

Cutting Carefully

The U.S. A&D workforce may be shrinking, but retaining talent remains a top priority

Carole Rickard Hedden Washington

As a war-weary nation grapples with how to cut military spending and a dysfunctional Congress allows meat-ax budget cuts to fall on the Defense Department and NASA, one might expect that the U.S. aerospace and defense (A&D) industry's best and brightest talent would be heading for the exits. Indeed, one-in-five A&D professionals under the age of 35 submitted resignations in 2012, up from 12% the year before. The good news: most left to go work for another aerospace company.

The findings of Aviation Week's 2013 Workforce Study reveal that the industry's employers are well aware of the challenges they face as they reduce payrolls to prepare for leaner times ahead. And by and large, most are seeking to use a scalpel, rather than the blunt force of across-the-board cuts. More than 86% of the companies responding to this year's study have planned layoffs for 2013. Yet those plans are often crafted to minimize damage to their technical workforce—and their ability to bring in new college graduates that will be crucial to their long-term success. Indeed, A&D companies have set aside 15% of their 22,000 job openings this year for new college graduates. And even as contractors reduce head counts, they are seeking to maintain pay raises and training and education for those who remain. Whenever possible, they are shifting defense workers to the expanding civil aircraft sector.

A separate survey of under-35 workers undertaken in conjunction with the study shows that despite dire headlines of budget cuts for the Defense Department and NASA, coupled with an exceptionally fractious Congress, many young professionals continue to view A&D as an industry that offers them technical challenge and an opportunity to grow in their careers. An impressive 70% of respondents said they would recommend their employer to a friend, while 60% would recommend working in the industry. That is hardly the picture of an industry facing end times.

And last year's high attrition rate ap-

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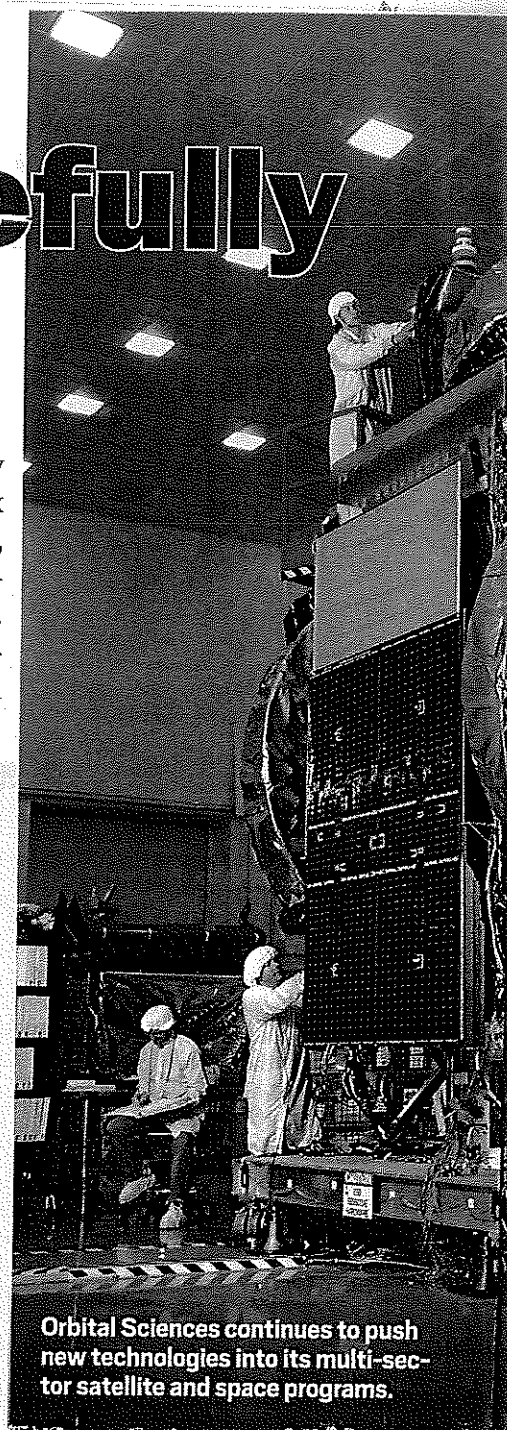
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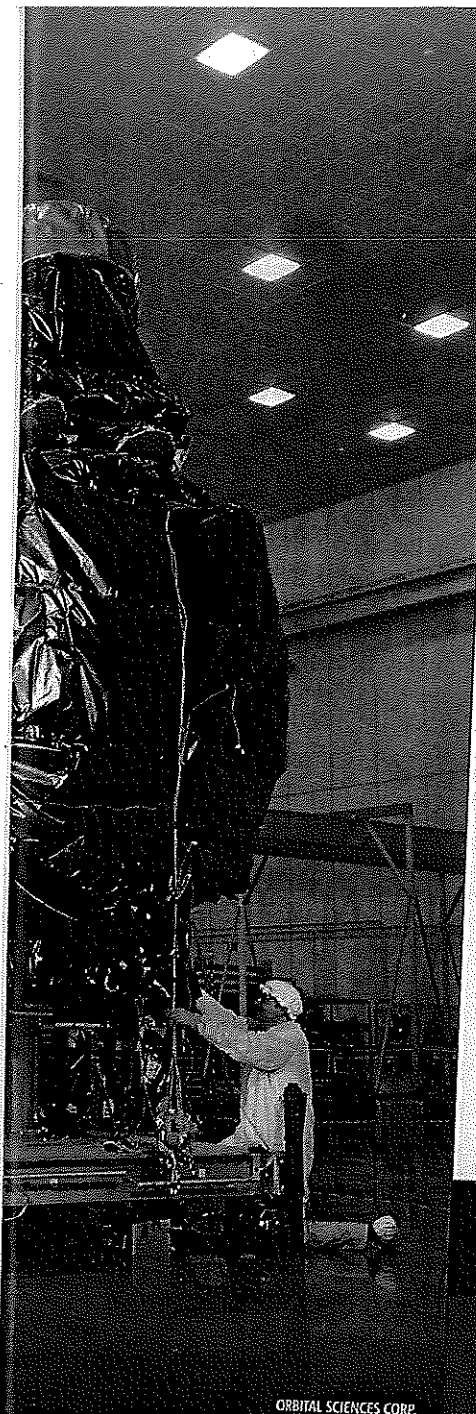
pears to be less about budget cuts than frustrations that have long bedeviled young professionals in good times and bad, regardless of gender or ethnicity. The culprits include poor management, bureaucracy and incompetence or poor attitudes among co-workers. There is also frustration that many workers



