



2010 Young Professionals/University Student Survey

In association with
Aerospace Industries Association
National Aeronautical and Space Administration

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**2010 AVIATION WEEK Young Professionals/University Study
Advisory Board**

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STUDY ADMINISTRATION

This study was led by an advisory board of key industry leaders who have gone beyond talk to work to find answers on filling the demand for highly talented workers in the future. They have worked as mentors, coaches, volunteers in classrooms and in sponsoring discussions about what it will take to encourage young people to study science, technology, engineering and mathematics and at a different level to pursue careers in aerospace and defense.

The commitment to identify the key factors that drive career decisions among young people was first broached by the 2008 AVIATION WEEK Workforce Study Advisory Board. A year later, when voluntary attrition among young professionals was defined at 15.7% the advisory board issued the challenge to track down the reasons why.

An initial advisory board that included Ed Hoffman of NASA and Rick Stephens of Boeing, who also heads the AIA Workforce Task Force developed a scope for the project with AVIATION WEEK assigned to develop the instrument and work with companies and university to identify a random sample of young people who could answer how and why.

Joining with them form the advisory board were Wanda Austin of Aerospace Corp. a team of young professionals representing NASA, Boeing, Lockheed Martin, Northrop Grumman and Pratt & Whitney. These young professionals – Anita Rebarchak, Ryan Rudy, Chris Dowell, Kathryn Fosha, Nick Sytland, Garth Henning, Robbie Shingler – provided insight into how to ask the questions and where to add information that would shine light on the topic. They were joined also by Deans of the Colleges of Engineering at Cal Poly, Georgia Tech, Virginia Tech and the University Michigan. These institutions are consistently named among those from which A&D companies do the majority of their hiring.

Member companies of the AIA Workforce Taskforce, NASA and Aerospace Corp. provided a randomized list of emails representing 10% of the young professional population (in some instances, this list was maintained within the company to provide for security and privacy regulations and policies).

Similarly, the COE Deans provided a 10% random sample of their engineering students over the ages of 18. It should be noted that the universities did require completion of certification work by the principal investigators on campus and the Aviation Week project leader through the Dept. of Health and Human Services.

The random sample individuals were sent an email explaining the purpose of the investigation and providing a link to an online survey. The survey micro site remained open for 30 days; two reminders were sent to the sample group.

Executive Summary

AVIATION WEEK launched Young Professional and University Student Research Study after conducting 13 years of research regarding the aerospace and defense workforce. During this time, revolutionary changes in technology developed, resulting in ever more complex and complicated work and strategies. AT the same time, other industry sectors were developing at a velocity that quickly put pressure on all sectors in terms of hiring the most talented workforce. The A&D sector's leaders felt that increasingly the talented engineering workforce was being drained away by new technologies or by other sectors entirely, ranging from finance to consulting.

While the competition for young college graduates was increasing, the industry also downsized. This resulted in a "double dip" demographic in which industry leaders struggled to rebuild the mid-career expertise while also hiring off college campuses. This ambiguity was heightened by a growing pool of employers who are eligible for retirement but who have not yet chosen to retire.

In response, the industry, NASA and AVIATION WEEK joined together to examine what affects decisions among young professionals and university students concerning their careers. For too long, leaders relied on urban myths and what was assumed about this demographic based on consumer habits. However, it was unknown whether consumer traits relate directly to the workforce.

The realities found in this year's study depict a workforce that is dramatically different in its concerns with regard to careers than its aspirations in terms of spending or other areas where extensive research has been completed. Among the key findings of this study:

- Young Professionals and University Students are interested in aerospace and defense careers as evidenced by the response rate to the survey
- The demographics for young professionals and university students do not exactly reflect those of the corporate world or society; specifically, the ratio of women in this workforce exceeds 30%
- Better than a quarter of the young professionals would prefer to stay with their current employer for their entire career and 47.5% say they want to stay in the same industry
- There is a disconnect between career expectations and reality, particularly with regard to the time between promotions
- The selection of college major was driven for the most part on personal interest and the ability to make money.

The Young Professional/University Student Advisory Board met in joint session with the AVIATION WEEK Workforce Study advisory board (industry leaders) to discuss the findings and develop a list of recommendations and findings. These follow:

- Assure that a longitudinal study process is put into place to follow the perceptions, opinions and careers of the individuals who volunteered for this study.
- Assure that industry leaders are made aware of the two primary issues concerning young professional employment
 - a. Employees leave immediate supervisors and/or programs, not companies
 - b. Mentoring relationships should exist in terms of company processes, but also with regard to technical expertise

- Assure understanding that there are differences of attitude and culture between employees in their 20s and employees in their 30s; this appeared to be most true with regard to feedback as employees transition from the hyper feedback environment of colleges/universities to careers.
- The study created awareness that there are common threads in what young professionals' face today just as in the past.
- The focus on compensation by young professionals is real and is linked in no small part to student loans combined with cost of living issues in top job markets.
- University students are seeking industry positions today; this needs to be monitored in the future as the financial and consumer industries recover from the economic recession.
- Industry and government agencies need to continuously recruit *current* employees.
- As the industry has become more program-centric, transitions to new positions internally have become more difficult.
- Industry, government agencies, young professionals and students are concerned about the impact of changes in NASA strategy on current and future workforce; space serves as a major factor in recruiting young people to appropriate STEM studies.

