

Can the Air Force and Airlines Collaborate for Mutual Benefit?

An Exploration of Pilot and Maintenance Workforce Options

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Preface

This draft report describes analysis to determine viable collaboration options between the Air Force and airlines in the areas of pilot and maintenance workforces. This analysis was performed in support of a RAND Project AIR FORCE (PAF) project, the overarching goal of which was to determine what collaboration options between the Air Force and airlines would provide mutual benefit and are realistically implementable.

The research reported here was commissioned by the Headquarters, Air Force Director of Future Operations (AF/A35) and conducted within the Manpower, Personnel, and Training Program of RAND Project AIR FORCE as part of a fiscal year 2015 project, “Air Force–Airline Industry Collaboration.” It should be of interest to all Air Force personnel concerned with rated management, aircrew retention, pilot training, and Air Reserve Component issues.

RAND Project AIR FORCE

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Abbreviations

AA	American Airlines
ADSC	active duty service commitment
AETC	Air Education and Training Command
AFR	Air Force Reserve
AGR	Active Guard Reserve
ANG	Air National Guard
A&P	airframe and powerplant
ARC	Air Reserve Component
ART	Air Reserve Technicians
ATP	Air Transport Pilot
AU	Air Force University
CAF	combat air forces
CCAF	Community College of the Air Force
FAA	Federal Aviation Administration
FY	fiscal year
HAF/A3	Headquarters Air Force/Operations, Plans and Requirements
MAF	Mobility Air Force
MASS	Merit Assignment Selection System
NPSF	National Pilot Sourcing Forum
OSS	overseas sorties
RAP	Ready Aircrew Program
SUPT	Specialized Undergraduate Pilot Training
SW	Southwest Airlines
TFAM	Total Force Aircrew Management
TWCF	Transportation Working Capital Fund
UA	United Airlines

UPT undergraduate pilot training

USERRA Uniformed Services Employment and Reemployment Rights Act

Objective

The objective of the Air Force–Airline Industry Collaboration effort was to investigate the viability of options for the Air Force and airlines to collaborate on issues related to their pilot and maintenance workforces by evaluating benefits, costs, and feasibility from the perspectives of the Air Force, the airlines, and individual service members.

This report encapsulates the analysis and results from the project. We begin with a context-setting background, then present workforce demographics and potential collaboration options. We conclude with findings and recommendations.

Background

The airline industry is beginning what is expected to be an unprecedented period of sustained pilot hiring, resulting in changes in demand for experienced U.S. Air Force personnel. Hiring projections are based on recent developments in commercial aviation, including mandatory airline pilot retirement at age 65, anticipated increases in airline demand with a strengthened economy, and normal attrition.

The Air Force is a prime airline pilot hiring source. Pilots gain invaluable experience during their initial service commitment of ten years of full-time military service. Airlines also find pilots in civilian sources, but the military provides premium training and allows a steady flow of experienced pilots directly into major airline flight operations. Also, while many military pilots historically have affiliated with a reserve component unit and continued military service on a part-time basis, there are concerns that the pace of airline requirements may create retention challenges starting in the 2018–2019 period. Researchers expect major airline pilot hiring to be at unprecedented sustained levels through 2030.¹ Demand for airline pilots could affect the total force—active and reserve.

Similarly, aircraft maintainers are in high demand within the Air Force. Airlines also have a need for experienced aircraft services personnel. Maintainers are often the limiting factor in reliable aircraft mission scheduling and sustaining deployed operations. With increased airline hiring, there is the potential to lose experienced Air Force maintainers from the total force just as they mature in their Air Force technical specialties.

Finally, the current operations tempo creates a potential for disrupting the traditional approach to employing part-time military reserve pilots. In 1994, the Uniformed Services

¹ For more details on hiring see Michael McGee, *Air Transport Pilot Supply and Demand: Current State and Effects of Recent Legislation*, dissertation, Santa Monica, Calif.: Frederick S. Pardee RAND Graduate School, RGSD-351, 2015.

Employment and Reemployment Rights Act (USERRA) placed a cumulative five-year cap on the amount of full-time military service that reservists could be absent from civilian employers.² Over the past 15 years, personnel have exceeded this limit periodically. While airlines comply with USERRA, continued waivers of this limit generate economic pressures for airlines, as well as unpredictability in scheduling and hiring. There is also an issue of perceived fairness between airline employees who serve in the reserves and those who do not.

Air Force and airline industry representatives initiated discussions regarding teaming/collaboration on issues of mutual interest regarding their pilot workforces. One issue being communicated to the Air Force is that airlines want predictability in pilot and maintainer scheduling as the pace of airline industry hiring increases. Airline personnel who are also reservists often take military leave that airline officials describe as occurring at erratic intervals and lasting for unpredictable lengths of time. The Air Force active and reserve component leaders want to retain a quality workforce to maintain readiness, reduce training costs for replacement personnel, and sustain its reserve population while confronting higher operations tempos in response to military global security requirements.

² Public Law 103-353, “Uniformed Services Employment and Reemployment Rights Act of 1994 (USERRA),” October 13, 1994 (codified at 38 U.S.C. §§4301-4335).

Workforce Demographic Context

Here, we describe the pilot and maintenance workforces. For each of the two workforces, we present the flow of personnel through the active duty and reserve components, discuss whether airline employment is attractive to Air Force personnel, and describe the impact of airline hiring on the Air Force workforces.

The Air Force Pilot Workforce

In this section, we give a representative description of the Air Force pilot workforce and context. The numbers, while not exact, provide an understanding of the relative proportions of pilots flowing into and out of the total force—including active duty components (RegAF), and the Air Reserve Component (ARC). To this end, the following analyses assume a steady-state system based on historical intake and loss rates and do not represent any change in the size of the pilot force. The Air Force has approximately 17,500 pilots. About 13,000 of these pilots are serving on active duty; the remaining 4,500 serve in the ARC, which comprises the Air Force Reserve (AFR) and Air National Guard (ANG). These populations include pilots who have finished both initial and aircraft-specific training and include officers through the rank of lieutenant colonel.

After completion of undergraduate pilot training (UPT) and aircraft-specific follow-on training, all new pilots enter into either the RegAF or the ARC (as depicted in Figure 1). Both sets of pilots incur a ten-year service obligation from the completion of UPT.

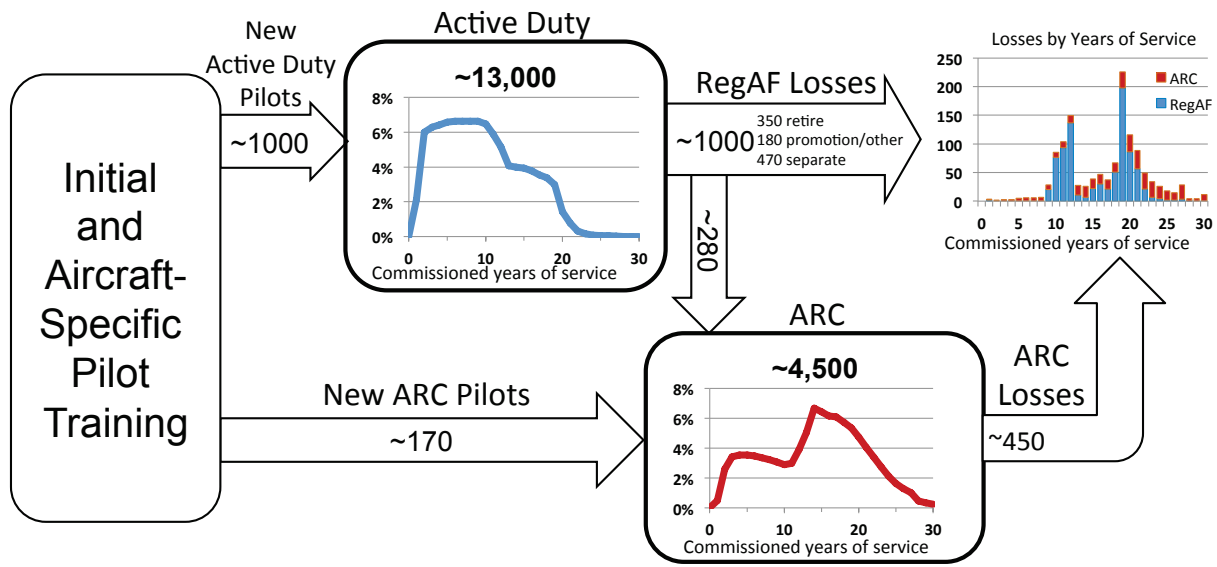
The RegAF pilot force must bring in approximately 1,000 new pilots per year to sustain its total required numbers, given historical losses. In our assumed steady-state system, the 1,000 pilots that leave active duty each year must be replaced by 1,000 new pilots entering the system.

Of the pilots that separate, some elect to continue military service in the AFR or ANG. The Air Force describes this election to join the ARC after active duty as “affiliation.” Historically, slightly more than 60 percent of pilots separating from active duty join the ARC (about 280 as shown in Figure 1). Affiliations traditionally have been the primary source of experienced pilots for the ARC, but are not sufficient by themselves for the ARC to sustain required personnel levels. The ARC also must train new pilots to maintain its inventory.

As the distributions show (see Figure 1), a majority of active duty pilots are still within their initial service obligation from pilot training. The active duty population drops off as pilots reach their tenth year of rated service, when the UPT service commitment ends and the potential for separations increases. Pilot population then declines steadily until another large drop at the 20-year point, when active duty personnel become eligible for military retirement. In addition to separations and retirements, there remain other reasons that pilots leave the active duty pool,

including promotion, grounding, and other losses;³ we focus on those that separate or retire primarily because they are the largest drain on the pool of Air Force pilots and the most qualified for immediate employment with airlines. The makeup of the ARC pilot force is the mirror image of the active duty in terms of experience because of affiliations. A majority of ARC pilots possess more than ten years of service. There is not the visible drop off at the 20-year mark because ARC pilots typically serve beyond 20 years of service.⁴ However, there is a steady decline as ARC pilots age, prompting a need to continually add new pilots to the ARC pool. The majority of pilots in the ARC (about 70 percent) serve part-time and often have a full-time civilian job, such as flying for an airline.