Orbital Sciences continues to push new technologies into its multi-sector satellite and space programs.

eligible to retire have chosen to remain on the job, slowing the path to advancement for those coming up the ranks. In 2012, 8% of the U.S. A&D workforce was eligible to retire—and just 1% did.

Aviation Week's Workforce Study, now in its 10th year, was undertaken in cooperation with the Aerospace Industries Association, American Institute of Aeronautics and Astronautics, and National Defense Industrial Association. This year's study drew a record response from companies that collectively employ 86% of the U.S. A&D workforce. One common concern with past year's responses: aerospace com-



ORBITAL SCIENCES CORP.

panies' ability to lure and keep new talent. The Aviation Week study identifies the top attractions as technological challenge, valuing the individual and professional development.

If there is one person who has come to represent the industry a decade into its second century, it is Elon Musk. Among his brain children—SpaceX, SolarCity and Tesla Motors—the entrepreneurial Musk represents the frenetic creativity A&D workers crave. No surprise then that SpaceX tops the list of companies to A&D professionals in technological challenge.

Musk is hardly unique, though. David

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Where A&D Professionals Want To Work

Technological Challenge

1. SpaceX
2. AGI (Analytical Graphics)
3. Orbital Sciences

Valuing the Individual

1. The Aerospace Corp.
2. Boeing
3. Acutec Precision Machining and Sechan (tie)

Professional Development

1. The Aerospace Corp.
2. Acutec Precision Machining and Orbital Sciences (tie)
3. Jabil Circuits

Source: Aviation Week 2013 Workforce Study

vid Thompson, who founded Orbital Sciences Corp. in 1982, has been blazing away at new technologies ever

since, providing satellite systems and support for commercial communication, missile defense and communication. Thompson's team designs and develops systems to endure the depths of space, compete with terrestrial alternatives and provide flexibility to upgrade consistently over a decade or two of life. And these systems must be developed and launched in about 36 months. It is an array of technological discovery that focuses on materials, software, systems integration, and the basics of astronautics and aeronautics.

Paul Graziani's Analytical Graphics Inc. has been named to the top companies list for six of the last seven years as his group continues to push new software capabilities and now apps into the market for defense and space.

Tony Parasida, Boeing's new senior vice president for human resources and administration, followed a different trajectory than Musk, Graziani and Thompson. He joined Boeing's commercial aircraft operations 35 years ago, working his way up the engineering ladder in air transport. His claim to fame, however, was on the defense side—bringing the V-22 technologies to market, an accomplishment that earned him Aviation Week's top honor, the Laureate, in 1997. Today he watches over the systems needed to put the right person in the right job, shepherding the high-growth demand of the commercial business while assuring minimal loss of talent from the space and defense businesses.

And while Parasida, Graziani, Thompson and even Musk have earned the gray hair that comes with guiding these new technologies into place, the industry is also marked with the accomplishments of much younger professionals who helped inform and guide this year's workforce study.