Demographics

The response rate for the Young Professionals' Study exceeded 50%, well beyond the norm for this type of study, resulting in a confidence level of 99% on the data. In addition, more than 1,000 of the respondents to the YP study self-selected themselves for inclusion in a longitudinal study.

The average respondent to the survey had been with his or her company for four years and was between the ages of 26 and 30. He or she was more likely to be male (66.32%) and was most likely to be Caucasian (70.3%). However, it is relevant to note that the percentage of Hispanic respondents was 6.39% compared to 6.11% of African-Americans. Given that this pool of respondents was predominately from engineering, technical and scientific backgrounds this is a substantial data point reflecting society's growing Hispanic population. Asian Americans comprised 10.2% of the respondent pool.

Also it was worthwhile to note that better than 33% of the respondents were female. This is interesting in that the ratio of women in the workforce drops to much lower figures after the age of 35. Anecdotally, the reasons for this shift have been documented. Still, it is interesting to note that this figure is above that for the engineering population as a whole and it exceeds the ratio of women in STEM studies over the past decade.

Respondent Demographics

Average Years with Company	4.03 yrs
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Average Age	26-30 yrs
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Gender	Male	66.32%
	Female	33.30%

Ethnicity	African American	6.11%
	Asian American	10.21%
	Caucasian	70.32%
	Hispanic	6.39%
	Native American	0.19%
	Other	3.53%
	Prefer No ans	3.24%

Career Plans

Of those responding to the survey, just over 44% indicate they plan to remain with their *current employer* beyond 15 years. Another 14.5% indicated they plan to stay with their current employer for 24-36 months. Asked how long they plan to stay in the *A&D industry*, 59.4% indicated they plan to remain in the A&D industry for more than 15 years, while 8.5% indicate they plan to stay in the industry for 24-36 months.

More than 40% are currently looking for a new job within their current organization while 27.4% are looking outside their organization. These points appear to be contradictory with the actual job search intent more closely aligning with the realities of the current attrition rates.

When the respondents are looking for a job within their current organization, they are most likely to look for a new opportunity or to extend their skills. Just over 41% are looking for a new position within their current organization. When looking outside their current organization – which 27.4% of them are doing -- they tend to look for a salary increase and for more hands-on experience.

How long do you plan to stay with your current employer?		% Total	
24-36 months	152	14.50%	
3 - 7 years	301	28.72%	
8 - 15 years	134	12.79%	
15-plus years	111	10.59%	
Until retirement	350	33.40%	
	1048	100.00%	

How long do you plan to stay in the aerospace and defense industry?		% Total	
24-36 months	89	8.49%	
3 - 7 years	198	18.89%	
8 - 15 years	138	13.17%	
15-plus years	125	11.93%	
Until retirement	498	47.52%	
	1048	100.00%	

Are you currently looking for a new position within your organization?		% Total	
Yes	431	41.13%	
No	617	58.87%	
	1048	100.00%	

Are you currently looking for a new position outside your organization?		% Total	
Yes	287	27.39%	
No	761	72.61%	

The Criteria They Consider

When making career decisions, the respondents indicate a wide variance of factors. However, the four receiving the highest degree of agreement were:

1. Benefits
2. Technological or work challenge
3. Opportunity to Advance
4. Salary

In looking at item #3, it should be noted that respondents believe they will be promoted and soon. Fully 41% believe they will be promoted within 12 months, while another 18% believe they will be promoted within the next two years. Given the reality of a promotion rate hovering around 7% for the industry, this could be an indication that there is a disconnect between aspirations and reality.

Close behind among the considerations but at a slightly lower level were the ability to earn additional degrees, credibility of the organization and the reputation of the industry for developing all new technologies. Of lesser concern was the diversity of the organization.

In the area of technological or work changes, respondents said the most important factors were the nature of the work and the ability to make good use of skills, followed by having the tools and learning to do a good job.

In terms of professional development, the respondents indicated that the most important factor was the opportunity to be promoted, followed by stretch assignments. Career counseling and coaching were not considered as important as were the ability to take additional coursework and having a specific career plan.

What Drives Their Work Satisfaction

The respondents were also asked what drives their satisfaction with their work once on the job. These included:

1. Relationship with my direct supervisor
2. I consider my work environment flexible
3. I have independence in my work.
4. I experience a variety of work assignments.