Figure 1. Representative Air Force Pilot Workforce with Annual Flows



Many Air Force pilots become airline pilots after their military service commitment ends and they become eligible to depart military service. The histogram in the top right of Figure 1 depicts, by years of experience, the approximate annual number of pilots leaving both the RegAF and the ARC. Large numbers leave the RegAF at the completion of the initial pilot training commitment, then again around 20 commissioned years of service (when active duty officers are eligible to retire). These local peaks correspond to the drop-offs in the distributions in the RegAF

³ Other losses refer to deaths and other events for which there were insufficient data to categorize. Air Force Personnel Center, *Rated Officer Retention Analysis: Pilot, Combat System Officer and Air Battle Manager Cumulative Continuation Rate and Total Active Rated Service, FY 14 Report*, undated.

⁴ With 20 qualifying years of service, ARC members are eligible for retirement pay, but payments do not begin until age 60. By contrast, an active duty retirement is paid immediately following retirement from the active duty.

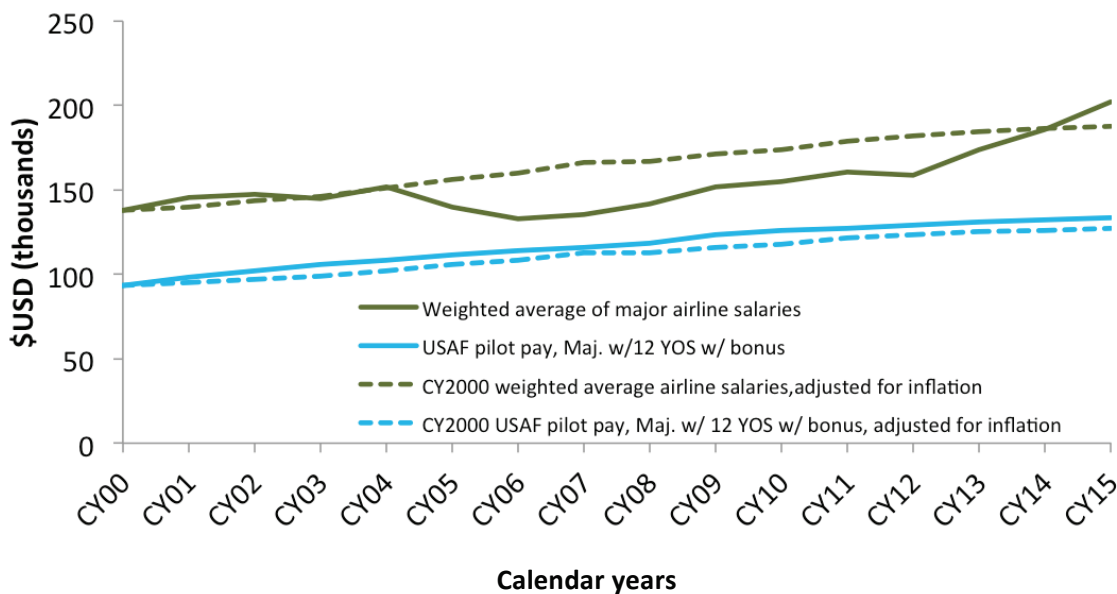
“Active Duty” box on the left. Losses from the ARC are more consistent by years of service. Multiple studies have shown a statistically significant relationship between increases in major airline hiring and increases in active duty separations and retirements.⁵

Many pilots leave the RegAF after their initial training commitment; this number of separations is correlated to the level of airline hiring. Next, we examine airline salaries to see what sort of choices pilots face when deciding whether to continue serving in the military or to apply for airline employment.

Airline Pay is Attractive to Air Force Pilots

The last surge in airline pilot hiring occurred prior to 2000. Following that surge, and after the terrorist attacks of September 11, 2001, the airline industry suffered declining revenue and restructured through bankruptcies and mergers. During this period, many airline pilot groups made concessions on pay and benefits. By 2015, pay levels for major airline pilots had rebounded to an even higher level than in 2000 when adjusted for inflation (see Figure 2).

Figure 2. Major Airline and Air Force Pilot Pay Adjusted for Inflation 2000 to 2015



SOURCE: McGee, 2015.

In the near future, major airline pay will likely continue to increase. Pilots at United Airlines (UA) received a 17.5-percent pay raise over three years in January 2014.⁶ Pilots at American

⁵ McGee, 2015. McGee is the most recent such study; it also contains a literature review of other studies that also showed this correlation.

⁶ Airline Pilot Central, “United Airlines,” undated.

Airlines received a 23-percent pay increase in January 2015 with 3-percent annual raises through 2019.⁷ Finally, pilots at Delta Air Lines rejected a 20-percent pay raise over three years in July 2015, presumably holding out for an even better offer.⁸ Given these recent contract outcomes, we expect major airline pilot pay to remain competitive in the near future.

All of the major airline workforces are unionized with a strict seniority system that motivates pilots interested in an airline flying career to get hired as soon as possible and stay with the same company. Seniority affects pay, quality of life, and vulnerability to furlough.

Table 1 shows five different pilot career trajectories and cumulative earnings at age 65, the Federal Aviation Administration (FAA) mandatory retirement age. To account for the time value of money, all pay prior to age 65 is inflated and any retirement pay after age 65 is discounted. As a baseline, we considered an Air Force pilot staying on active duty for 20 years, retiring as a lieutenant colonel, and then flying for a major airline. Four other cases included:

- serving 25 years active duty, retiring as a colonel, then flying for a major airline
- separating from active duty after active duty service commitment (ADSC), then flying for a major airline
- separating from active duty after ADSC, serving until 28 years of service in the ARC and flying for a major airline
- a civilian career path of an aviation college, flight instructing, flying for a regional airline, then for a major airline.

Table 1. Career Pilot Earning for Different Career Paths at Age 65 (in millions)

	Retire Military After 25 Years of Service as O-6, Career Airline	Retire Military After 25 Years of Service as O-5, Career Airline	Separate Military After ADSC, Career Airline	Separate Military After ADSC, Career Airline and ARC	College, Civilian Flight Instruction, Regional Airline, Major Airline
Total earnings at age 65	\$13.46	\$14.05	\$15.34	\$16.57	\$15.60
Difference	-\$0.59	Baseline	\$1.29	\$2.52	\$1.55

Given current airline and Air Force pay, pilots make more money over a career if they separate from the military at the first available opportunity (near the eleventh year of service), get hired by a major airline, and fly for the ARC. The break-even points where earnings computed at age 65 are equal between separating or retiring from the RegAF and going to the airline is 14 years for retiring as a lieutenant colonel at 20 years of service and 16.5 years for retiring as a colonel with 25 years of service.

⁷ Terry Maxon, “American Airlines Pilots OK 5-Year Contract,” *Dallas Morning News*, January 20, 2015.

⁸ Susan Carey, “Large Majority of Delta Pilots Reject Three-Year Contract,” *Wall Street Journal*, July 10, 2015.

Indications That Air Force Pilots Are Interested In Airline Careers

One indicator of pilots' desire to fly for airlines at some point in their career is how frequently Air Force pilots obtain FAA civilian pilot ratings. After completing UPT, pilots can take an FAA exam and earn a Commercial Multi Engine Land pilot certificate via a military competency process that recognizes the military pilot training. While this is not the FAA Air Transport Pilot (ATP) pilot certification rating required to be hired for a major airline, it does serve as an indicator of interest in a potential civilian pilot career, or at least an indicator that individuals are keeping their career options open.

We obtained records from the FAA Airmen Certification Branch—AFS-760, which tracks new pilot certificates and the numbers and types that are earned through military competency. From that data, we found that an average of 1,062 pilots per year over the past seven years earned FAA ratings via their military experience and this number is increasing. A majority of these pilots also had a type rating listed recognizing their flight time and experience in the Air Force's T-1 Jayhawk training. We calculated that 60 percent of newly trained pilots opted to get their FAA rating, nearly all of them pilots that were entering the Mobility Air Force (MAF) and just completed T-1 training. Notably, very few fighter/bomber-track T-38 graduates opted to earn an FAA rating. This might be because T-38 track pilot graduates are more focused on military flying at that stage in their career. Another reason T-38 trained pilots may not seek FAA ratings is that the Commercial Multi Engine Land Rating would have a centerline thrust restriction. This restriction limits pilots to operating aircraft with engines along the centerline of the aircraft, which means getting the FAA rating might not be worth the additional training needed to avoid the restriction and meet the qualifications for airline hiring. The difference also could be a cultural artifact of the T-1 training locations with a mobility-focused instructor force and historically closer ties with their regional FAA offices. At these locations, an established practice exists of obtaining FAA ratings not only for a possible future airline career, but also as a mark of professional pilot achievement, certification, and competency.

Correlations Between Airline Hiring and Full-Time ARC Pilot Losses

Previous studies have shown a high correlation between active duty Air Force pilot losses and major airline hiring.⁹ Other recent work has shown that as active duty losses increase, so does affiliation from the RegAF to the ARC. While we know that some active duty pilots transition to airline jobs and others transition to full-time ARC jobs, there has been little information on whether or how airline hiring affects full-time ARC members. We examined

⁹ See, for example, Marc N. Elliott, Kanika Kapur, and Carole Roan Gresenz, *Modeling the Departure of Military Pilots from the Services*, Santa Monica, Calif.: RAND Corporation, MR-1327-OSD, 2004; Nolan Sweeney, *Predicting Active Duty Air Force Pilot Attrition Given an Anticipated Increase in Major Airline Pilot Hiring*, dissertation, Santa Monica, Calif.: Frederick S. Pardee RAND Graduate School, RGSD-338, 2014, p. 120; McGee, 2015.

personnel files to understand the relationship between the full-time ARC pilot force and major airline hiring.¹⁰

A substantial subset of pilots in the ARC remain full-time members. Unlike the part-time or traditional reservists and guardsmen, these personnel serve as either dual-status technicians or Active Guard Reserve (AGR). In the Air Force reserve, technicians are referred to as Air Reserve Technicians (ART). In both branches of the ARC, technicians are government civilians responsible for ARC management, planning, and training—primarily at the unit level—with a job requirement of also being participating reservists. AGR members are essential personnel serving on active duty within the Guard or Reserve and having all of the pay and benefits of an active duty member.