One of the newer breed was onboard an aircraft carrier and recorded data for the first unmanned aircraft landing. The real accomplishment, he says, was not the landing of the unmanned aircraft but rather the landing of a tail-less aircraft onto a carrier deck and the realization that crosswinds and gusts had little effect on the landing.

Another, an under-35 woman, is pushing advanced technologies through The Aerospace Corp.'s labs. And a compatriot is participating in a leadership job-rotation program, learning how to analyze business intelligence and connect the dots to form business strat-

egy, while straining against the system to get back to a technical assignment. They are living what students say they dream about in a future job: the technological challenge.

Rockwell Collins's new president/CEO, Kelly Ortberg, says while he has to compete within the industry for employees like these, he must also compete with other industries. "It is one of the biggest challenges I see in the short- and long-term—our industry's ability to attract and retain

engineering and technical talent." I think young professionals—or all professionals for that matter—like to know they are making a difference, and making life better."

Ortberg's play to technical professionals is a strong one. In the past 24 months Rockwell Collins rolled out a new product that is emblematic of the approach: the Pro Line Fusion technologies, including synthetic vision. The R&D investment was in the commercial side of the business, but the technology was leveraged for the military market, specifically for Embraer's KC-390 military transport.

Gina Burns, vice president of workforce analytics and strategy at Lockheed Martin, led the young professionals study. She says that in tough times it is crucial for companies to retain funding for internships and other efforts to attract the next generation of talent. Once they are on board, the secret to keeping them is the same today as it has been for generations. Burns says creating a nurturing and challenging work environment where good performance is valued and rewarded will be the most important focus for an industry in transition. **☪**

Percentage* of A&D Employees Eligible to Retire in 2013

With Clearances.....	14.6%
Business Development/Marketing.....	11.7%
Supply Chain.....	10.1%
Research & Development.....	8.9%
Engineering.....	8.7%
Manufacturing/Operations.....	8.1%
Finance.....	7.9%
Program Management.....	7.4%
Information Technology.....	6.1%
Software.....	4.9%

*Overall, the percentage of U.S. A&D employees eligible to retire is 9.6%.

Source: Aviation Week 2013 Workforce Study

WHERE THE JOBS ARE

Carole Rickard Hedden Washington

Aerospace and defense companies large and small plan to hire in 2013. While much of the hiring will replace workers leaving for retirement or a new opportunity, the numbers also include some all-new jobs and new skills.

As of April 7, the companies responding to the Aviation Week Workforce Study had 22,000 funded, open job requisitions. Last year, the industry forecast hiring at 28,000; at year-end 31,000 people had been hired and the industry-wide headcount had risen to 629,000—a gain of 5,000 new jobs for the year. That optimistic outcome is not anticipated this year.

Boeing, the industry's largest company with just over 174,000 of the 649,000 workers, already has shifted

7,500 employees from defense to commercial operations. The company plans to hire 8,000 to 10,000 people this year. However, Boeing leaders also anticipate that the total headcount for the company will go down by year-end, despite heavy hiring in its commercial business.

Almost half the jobs to be filled this year are in STEM—science, technology, engineering and math—job categories. The most in-demand skills are systems engineering and computer software engineering. While systems engineering is increasing in all industry sectors, software is the one watch. Plain and simple, A&D relies on legacy architectures and languages to keep aircraft, satellites and ground systems operating for decades-long spans. At the same time,

TALENT PIPELINE

A&D Companies' Preferred "Suppliers" of Talent

- Penn State
- Embry-Riddle Aeronautical University
- Georgia Institute of Technology
- Rochester Institute of Technology
- Massachusetts Institute of Technology
- Cal Poly-San Luis Obispo
- Purdue University

Where the Greatest Number of A&D Hires Came From

- University of Washington
- Iowa State
- Embry-Riddle Aeronautical University
- Washington State
- University of Iowa

Alma Maters Most Valued By Employee in Landing a Job/Promotion

- University of Washington
- Embry-Riddle Aeronautical University
- Texas A&M
- University of Illinois
- Penn State
- Purdue University
- Virginia Tech
- Arizona State University

Source: Aviation Week 2013 Workforce Study

other industries are pushing software and apps into a growing number of formerly manual operations. Among the big names scooping up software engineers this year are General Motors and Ford as they race to keep up with Tesla Motors' touch-screen driving machine.

Just behind systems and software engineering, in terms of demand, is aerospace engineering, with jobs evenly distributed between commercial and defense assignments.

Jobs can be found at every level. For companies with 1,000-9,999 employees, there are nearly 4,000 openings including 1,000 engineering slots, close to 200 information technology workers and almost as many manufacturing/operations positions. **☪**