked about how Afghanistan, and I quote, “sits in a very important place on the planet, and it's a place that, if properly orchestrated, becomes an aviation highway.” Schwartz went on to say that this highway could lead to real income, and offer an alternative to the country's dependence on the narcotics trade. Civil aviation, he said, “brings things to market. It allows people to coalesce. It allows governments to reach out from the center to the periphery.”

Don't you love it when the military brass helps promote civil aviation!

And there is a lot to promote. At its annual forecast conference last week, the FAA said about 712 million passengers flew on domestic carriers in 2010. And, it is predicting that U.S. airlines will carry 1 billion passengers by 2021.

The question is whether we'll be ready. We're feeling cautiously optimistic.

The President's 2012 Budget Request, released on February 14, points to a smooth trajectory for NextGen. Few issues are as urgent as our government's commitment to improving the efficiency and safety of the national air space. In 2012, the White House proposes to fund NextGen at \$1.24 billion. That's a very good figure, particularly in this environment and a sound investment in our nation's infrastructure in the sky.

Now on a harder point, we continue to work toward establishing a sound business case for equipping airlines with upgraded avionics. A big step toward making that business case comes from the fact that NextGen equipage is estimated to produce nearly 154,000 jobs. So a National Infrastructure Bank, private equity loans with government backing, tax incentives – there are many ways to advance equipage but it needs to be addressed. Without the cockpit infrastructure component, there is no NextGen.

The main topic of my remarks today is innovation. I'd like to start with a story. The year was 1964, and 40-year-old Stephanie Kwolek was a chemist working for DuPont in Wilmington, Delaware. Her research group was investigating polymers as they searched for a new, strong, lightweight fiber for car tires. Many of these polymers formed in solution, which at times left the solution cloudy and not viscous enough for any apparent use. The cloudy solution was usually thrown away. Kwolek focused her curiosity on this leftover solution. She further processed it. Her supervisors were amazed when she found that fibers derived from this solution refused to break under far more force than nylon could handle. That day, Kevlar was born.

The Kevlar Survivors Club counts more than 3,000 members whose lives have been saved by Kevlar, thanks usually to its use in bullet proof vests and helmets. Each of those 3,000 people can thank Stephanie Kwolek, who consulted for DuPont even in retirement and has served on the National Research Council and the National Academy of Sciences.

Kwolek's innovative spirit is something we in the aerospace industry share. In many ways, she was like a child playing in a sandbox that day, but her sandbox was a high-tech chemistry lab at a large corporation with a robust R&D budget.

In the aerospace industry, the heavens are our sandbox.

But there are a few storm clouds up there too. First, our industry must deal with an array of barriers to technological innovation, which I'll discuss. And second, the biggest challenge of all is the federal deficit, which must be reduced.

Let me mention a new book, *The Great Stagnation*, by economist Tyler Cowen. The book has generated some buzz among economists lately with claims that the U.S. economy has picked all of what Cowen calls the "low hanging fruit" that drives technological progress, such as cheap land and labor. The progress of technology, Cowen warns, has hit a plateau.

The book sparks the question about the aerospace industry's innovation trajectory: Have we maxed out our innovation climb rate? Are we at a complacent cruise altitude?

The answer is a resounding no. We are still a young industry by historical standards. We have unlimited potential for innovation. Aerospace is, and will continue to be, unique. It doesn't compare with the automobile industry, with all due respect to the fine job Mr. Mullaly has done at the Ford Motor Company. Aerospace doesn't compare with high speed rail, either. Aerospace is in a class by itself.

Look at innovations such as the Northrop Grumman X-47B Unmanned Combat Air System Demonstrator, which made its first flight at Edwards Air Force Base just a few weeks ago. It looks like a B-2 stealth bomber, but about the size of an F-14 Tomcat. Northrop Grumman and the U.S. Navy plan to land an X-47B autonomously on an aircraft carrier in 2013. That, I can assure you, will revolutionize naval aviation.

From fuel cells being tested in light sport aircraft to the revolution in composites for new airliners such as the 787, innovation is happening.

And don't forget the space heads. Paying customers will soon buy suborbital flights on Burt Rutan's *VSS Enterprise* rocketplane. And one of AIA's member companies, SpaceX was started by a guy a lot of people now know, Elon Musk, who just seven years ago had no rocketry experience whatsoever. He hired the right engineers, applied his experience in kicking off internet ventures, and last year put a 180-foot-tall rocket in orbit—twice. On the second flight, SpaceX achieved the first successful reentry and recovery of a private spacecraft.

These and other innovations underscore what I've said publicly many times: Our industry has proven to be the foundation of this country's economic and national security. Technological innovation is what renews and fuels this industry, and maintains its world leadership.

Over the past two years, despite what many economists have called The Great Recession, U.S. aerospace has returned solid results, leading all manufacturers in trade surplus. The aerospace and defense industry is a true economic engine for the U.S. economy. It supports more than two million middle-class jobs and 30,000 suppliers from all 50 states. Total aerospace sales in 2010 rose to \$216 billion, a new record for the seventh straight year. The economic benefits from aerospace include a \$53 billion positive trade balance fueled by \$81 billion in exports.

What's not to love? Well, just a few things. Let's talk about some of the barriers to innovation that I mentioned a moment ago.