Personnel data show that both the absolute number and percentage of full-time pilots have increased in the ARC since 1996. As can be seen in Figure 3, full-time pilots now make up just under 40 percent of the ANG and about 25 percent of the AFR. These personnel serve as instructors within units, tasked with maintaining mission readiness for the entire unit—both full- and part-time members. Full-time positions offer the security of government employment, the ability to serve in the military, and a much greater ability to homestead (not move as frequently as required in the RegAF). These aspects of full-time ARC positions offer greater security than an airline career, which is subject to periodic layoffs and other changes based on seniority. However, despite the benefits of full-time ARC employment, we found that strong hiring demand from the airline industry also increases the losses and turnover of the full-time ARC pilot workforce. This relationship between airline demand and full-time ARC pilot loss is especially strong in the ANG technician community. Historically, these losses have been readily replaced from a pool of part-time pilots seeking full-time employment or pilots newly affiliating with the ARC from active duty.

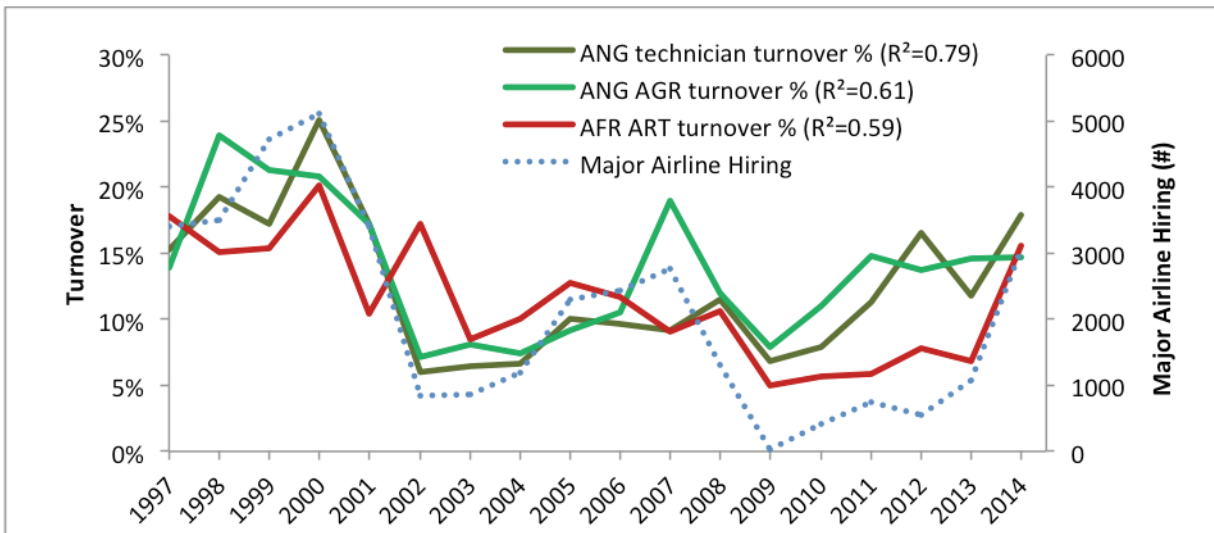
As Figure 4 shows, there is a correlation between full-time pilot turnover in both the AFR and ANG and in major airline hiring. The losses are expressed as a percentage to take into account that the full-time work force has grown over time. As airline hiring trends upward, the ARC may have to consider streamlining its hiring and training processes to keep up with increased turnover, or look into allowing pilots the ability to transition more easily between full-time and part-time statuses.

¹⁰ The current and historical numbers of Air Force pilots were derived through the use of the personnel files sent to RAND Corporation monthly by the AFPC.

Figure 3. Number and Percentage of Full-Time ARC Pilots (in calendar years)



Figure 4. Full-Time Pilot Turnover in the ARC Compared with Airline Hiring (in calendar years)



NOTE: R^2 was determined by controlling for Air Force personnel reductions in calendar years 2007, 2012, and 2014. R^2 is the coefficient of determination and can be considered the percentage of turnover that is explained by changes in major airline hiring (see McGee, 2015). To further check the correlation, a Durbin Watson test was performed to examine the independence of the residuals. The Durbin Watson statistics for ANG TECH, ANG AGR, and AFR ART turnover are 1.58, 1.12, and 2.41, respectively, with an upper critical value of 1.07 ($\alpha=0.01$). These values show there is no statistical evidence of autocorrelation in the errors, thus lending further support that R^2 represents the percentage changes in ARC turnover explained by major airline hiring.

In conclusion, airlines are attractive to both RegAF and ARC pilots when major airline hiring is high. Air Force pilots interested in maximizing their income would leave after the completion of their ADSC. These losses are detrimental to Air Force staffing and provide the motivation for the Air Force to collaborate with the airlines to limit losses.

The Air Force Maintenance Workforce

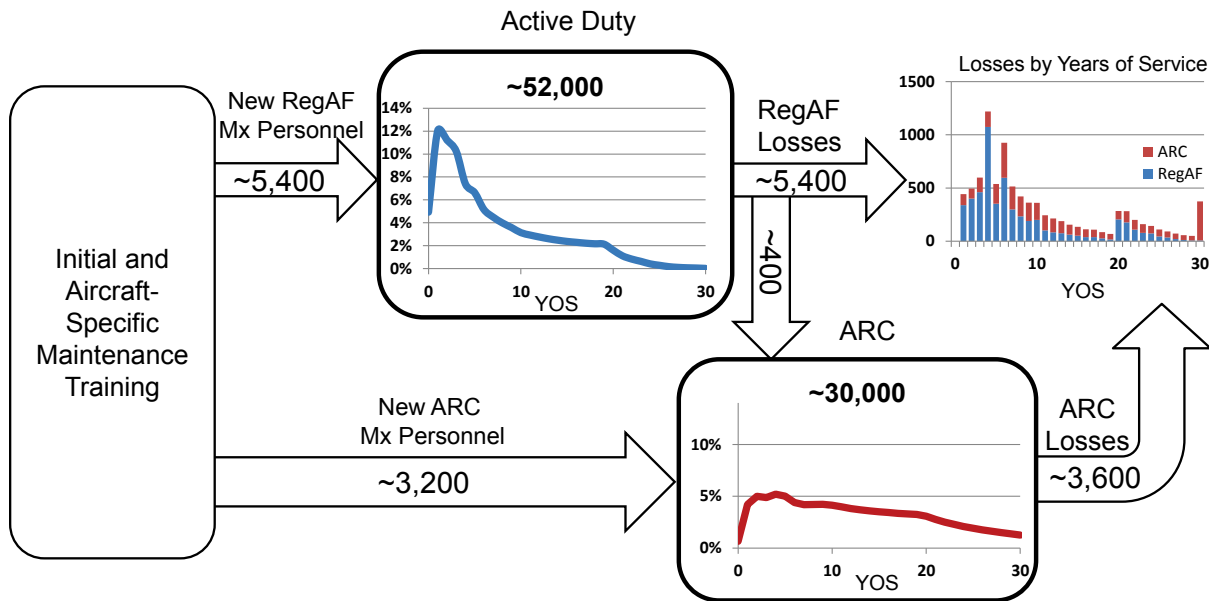
In addition to pilots, the Air Force and airlines both engage a second workforce: Both need well-trained maintainers to generate sufficient aircraft to meet schedule demands.

Historically, the Air Force has had a relatively steady, predictable flow of maintainers from enlistment to separation or retirement. Maintainers separate from the Air Force for any number of reasons (e.g., personal, administrative, or judicial) and can retire after 20 years of service, with 30 years of service being the high year of tenure for most enlisted personnel (meaning they have to retire).

Figure 5 shows the Total Air Force's steady-state maintenance workforce based on recent inventory and historical loss and accession rates.¹¹ Active duty and ARC accession rates match their loss rates, leaving approximately 52,000 RegAF and 30,000 ARC maintainers at any given time. Approximately 400 of the 5,400 annual RegAF losses remain part of the total force by a transition to reserve military status and affiliating with an ARC unit. In both the RegAF and ARC graphs in Figure 5, first-term enlistments make up a significant part of the population, which decreases over increasing longevity toward zero at 30 years. The "Losses by Year of Service" chart in the top right provides a more detailed look at the time-in-service of maintainers separating or retiring from the total force at any given time. The spikes at the four- and six-year points reasonably correspond with maintainers separating after their first-term enlistments. The next spike, at 20 years, logically corresponds with the earliest authorized retirement date, and the spike at 30 years corresponds with the enlisted high year of tenure, at which point maintainers must retire. The losses in other years happen for any number of reasons (e.g., personal, administrative, judicial, or retirement between 20 and 30 years). It is important to point out that, historically, the Air Force has been able to compensate for levels of separation and retirement; airline hiring patterns have not caused Air Force maintainer staff gaps.