This fourth point is echoed frequently by those who indicate they do not want to work on a single assignment or task, but rather enjoy the pressure and challenge of tackling multiple facets of a problem set. Industry has indicated a desire for keen analytical thinkers who are bored quickly when those assets are not put to work.

The areas the respondents least agreed with in terms of work satisfaction included the ability of the organization to handle change, the pace at which the organization operates and the ability to participate in professional networking. Pace of change, pace of decision making and pace of long hours were cited as fundamental issues.

The most important factor to feeling valued in the workplace, however, was the ability to balance work and private life, followed by the ability to contribute to the organization's success.

Labeling Generations

The overwhelming response by the study respondents was that they preferred not to be labeled, by age cohort or by other manner. However, they did respond to a light question contributed by the young professionals on the advisory board. The query was specifically about the terms *geek* and *nerd* based on the frequency these terms are used by individuals to describe themselves or others, specifically in the classroom or work setting. The respondents tend to believe that *nerd* is a more positive term than *geek*, while *geeks* tend to be a bit less inept in social situations than *nerds*.

University Findings

Similar to the Young Professionals' Study, AVIATION WEEK worked with the advisory board to develop a short survey instrument that would allow the individual to complete the survey in less than 10 minutes online. The Universities contacted the random sample group and provided them with the link to the survey, as well as sending reminders to participate.

The return rate for the College of Engineering Student survey was more than 30%.

Who They Are

The responses indicate that a decline in female engineering student population continues. Statistics regarding African-American is slightly lower than from other sources (Black Engineer) and slightly higher for Hispanic students.

Ethnicity	% total
African-American	2.78
Asian-America	14.2
Caucasian	69.14
Hispanic	6.48
Native American	0.31
Other	4.94
Prefer not to answer	2.16

The average age of the respondents to the college study was 20.8 yrs, and 27% were female. Just fewer than 70% of the respondents were Caucasian, just 2.7% were African-American and 6.48% were Hispanic. Asian Americans made up 14.2% of the respondents.

Academic Status	% Total
Freshman	12.04%
Sophomore	19.44%
Junior	27.78%
Senior	33.64%
Graduate - Master's level	4.63%
Graduate - PhD level	0.93%
Student currently on intern/co-op assignment	1.23%
No answer	0.31%

Key Findings

Key findings for the University engineering students:

- The number one career interest is academia, followed by defense and national security.
- 67% of the engineering students indicate they are interested in a career in aerospace and defense.
- 54% think they will remain with the same profession for more than 15 years, 57% believe they will stay with their first employer for three to seven years.
- Unlike the young professionals, the college students are undecided about how long they will remain in the same profession; 44% think they may leave their first profession in the first 15 years.
- 57% expect to be promoted within the first 18 months on the job and more than 80% believe they will be promoted within the first 24 months.
- Teachers and other adults were the most prevalent reason the students went into engineering; the least cited reason for engineering as a career choice was “desire to serve”.

Interest in A&D

Note that the 67% of respondents indicating interest in A&D is skewed. This was an AVIATION WEEK study so the respondents, by the very nature of the survey itself, would have a tendency toward A&D careers.

For those who did indicate an interest in A&D, the influencing factors were

- An interest in aircraft, defense, and space
- The ability to contribute to high profile projects
- The technological challenge
- The availability of jobs

Keep in mind that these students have seen dramatic changes in hiring in the past two years. Cooperative education arrangements have been cancelled. Students hired by consulting firms or investment houses have seen their offers rescinded. So while A&D hiring slowed, graduates were still finding jobs in most instances.

Those respondents who indicated they had no interest in A&D said the factors for this included:

- They had never known anyone in this area of work
- The salaries were perceived to be lower
- A lack of interest in aircraft, defense and space

Career Expectations

The expectation concerning careers from the University students reflected in some part those of the Young Professionals. Their expectation was that they would be promoted within the first 18 months of their first job. Over 50% believe they will stay in the same profession for 15 or more years. Better than 57% believe they will stay with the first employer for 3 to 7 years.

Selecting a College and a Major

One question that was asked of both the young professionals and the university students concerned the factors that contributed to the selection of a college major.

For Young Professionals, the key determinants were:

1. Personal interests
2. The ability to make money
3. Respect for the profession.

For the university students, the three top factors contributing to their selection of a major were:

1. Personal interests
2. Respect for the profession
3. Desire to contribute to society.

Choosing a college followed the standard set of factors – reputation of the institution, cost, reputation of the faculty, and location. Interestingly, these are quite similar to the factors used by companies in selecting the institutions where they will heavily recruit new employees. The additional factor considered by the companies is the success of the alumni hired from that campus.

Geek or Nerd

Within the college community, the terms Geek and Nerd were more interchangeable than among Young Professionals and were seen as a “badge” of intelligence. As one student wrote: “I am a nerd and a geek. I’m living the dream!” Better than 40% viewed nerd positively, while 34% viewed Geek in a positive way. There was a higher correlation between geek and social ineptness than nerd and ineptness.