The largest constraint on innovation is demand. Innovation is less likely and harder to do if there is little demand. And a lot of early demand comes from the federal budget, which as we all know is under tremendous pressure these days. Much of the innovation from our industry comes from funding of precompetitive, cutting-edge risky technologies, both at DARPA and NASA. Some of those technologies fail, but others develop into important government products; others become the seed corn of industry advancements. On the commercial side today, new engine technologies, materials and developments in sustainable alternative fuels are driving demand for new aircraft.

A second barrier to innovation is regulatory and administrative policies that discourage investments that lead to innovation. They can't often stop innovation, but they will slow it down.

This includes a host of issues that AIA spends a fair amount of time trying to change, like our burdensome acquisition policy. Our federal acquisition system should reward performance,

promote fairness and stability, create incentives for cost savings and establish balanced and equitable risk-reward financial relationships. But it doesn't. I'll give credit to Defense Secretary Gates and Under Secretary Ash Carter for their efforts with the Efficiency Initiative, but more needs to be done to make doing business with DOD a sound value proposition, especially in today's environment.

I'd also put U.S. tax policy in this category. The U.S. was once home to the lowest corporate tax rates among industrialized economies. It's now among the highest. The World Economic Forum lists access to financing, tax rates and tax regulations as the top three problems of doing business in the U.S. That's got to change. The U.S. Tax Code must foster competitiveness rather than produce disincentives for U.S.-based investment and job creation.

Related to tax policy, another major barrier is the lack of a permanent R&D tax credit. U.S. firms produce the world's most reliable aerospace systems. But they must compete with a foreign marketplace where governments underwrite a huge portion of the industry's civil aeronautics R&D. On average, U.S. firms invest an additional \$94 in research and development for every \$6 the federal government invests through the R&D tax credit. We sincerely hope Congress enhances and makes permanent the R&D credit.

And finally, a particularly troubling constraint to innovation in our industry is attracting talent – the science, technology, engineering and mathematics workforce. A highly skilled STEM culture is essential to our national security, prosperity and ability to innovate. But pending retirements will soon cause a shortage of trained technical graduates that even Embry-Riddle can't replenish.

The challenge of attracting talent to our industry is directly linked to the lack of demand that I talked about earlier. If we don't create demand, the smart, talented people we want to have work in our industry will go work for the next Google, Facebook or cool 3-D video company instead.

I'd commend a speech to all of you that Wes Bush, CEO and President of Northrop Grumman, gave recently to the Northern Virginia Technology Council on the industrial base. He said, "Speaking as an engineer, for many critical skills, there is no substitute for actually building something. If we don't have new projects, those skills will atrophy."

It couldn't be better said.

My final point today is about the challenge to innovation the federal debt presents. This dragon must be slayed. The *Washington Post* reported on February 17 that by the end of the coming decade, every man, woman, and child in the U.S. will pay more than \$2,500 a year just to cover the interest on the national debt.

While the new Congress and the administration have vowed to reduce the deficit, we all have to ensure that this is done intelligently. Ill-considered cuts to aerospace could threaten our national security, aviation infrastructure, space leadership, critical innovations in technology and our industrial base. On the military side, any impulse-driven cuts to the defense budget could interfere with our industry's ability to supply U.S. servicemen and women with the tools they need to do their job.

And, we don't think the answer for the deficit is higher taxes, which are a direct threat to the growth of manufacturing jobs. These taxes will render companies of all sizes less competitive in the global marketplace.

Tom Faust, age 73, knows this. He's a self-made man in Reading, Pennsylvania, a town where jobs are being shipped overseas faster than the businesses can close their doors. His company, T.G. Faust, Inc. is holding out, right downtown on Minor Street between 6th and 7th. Tom's employees make Kevlar-reinforced bulletproof vests and other protective apparel. Ninety percent of his business is for the U.S. military, and the rest for police districts. One of Tom's prized possessions is a letter from the late four-star General Wayne A. Downing. In it, Downing recounted visiting special ops troops in Somalia in the 1990s, and told how their lives were saved because of the protective body armor Faust's company provides.

But even Faust is struggling to win contracts now. "It's getting tougher and tougher to keep costs down," he said recently. "We can't just compete on price alone. Faust vests are known for offering about 20 percent more coverage than most. Though he hasn't won a contract to supply the Reading Police Department, about 20 of its officers come to him annually to buy a vest with their own money.

Who can put a price on that?

We in the aerospace industry, as well as related industries, need to make our voices heard. We need to reach out to our congressmen and others with renewed vigor, to let them know how our industry makes a difference not only in the critical area of national security but in the realm of innovation and manufacturing. This is particularly important as solutions to our nation's fiscal problems are being debated in Washington, D.C.

From the curiosity that hatched Kevlar a generation ago in Stephanie Kwolek's Dupont lab to the spirit that drove Tom Faust to turn it into a life-saving business, the U.S. is still a place where innovation and manufacturing are alive and well.

Once again I'd like to thank Embry-Riddle for hosting this important event, and congratulate the Center for Aviation and Aerospace Leadership for taking on the task of developing the next leaders of our industry, who surely will be our next innovators as well. Thank you all for your hard work in aerospace.

Now all of you engineers, scientists and innovators – get back to that sandbox in the heavens, have some fun, and surprise us!