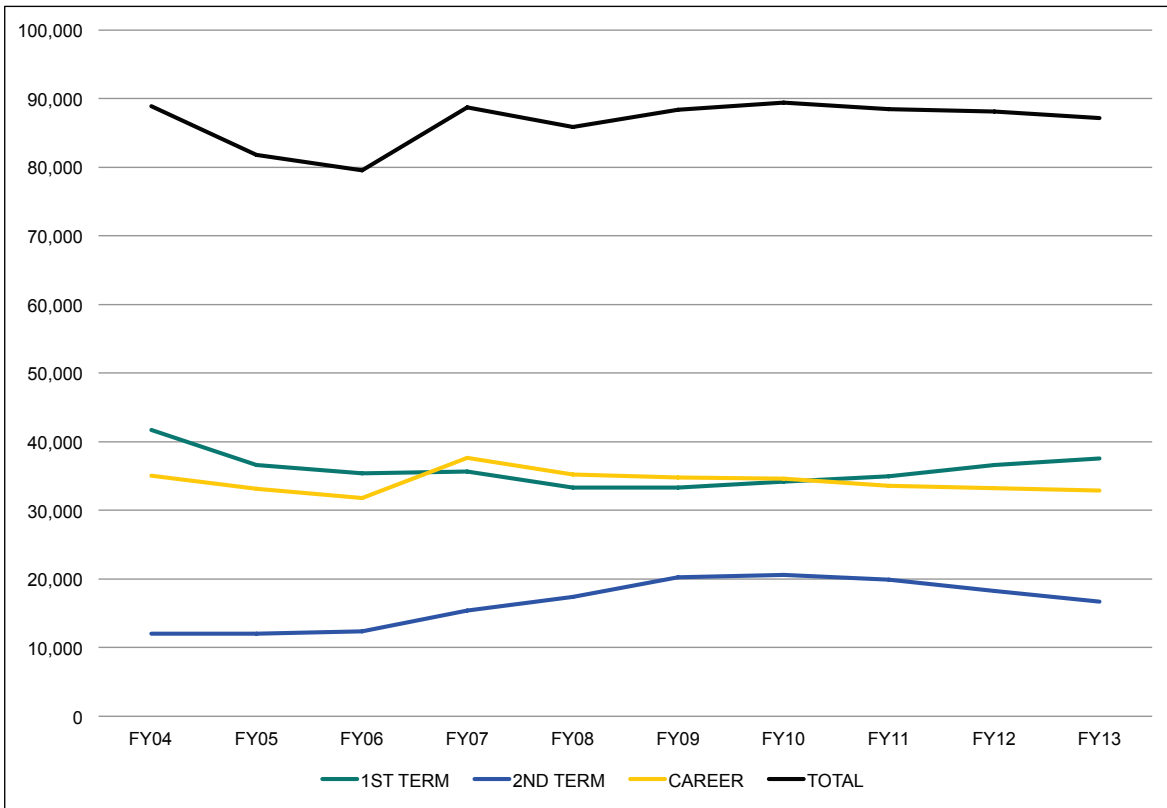
¹¹ The current and historical numbers of Air Force maintainers were derived through the use of the personnel files sent each month to RAND Corporation by the AFPC since 1996.

Figure 5. Representative Steady-State Air Force Total Maintenance Workforce



Over many years, the Air Force has maintained a relatively steady overall maintainer population. Figure 6 shows the Air Force total force enlisted maintainer population from fiscal year (FY) 2004 through FY 2013. The black line on top shows the total force maintainer population. The other lines represent terms of service, each trending similar to the black line.

Figure 6. Total Air Force Population of Aircraft Maintenance Personnel



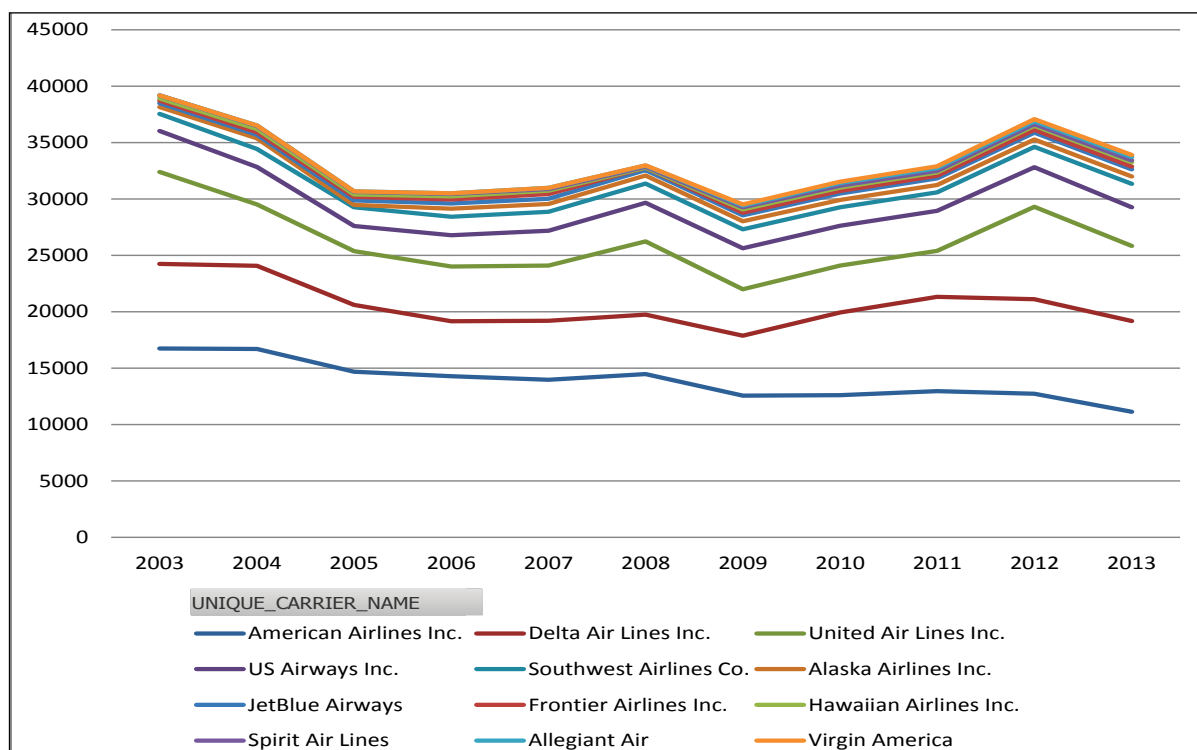
SOURCE: AFPC, “Interactive Demographic Analysis System (IDEAS),” last reviewed Dec. 1, 2015.
 NOTES: 1st term = maintainers on first enlistment; 2nd term = maintainers on second enlistment; career = maintainers on their third or subsequent enlistment; the black line indicates all terms for the total force.

Airline Maintenance Personnel Demographics

Figure 7 shows the maintainer population for the top ten airlines over the same period of time as the total Air Force maintenance population as shown in Figure 6.¹² All airlines’ maintenance populations increased or decreased in unison, which can be attributed to national events such as post-9/11 impacts or national economic events. During the period from 2009 to 2012 when the airline workforce was increasing, the Air Force was able to keep a steady total force, as shown in Figure 6.

¹² Office of the Assistant Secretary for Research and Technology, Bureau of Transportation Statistics, “Air Carrier Financial: Schedule P-10,” U.S. Department of Transportation, 2014.

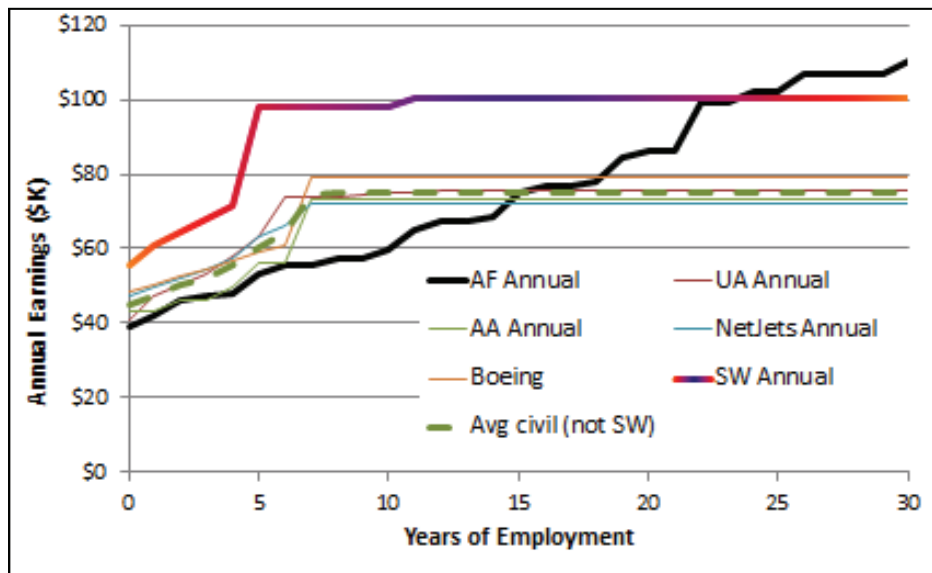
Figure 7. Maintainer Population for the Top Ten Airlines



One reason the Air Force has been able to keep a stable maintenance workforce may be salary; the service offers salaries that are competitive with several major airlines for which we were able to obtain pay information. Figure 8 compares Air Force salaries with those of Boeing and four airlines—American Airlines (AA), NetJets, Southwest Airlines (SW), and UA—for employees with a given tenure or years of service.¹³ The figure also includes an average salary line that includes all the commercial companies above except Southwest Airlines because that company seems to be an outlier; its maintainers earn considerably more than the average.

¹³ The salary information for each commercial airline is for the period 2011–2012, extracted from their respective union agreements. “Agreement Between American Airlines and Transport Workers Union of America, AFL-CIO, Covering Aviation Maintenance Technicians and Plant Maintenance Employees of American Airlines, Inc.,” Transport Workers Union, September 12, 2012; “Agreement By and Between Southwest Airlines Co. and the Mechanics in the Service of Southwest Airlines Co. as Represented by Aircraft Mechanics Fraternal Association,” Transport Workers Union, August 16, 2008–August 16, 2012; “Collective Bargaining Agreement of November 2, 2008, Including Contract Extension Agreement of December 7, 2011, Between The Boeing Company and International Association of Machinists and Aerospace Workers, AFL-CIO and Certain Districts and Local Lodges Thereof,” International Association of Machinists, 2008; “Netjets Collective Bargaining Agreement Mechanics and Related Employees and Stock Clerks,” airlinemechanics.org, January 16, 2007; “Tentative Agreement Between United Airlines, Inc. and the Airline Technicians and Related Employees in the Service of United Airlines, Inc. as Represented by the International Brotherhood of Teamsters, January 1, 2010–June 30, 2013,” Teamsters Local Union No. 104, 2013.

Figure 8. Air Force and Commercial Maintenance Personnel Salaries



NOTE: AF Annual = Air Force, enlisted. Avg civil = average of UA, AA, NetJets, and Boeing.

Upon initial enlistment, Air Force maintainers receive lower earnings than maintainers in airlines, but eventually their incomes surpass the earnings of airline aircraft technicians. The Air Force tends to enlist untrained personnel and provide all required maintenance training, while airlines hire trained maintainers, generally with an airframe and powerplant (A&P) certificate as a prerequisite, and offer a higher initial salary. Near the six-year point, commercial maintainer earnings increase at a better rate than those of the Air Force, but commercial earnings level off at an average of \$75,000 around the seventh year, while Air Force earnings continue to increase. Near year 17, Air Force earnings surpass that of all commercial companies except Southwest, which falls behind at approximately the 24-year point, at \$101,000, and continue to increase to approximately \$110,500 at the 30-year point.

Indications of Air Force Maintainer Interest in Airline Careers

Further evidence that the Air Force might be unaffected by airline hiring is that few Air Force maintainers appear to be attaining A&P certifications, which are an FAA requirement for maintainers to repair commercial aircraft unsupervised, and often a prerequisite for employment with airlines. While the Air Force has a robust training system, it does not take the place of an A&P certification. The Air Force Air University (AU) offers an A&P certification program that was developed to bridge the gap between a maintainer's Air Force training and experience and

the FAA requirements to test for A&P certification.¹⁴ If a maintainer completes AU's program, the Community College of the Air Force (CCAF) provides the maintainer with a completion certificate that is recognized by the FAA as evidence that the maintainer met the FAA's training and experience requirements and ultimately authorizes the maintainer to take the FAA tests.

On average, five to six Air Force maintainers per month (out of approximately 80,000) reported A&P certification to CCAF from March 2008 through November 2014.¹⁵ Possible reasons for the low completion rate could be that it is prohibitively expensive for the maintainer to pay for the FAA tests beyond what is paid by the GI Bill or other funding sources, there is no established deadline for completion, or there is low awareness of the program. Further, maintainers who successfully complete AU's program are not obligated to take the FAA tests, and in the event that maintainers do take the FAA tests and receive A&P certification, they are not obligated to report receipt of an A&P back to CCAF.¹⁶ Finally, a maintainer can qualify for A&P certification by simply passing the test, without enrolling in AU's program. Therefore, the data on the number of Air Force maintainers who have received A&P certification are likely underreported. Overall, while this data suggests that the number of Air Force maintainers completing the A&P course and getting their A&P certification is low, it may not be an accurate number.

Even with very generous assumptions about the numbers of Air Force maintainers pursuing A&P certification either through the AU program or by taking the test, the available data indicate that only a very small fraction of the Air Force workforce, approximately 1 in 1,000, seems to be earning a credential required for airline maintenance work. Note that this rate is significantly lower than the rate of pilots obtaining FAA certification, which is about 6.5 percent of the total pilot population per year.

Finally, we note that the rate of active duty maintainer losses from separations and retirements, as described earlier, greatly exceeds the expected rate of future job openings in the airlines. The chart in the top part of Figure 9 shows the current inventory of Air Force and airline maintainers. The total population of Air Force maintainers is considerably higher than all airlines combined. The bottom part of Figure 9 shows the annual active duty maintainer losses of 5,400 from separations and retirements and the average annual expected hiring rates for airline maintainers of 1,350 positions.¹⁷

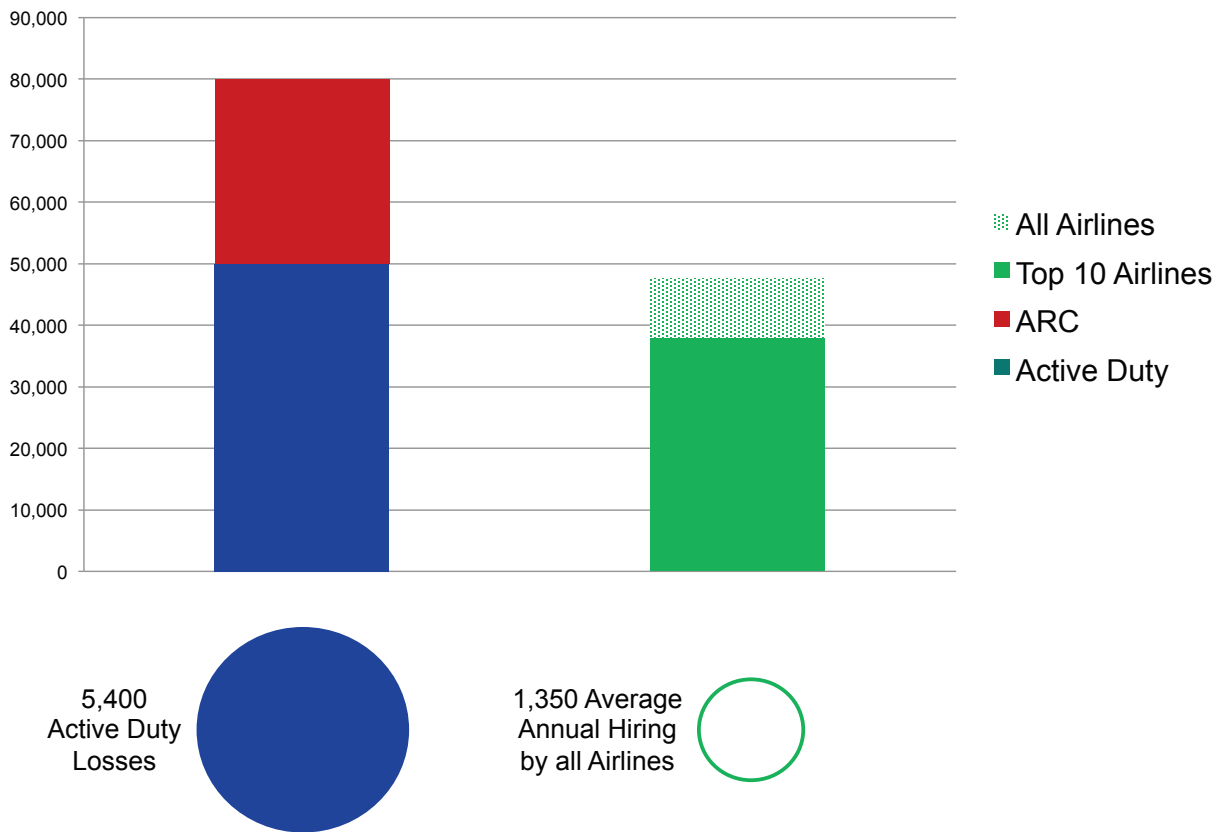
¹⁴ Air Force A&P Certification Program internal document received by RAND from Air Education and Training Command (AETC), CCAF credentialing programs, December 19, 2014.

¹⁵ AETC CCAF, 2014.

¹⁶ The primary reason a maintainer would report their A&P back to CCAF is to receive college credit.

¹⁷ Inventories: Office of Airline Information of the Bureau of Transportation Statistics, *Annual Employee Statistics by Labor Category (Schedule P-10)*, Department of Transportation, 2013. Estimate of airline technician hiring per year: Bureau of Labor Statistics, *EP Tables*, last modified December 8, 2015.

Figure 9. Current Maintenance Inventory, Annual Losses, and Airlines Hiring Averages



The rate of active duty Air Force maintainers separating or retiring is four times greater than the rate of expected airlines hiring.

Based on the analyses above, we recommend the Air Force not invest in collaborating with airlines around the maintenance workforce. The Air Force has a history of meeting maintainer manpower requirements by keeping accessions consistent with separations and retirements. At the same time, the Air Force offers competitive pay compared with several airlines, suggesting little financial motivation for maintainers to leave the Air Force for a maintenance job. Although the data have limitations, it does not appear that large numbers of maintainers are working toward an A&P certification, a prerequisite to employment with a airline. Finally, while the number of potential maintenance job openings in the airlines may increase in the future, current steady-state rates of separation and retirement should continue to be able to absorb the increase.

In summary, major airlines are not a significant factor affecting the Air Force maintenance workforce. Our analyses indicate that airline maintenance hiring likely would not affect Air Force maintainer retention. Four indicators suggest the Air Force can continue to keep a stable maintainer force without collaborative efforts with the airlines:

- Historically, the Air Force has kept steady maintainer retention rates while the airline maintainer population has fluctuated over the same period of time.

- The Air Force offers competitive maintainer salary salaries compared with several airlines, making it unlikely that maintainers would separate or retire for better earnings potential alone.
- Few Air Force maintainers seem to be pursuing FAA A&P certification, which is often a prerequisite to employment in the airline industry.
- On average, there are considerably more qualified Air Force maintainers separating or retiring than projected airline maintenance jobs available.

Workforce Summary

The analyses in this section suggest that the Air Force may be at a disadvantage when competing with the major airlines for pilots; therefore, collaboration around the pilot workforce might be necessary to offset anticipated airline hiring. Conversely, the Air Force is well positioned with regard to the maintainer workforce and need not pursue collaboration with airlines.

Benefits of Collaboration to the Air Force

The Air Force primarily seeks to gain more control over managing pilot retention and the experience level of the pilot workforce. It invests significant resources in training pilots, and provides even further training and experience for pilots to fulfill unit instructor and leadership positions—and, later on, staff and headquarters roles. In times of significant airline hiring, as are predicted over the next decade, more pilots leave the Air Force than in times of low airline hiring, which is to be expected. If the Air Force could somehow work with the airlines to retain people for longer periods, both in the RegAF and the ARC, the Air Force would benefit by reducing the training burden to replace losses, as well as keeping manning at levels required for wartime readiness. A secondary goal for the Air Force would be to save money by reducing costs because of the reduced training burden.

The airlines primarily seek to reduce their personnel costs. A secondary goal of the airlines is to increase predictability in their scheduling and hiring processes, both of which also would contribute to reduced costs. Anecdotally, airlines experience scheduling problems when military operations tempo increases for their employees who are also part-time military reservists.

Individual pilots seek to increase earnings, advance their careers, reduce the risk of unemployment, and improve their quality of life. Military service creates uncertainties, but so does a career flying for the airlines.

Unions that represent airline pilot groups are interested in maximizing benefits across their entire pilot membership, much of which does not have military experience either on active duty or with the ARC. Generally, if a collaboration option provided benefits to a majority of union members, the union likely would be agreeable. However, if options somehow favored current ARC member pilots over civilian pilots, or allowed an airline company to pay military pilots less

money (i.e., through some type of arrangement where military pilots could work part time or at low/no cost to the airlines) the unions likely would oppose such options.

For a collaboration option to be viable, it should benefit all parties involved. However, there may be situations where the parties would be willing to accommodate one option in exchange for the benefit of another option, in a quid pro quo manner.

Options

For this project, we considered several collaboration options. For each of the options, we discuss the general concept and the potential costs and benefits to the Air Force, to the airlines, and to individual pilots, as well as any known implementation issues. The options are grouped into three general categories: training, job sharing, and overarching.

Training Options

This section introduces several options—proposed by the RAND team, airlines, and the Air Force—that involve collaboration on training or crediting experience. Following this introductory section, more analysis is presented in subsections on specific options. Given that airlines benefit when they hire military pilots trained by the U.S. government, they may be willing to contribute to that training. The Air Force, especially the ARC, may benefit if it gave Air Force training credit for airline flying.

A range of options were considered that involve training. The first set of these options involves crediting flying events between the Air Force and airlines. Potentially, flying credit could be granted for simulator training, landings, instrument approaches, overseas sorties (OSS), and instrument checkrides. More-complicated options related to training could involve sharing simulators or aircraft, or allowing military pilots to gain experience through airline flying. The most-complicated options discussed, which are probably least likely to be implemented, involve airlines providing financial resources for initial qualification or continuation training. Implementing these options may impose an added tracking or administrative burden on the Air Force.

Sharing Training/Currency

Although the governing rules and regulations differ, pilots in both the Air Force and airlines must meet certain flying requirements regarding frequency and recency. For example, the FAA requires airline pilots to accomplish three landings every 90 days, whereas Air Force regulations require pilots to perform a takeoff, instrument approach, and landing every month. There are multiple requirements to maintain currency. If credit from accomplishing flying or training events for the airline could be credited to the Air Force (or vice versa), both may be able to save on training costs. While there might be a higher probability that this could occur for like aircraft—such as the C-40 and 737, an airframe used by both the Air Force and airlines—the option is still highly unlikely and the airlines prefer to have all their pilots undergo airline-conducted training in addition to Air Force training. After considering a range of flying events,

we identified the most promising option: the Air Force allowing credit for flying OSS when ARC pilots carry out airline oceanic flights.

A review of training requirements found that military pilot flying training fell primarily into periodically required training sorties, or events.¹⁸ Combat aircraft required Ready Aircrew Program (RAP) training sorties, which were military combat-centric, typically required every month, and were not similar to airline flying. MAF aircrew required training events more similar to airline flying. However, we deemed that MAF tactical, low-level, airdrop, and aerial refueling training events, like combat-centric training, were not compatible with airline flying. We found that the vast majority of basic MAF aircrew training requirements—those that would be most similar to airline requirements—were 100-percent creditable in high-fidelity simulators and had no flying hours programmed against them, thus, airline flying would provide no savings. Both RegAF and ARC pilots have requirements to fly in OSS training—training that cannot be accomplished in simulators. According to the ANG and AFRC flying hour managers, more than 3,000 ARC MAF pilots required OSS training.¹⁹ In FY 2015, the ARC MAF units programmed more than 26,000 flying hours for OSS training (14 percent of their total 184,000 programmed flying hours).²⁰ OSS training requirements are programmed as Transportation Working Capital Fund (TWCF) flying hours: These are difficult to cost out, but when demand for overseas cargo movement is low, the Air Force will meet its OSS training requirement using Operation and Maintenance funds. To get a sense of how much of the overseas sortie training requirement could be credited; we made assumptions based on the proportions of ARC pilots that are airline pilots and the amount of international flying those pilots perform. Approximately 65 percent of ARC pilots fly with the airlines and 21.4 percent of U.S. air carriers' flying is international.²¹ Combined, this means that approximately 14 percent of ARC pilots (65 x 21.4) fly international routes. If just half the routes met OSS criteria, then 7 percent of the reserve component OSS could be OSS-credited against training requirements. The amount of money and flying hours saved depends on the complex relationships among TWCF costing, commercially procured airlift, the level of overseas cargo demand, and the magnitude of the OSS training requirement.

¹⁸ There are a series of Air Force regulations that list training requirements: U.S Air Force, Air Force Instruction 11-2C-5 Vol. 1, *C-5, Aircrew Training*, April 25, 2012; U.S Air Force, Air Force Instruction 11-2C-17 Vol. 1, *C-17 Aircrew Training*, June 1, 2012; U.S Air Force, Air Force Instruction 11-2KC-135 Vol. 1, *KC-135 Aircrew Training*, June 4, 2012; U.S Air Force, Air Force Instruction 11-2KC-10 Vol. 1, *KC-10 Aircrew Training*, June 5, 2012.

¹⁹ RegAF pilots also require OSS, but currently cannot simultaneously be employed by an airline and thus do not have an alternate means of getting overseas flying experience.

²⁰ Office of the Assistant Secretary for Research and Technology, Bureau of Transportation Statistics, "Flights: All Carriers, All Airports," U.S. Department of Transportation, 2015.

²¹ Based upon 12 months of data. Office of the Assistant Secretary for Research and Technology, Bureau of Transportation Statistics, 2015. For this estimate, we make the assumption that the same proportion (21.4 percent) of airline pilots fly internationally. Additionally, we assume that 21.4 percent of ARC pilots who are also airline pilots fly internationally for the airlines.

Regardless of potential flying hour savings, the Air Force should consider this option because of the flexibility it would allow pilots and units in meeting training requirements.

Accessing Regional/Major Airline Civilian Pilots into ARC

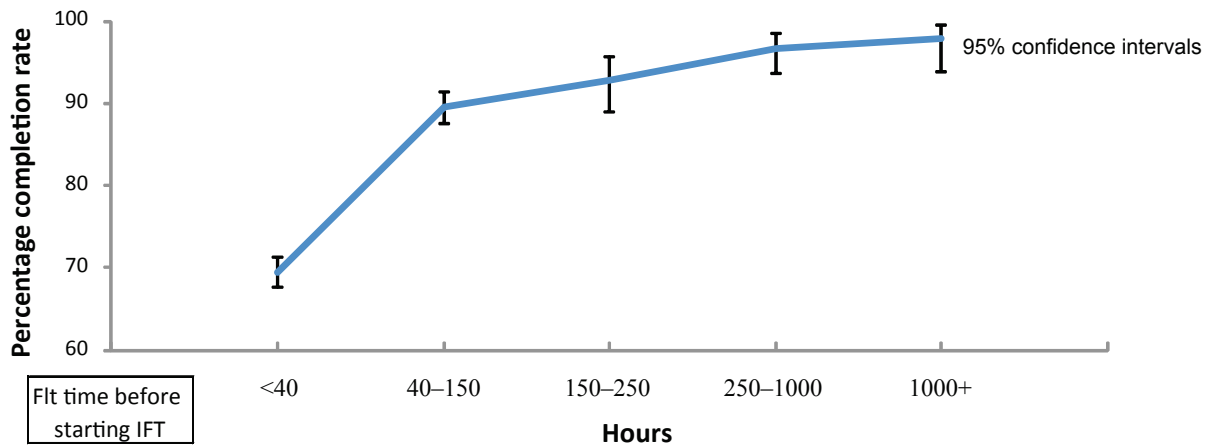
This option is the reverse of pilots gaining experience in the military and then leaving to fly for an airline. This option explores the potential of the Air Force leveraging the experience gained by civilian regional airline pilots to select pilots most likely to succeed in, and possibly shorten, Air Force initial training. This may be attractive to pilots in the near future because there is significant instability in the regional airline industry and Air Force pay is much higher than pay for regional pilots.

Figure 10 shows that Air Force pilot trainees who had more than 40 hours of flying before UPT had a statistically significant higher UPT completion rate.²² Flying experience beyond 150 hours only slightly improved the completion rate, but not significantly beyond the large improvement between the 0–40 and 40–150-hour groups. Figure 11 shows that trainees with more than 1,000 hours had statistically significant better overall performance at UPT. The center of each of the distributions represents the mean Merit Assignment Selection System (MASS) score for trainees with different levels of flying experience prior to UPT in both primary (T-6) and secondary (T-1 or T-38) phases.²³ The results show that the performance advantage of previous flying experience does not decay as UPT classes reach different phases of training (i.e., aerobatics, formation, secondary, or the mission phases of training). Historically, a majority of these candidates with 1,000+ hours were destined for ARC units but there were also some that were OTS candidates and went on to active duty.

²² ~ 40 hours of flight time closely associates with the ability to solo and pass an initial FAA private pilot license evaluation.

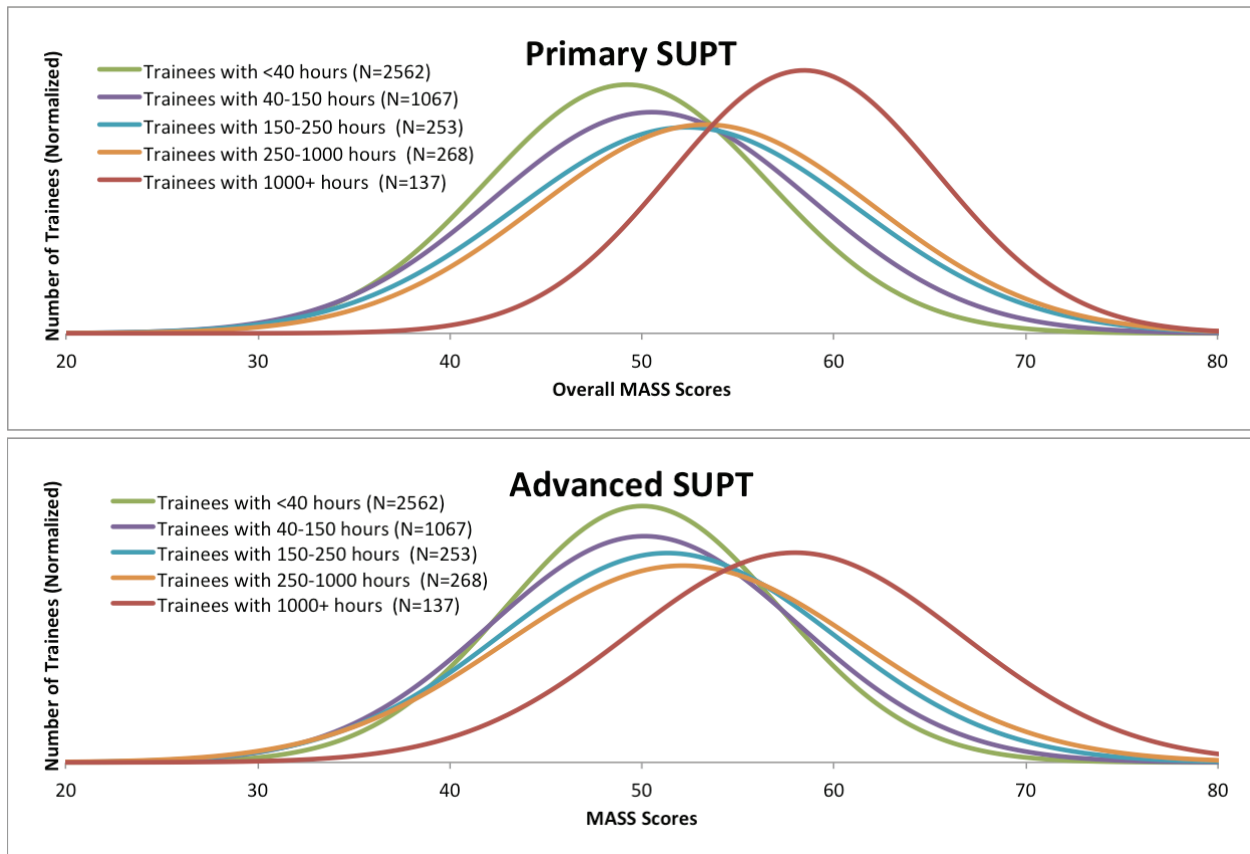
²³ The MASS score is a standardized composite of daily flying performance, check rides, academic grades, and flight commander ranking used to determine student class standing and assignment choice.

Figure 10. Combined Initial Flight Screening/Specialized Undergraduate Pilot Training (SUPT) Completion Rate by Previous Flying Experience



SOURCE: Data provided to RAND by AETC/A3 and AFPC/DSYX; analysis of statistics on 4,287 UPT students from 2006 through February 2015 with valid Pilot Candidate Selection Method (PCSM) scores (with minimal Air Force Academy graduate inclusion).

Figure 11. Overall UPT Performance by Previous Flying Experience



Based on preliminary analysis of syllabus items that a highly experienced civilian pilot already would have mastered, we estimate that 20–30 percent of the UPT syllabus could be eliminated for these highly experienced candidates; this would reduce the UPT course time by a similar amount and result in a cost savings of between \$140,000 and \$310,000 per student.²⁴ A more detailed performance analysis would be needed to decide which specific events and sorties could be effectively eliminated.

Aligning Air Force Training Schedules to Times of Low Airline Activity

Airline flying is periodic in nature, with surges in the summer and lulls in the winter. Additionally, airlines conduct their pilot scheduling in one-month blocks. If the Air Force could schedule large exercises and training events when airlines anticipate lulls, this could improve the number of pilots available to the airline during peak periods and allow more pilots to be available to participate in military exercises. Regarding the monthly scheduling, ARC units typically have their drill weekends on the first weekend of the month, which is sometimes problematic for airlines—if pilots are consistently unavailable at the beginning of the month, it could preclude those pilots being scheduled in both the preceding and current month. (airline scheduling for the preceding month could be affected because pilots would not be able to fly trips that continue into the next month and conflict with that month’s drill.)

Forty-nine percent of the drill weekends occur on the first weekend of the month; 69 percent of the time, drill weekend occurs on the first nonholiday weekend of the month (see Table 2). This is especially problematic for the ANG, which generally offers only one drill option per month; some AFR units offer two options for drill weekends each month. To alleviate scheduling conflicts with the airlines, RAND recommends the ARC consider splitting drills between the second and third weekends of the month. This will divide the civilian pilot ARC members across multiple weekends and avoid weekends that are within a few days of the beginning or end of the month to maximize availability for airlines. This change would primarily benefit the airlines, but would take minimal Air Force effort.²⁵ There is no benefit per se to the Air Force in changing the drill schedule, but it might allow reservists to fly more for airlines and still participate in reserve weekends.

²⁴ This preliminary analysis was based on the T-6, T-1, and T-38 syllabi allocated ground and flying training events. The cost estimate is based on training costs in Secretary of the Air Force, Air Force Instruction 65-503, *U.S. Air Force Cost and Planning Factors*, February 4, 1994, Table A34-2, "Representative Officer Aircrew Training Costs—Variable and Fixed," March 5, 2014.

²⁵ The authors looked exclusively at the airline industry and did not consider potential impacts of this recommendation on other industries.

Table 2. Breakdown of Uniform Training Assembly (Drill) Weekends FY 2015

Month	Week 1	Week 2	Week 3	Week 4	Week 5	Total Training Weekends
October 2014	70	0	22	9	0	101
November 2014	97	8	29	4	0	138
December 2014	114	20	4	1		139
January 2015	3	118	0	20		141
February 2015	117	0	24	1		142
March 2015	111	10	19	2		142
April 2015	3	98	24	15		141
May 2015	95	2	38	0	3	138
June 2015	103	24	3	11		141
July 2015	0	74	11	14		99
August 2015	69	34	18	13	1	135
September 2015	2	97	29	12		140
TOTAL (%)	49	30	14	6	0	

SOURCE: FY15 schedules of 141 AFR and ANG Flying units

NOTE: Color key for weeks which should not have drill weekends

Holiday: blue

No week 5: orange

Weekend split over 2 months: purple

We also considered the overlap between ARC participation in military large-force exercises and peak airline flying periods. As already noted, passenger airline flights peak in the summer and ebb in the winter. Cargo airlines have a sustained busy season in November and December with holiday package shipping. We obtained five years of scheduling data for combat air forces (CAF) from 2010 to 2015 showing how many aircraft were involved in large exercises during any given month. Peak exercise participation by CAF aircraft did not overlap with major airline flying. In addition, the maximum number of ARC aircraft and by deduction the number of pilots involved is very small, ~40 per day, compared with the number of daily occurring airline flights, ~26,000.

We recommend the Air Force not expend effort to minimize ARC exercise participation during peak airline flying because the added effort to reschedule likely is not worth the benefit to the airlines in terms of added numbers of pilots available, or the benefit to the Air Force of substantially being able to have greater ARC participation in these large large-scale exercises.

Using Airline Flying to Season Military Pilots

In this option, Air Force pilots would fly for airlines to build time and experience, and possibly maintain some sort of Air Force currency, while being paid by the Air Force. An arrangement of this type would allow the Air Force to maintain a trained, current pilot force for less money because it would save flying hours on its own fleet. The airlines may be able to

benefit from reduced labor costs because the Air Force would pay the salary of pilots being seasoned.

After discussion with airline officials, we did not pursue this option further because there was very little interest from that side. Also, the pilots who typically need the most seasoning do not yet have the requisite experience to meet the FAA standards for airline flying (an Air Transport Pilot rating). Unions likely would object to individuals flying for the airline who were not being paid by the airline at a rate equal to pilots with similar seniority.

Job-Sharing Options

Sabbaticals or Part-Time Opportunities with the Airlines for Full-Time Service Members

The Air Force recently piloted a program to offer sabbaticals to pursue other interests—often education or family interests. This approach could be extended to give pilots some airline experience. Full-time Air Force members would be able to keep their military jobs but take off up to three years to pursue airline flying. The Air Force could realize cost savings through relief of obligation to pay for and season excess pilots. The Air Force could keep the option to retain members at the end of the sabbatical tour or implement a service commitment that would require additional Air Force service upon return from the sabbatical, thus increasing retention if desired. This option is not assured; there is the possibility that the Air Force would lose pilots to the airlines following their sabbatical if a service commitment were not included. The airlines would benefit from having a “try before you hire” arrangement and might get preferential access to a pool of desirable candidates with Air Force training and experience. However, airlines might incur additional training costs because of the additional turnover. This arrangement might be beneficial for individual pilots because they could gain a line number to establish seniority with the airline during the sabbatical, then return to the Air Force to earn a military retirement afterward. Given the benefits, Air Force pilots might appreciate the opportunity to start a career with an airline.

We did not pursue further analysis on job-sharing primarily because airlines expressed little interest in hiring pilots who were obligated to return to full-time Air Force duty for a period of years.

Part-Time Airline Jobs for Full-Time ARC

Development of this option stemmed from concern about a recent trend of increasing losses of full-time ARC technicians. The suggested arrangement involves pilots maintaining two part-time jobs, one with the Air Force and the other with an airline. This arrangement would allow the ARC to retain personnel who no longer wish to work full time with ARC while providing time for replacements to be trained. However, the pilot might struggle to balance the two jobs, and the Air Force would incur the additional cost of replacing 50 percent of the ARC technician. For the

airlines, part-time pilots could function as shock absorbers in times of increased demand (i.e., during the summer months and weekend holiday schedules), without the added cost of keeping a full-time pilot on the payroll. Potential costs to the airline involve expending training resources without the payback of a full-time employee and additional scheduling burdens. There would also be issues of how these pilots would be integrated into the airline seniority system.

Overarching Options Shaping Air Force Approach to Managing Pilots

“Pilots as a National Asset” Program with Other Government Agencies and the Airlines

This concept involves the Air Force and other stakeholders taking a national, holistic view of managing the pilot work force, including a commitment across all groups that use pilots—the Air Force, passenger airlines, cargo airlines, etc.—to building and maintaining a sizable pool of qualified pilots. There has been renewed interest recently in the idea of pilots as a national asset with the latest airline hiring wave, FAA rule changes that require airline pilots to have more flight experience, and airlines advocating for a “National Airline Policy.”²⁶ The Air Force could benefit from improved recruiting, alleviation of some training burden, and better information about developments in the airline industry that could affect Air Force manning and retention. The airlines may be ensured a more stable supply of military-trained pilots. This approach could be a method for both sides to advocate additional educational funding to support training of pilots in the national interest. However, both the Air Force and airlines might be expected to fund additional programs or efforts that were not either entity’s responsibility previously (e.g., airlines contributing to initial pilot training).

The nation might consider pilots a national resource because a strong pilot workforce contributes directly to national security and the economy. The ARC relies on full-time airline pay for ARC part-time pilots to keep these individuals compensated while benefiting from these pilots being available for national military mobilization. The nation’s defense strategy currently relies on the availability of airline pilots for the Civil Reserve Air Fleet in case of national emergencies. The Civil Air Patrol, an Air Force Auxiliary, relies on experienced volunteer pilots to fulfill its missions. Finally, the major airlines are an economic engine that helps drive the national economy.

Pilots also might be considered a national asset because of the high costs of providing training and flying experience, and interdependencies of airline, Air Force, and broader

²⁶ Major airlines are endorsing the “National Airline Policy” through Airlines for America, the major airline industry trade group. The proposed policy centers on reducing taxes, reforming the regulatory burden, modernizing the air traffic system, competing globally, and stabilizing energy prices. Presumably, reducing the regulatory burden and competing globally could be applied to the pilot workforce. Read more at “Airlines for America Promotes a National Airline Policy,” United Hub, December 16, 2013. Additional information is available at the Airlines for America website.

government policy. For example, the cost for Air Force UPT alone ranges from \$722,000 to \$1.05 million.²⁷ Military training benefits airlines with a stable supply of sufficiently experienced applicants. As an example of how broader policies can affect both the Air Force and airlines, federal steps to increase the number of pilots (e.g., funding nonmilitary flight training) also can benefit military in that more candidates with a higher probability of UPT completion will be available.

We recommend that the Air Force continue to work with the National Pilot Sourcing Forum (NPSF), a group consisting of major airline pilot hiring representatives and the Air Force rated management personnel. The Forum's objective is to provide a holistic view for managing the pilot work force from recruitment to retirement in a way that ensures a viable supply of safe, well-trained pilots to meet military and civil aviation requirements. We also recommend that the NPSF include more groups—including regional airlines, labor associations, congressional staff, other services with pilots (e.g., the U.S. Navy), universities with aviation-related programs, and the FAA—which would increase the value to the Air Force and other stakeholders. The NPSF is a valid extension of Air Force total force interests that will allow the service to keep cognizant of pilot flow to airlines and ARC-airline issues. Additionally, continued participation in the NPSF will allow the Air Force to focus on potential outcomes when pilot demand changes (e.g., economic surge or downturn, military ops tempo). This might provide the Air Force with advanced warning of airline hiring bow-waves or layoffs, which would allow better anticipation of effects and more precise application of personnel management policies, such as reductions in force or selective retention bonuses. The information shared between the Air Force and airlines via this forum could serve to smooth the flow of pilots between stakeholders.

In general, the NPSF is a forum that allows for the Air Force and the airlines to collaborate on addressing their common challenge of sustaining and growing an experienced pilot force. The group also could work on areas outside the flow of pilots, including such topics as vetting the effects of FAA rule changes on the flow of pilots and collaboration to increase interest in aviation careers.

Clarifying USERRA Guidance

USERRA is an employment law designed to provide specific protections to broad categories of current, former, and applicant members of the armed services.²⁸ The congressional purpose behind USERRA is to encourage non-career service in the military by eliminating or minimizing disadvantages with beneficiaries' civilian careers, to minimize the disruption to both service members and employers by providing for prompt reemployment following periods of service,

²⁷ Secretary of the Air Force, 2014.

²⁸ Public Law 103-353.

and to prohibit employment discrimination against service members.²⁹ USERRA protections apply to both voluntary and involuntary military service, as well as all employers in the private and public sector, including the federal government.

Many airline pilots also serve in the ARC on a part-time basis and frequently use their USERRA rights in the course of their military service. Generally, airlines are very familiar with the requirements of serving in the ARC and support their pilot employees. With swings in the airline industry and various levels of reserve call up, airline hiring and ARC manning is sometimes in harmony. For example, when airlines furloughed pilots after 9/11 there were many reserve call-ups and pilots maintained full-time employment through the military. However, in times of strong airline hiring demand AND high levels of military activation, there is competition for pilots' time and greater scrutiny is placed on ARC pilots taking military leave from the airlines. Periodically over the last 15 years, personnel have exceeded the cumulative five-year limit for full-time military service away from their civilian employers established in USERRA.

Based on conversations with airlines, we believe that clarifying and solidifying the requirements for how pilots give airlines notice of impending military leave would appeal to airlines and might entice them to collaborate on other options. Some elements of the law are vague regarding reasonable notification time and how notification must be provided (i.e., written, phone call, email). Clarifying notice requirements would require minimal cost and effort on the part of airlines and the Air Force. However, stricter notice requirements in terms of timing or method of notification might affect pilot morale and thereby hurt pilot retention.

The airlines are especially interested in obtaining a USERRA policy clarification letter from Air Force leadership for airline pilot ARC members; the Total Force Aircrew Management (TFAM) office within Headquarters Air Force/Operations, Plans and Requirements (HAF/A3) is developing such a letter. We recommend completing this activity because it is relatively low effort and will address a current airline concern, thus building good will for future collaboration.

²⁹ Public Law 103-353 (38 U.S.C. §4301).

Findings and Recommendations

Findings

Airline hiring will remain strong. All signs in FY 2015 indicate that airline hiring is occurring, and will continue, as anticipated. A job with a major airline will remain an available and financially lucrative employment option for an Air Force pilot eligible to separate from military service.

Major airlines are not a significant employment draw away from the Air Force for the maintenance workforce. We examined four indicators leading to this conclusion. The size of the Air Force's maintenance workforce has been relatively constant, while the airline maintenance workforce has varied over time. Air Force pay is competitive with airline maintenance technician pay. Air Force maintenance personnel show little proclivity for obtaining FAA certifications, which are often prerequisites for airline maintenance employment. Finally, the civilian maintenance technician hiring numbers are much smaller than the average number of maintenance personnel leaving the Air Force each year.

Major airline pay incentivizes Air Force pilots to separate. Strictly looking at earnings through age 65 (the mandatory FAA retirement age) and any expected retirement pay after age 65, a pilot will make more money separating from the active duty Air Force and working with a major airline than if he or she stayed in the Air Force until earning an active duty retirement. While this doesn't account for quality of life or income security, the largest fiscal payoff for a pilot in the active duty Air Force is to separate. The break-even point—where earnings computed at age 65 are equal between separating from the RegAF and going to the airline or retiring—is 14 years for retiring as a lieutenant colonel at 20 years of service and 16.5 years of service for retiring as a colonel with 25 years of service.

ARC full-time turnover also correlates with major airline hiring. Previous work showed the correlation between active duty separations and retirements with major airline hiring. There is also a strong correlation between pilots leaving full-time positions with the ANG and AFR to pursue airline careers. These positions traditionally have been backfilled by part-time pilots waiting in the wings, but the turnover and time to fill these positions cause stress within ARC units.

Experienced pilot candidates perform significantly better at UPT. Air Force pilot trainees who had more than 40 hours of flying before UPT had a statistically significant higher UPT completion rate,³⁰ and trainees with more than 1,000 hours had statistically significant

³⁰ Approximately 40 hours of flight time closely associates with the ability to solo and pass an initial FAA private pilot license evaluation.

better overall performance at UPT. Historically, a majority of these candidates were destined for ARC units but there were also some that were OTS candidates who went on to active duty.

Most major airlines are not interested in collaborating on part-time, sabbatical, or seasoning options. These options, which limit future productivity, provide little current incentive for airlines. In the current airline pilot job market, major airlines have the leverage and desire to get the maximum utility out of each pilot they hire. Additionally, in the case of pilot seasoning, pilot unions stress that a pilot flying for the airline should be paid in a manner consistent with all other pilots at the company.

Recommendations

Stay engaged with airlines, the FAA, pilot unions, and universities to facilitate personal and organizational relationships that can smooth the flow of pilots between the military and airline workforces and build on the idea that pilots are a national asset. It is in our nation's best interest to facilitate a viable pilot workforce through appropriate common focus on the pilot life cycle from recruitment to retirement.

Recruit pilot candidates with airline experience. Pilot candidates with previous flying experience should be given even greater preference in selection to attend UPT. Additionally, the Air Force should consider operating a streamlined UPT course to save money and time for candidates with more than 1,000 flying hours. There is potential for significant employment changes in the regional airline industry that could result in large numbers of these candidates being available. The Air Force should be poised and ready to recruit these candidates should this become a reality.

Credit OSS for ARC airline pilots. Crediting OSS flown by ARC MAF members while flying for their airlines could allow the Air Force to save money through a reduced flying hour program. Even if flying hours are not reduced, allowing this training credit will provide commanders and individual members with more flexibility in maintaining readiness.

ARC should consider splitting drills between second and third weekends of the month. This would accommodate airlines' monthly scheduling process and make it easier for members to fly for airlines. Dividing units between two separate drill weekends would solve the problem of all ARC pilots from being away from their airlines during the same weekend. Additionally, pilots may benefit by being able to earn more pay if drill weekends and airline flying were further deconflicted.

Provide USERRA policy guidance to ARC members. Obtaining USERRA clarification and enforcement is one of the primary interests of the airlines. The TFAM office within HAF/A3 is working on this, and we recommend completing the letter because it is relatively low effort and will address a current airline concern, building good will for future collaboration.

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