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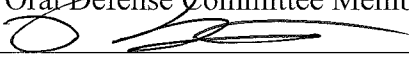
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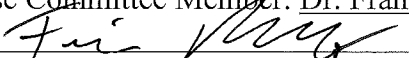
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Executive Summary

Title: The Airlines Versus Marine Corps Aviation: Anticipating Manpower Shortfalls in a Competitive Market.

Author: Major James M. Brophy, United States Marine Corps

Thesis: Marine Corps aviation manpower should take a proactive approach to meet staffing goals by studying trends in airline industry demand to project future shortfalls and implement solutions before they become problematic.

Discussion: Since 2010, the United States airline industry has seen a steady demand in pilot and maintenance technician requirements. It has also identified a future labor shortage spanning over the next few decades to compliment the increase in manpower. Prediction models portray a deficit of over 35,000 pilots by the year 2030 if an aggressive hiring strategy is not implemented as the industry continues to grow at a rapid rate. High demands in the global market have increased the need for additional cargo aircraft in major shipping companies like the United Parcel Service and Federal Express while Southwest and Delta airlines look at all available resources to meet higher demands in air travel. The difficulties in satisfying these demands will only get worse as a high percentage of airline pilots approach the mandatory retirement age of sixty-five.

In the wake of the airline industry's workforce demand sits United States Marine Corps aviation. Frustrations in the ready rooms among Marine aviators and maintainers are far too common mainly due to the lack of funding to keep healthy aircraft on the line and flight hours in pilot logbooks. The lack of flight time coupled with high operational and additional "B" billet duties keeping quality aviators out of the cockpit only make matters worse. The Deputy Commandant of Aviation put out a survey indicating three quarters of his pilots are influenced to leave the Marine Corps and seek civilian job opportunities elsewhere.

Active duty pilots are leaving the Marine Corps following the expiration of their contracts to seek a healthier flying career and lifestyle in the public sector while Marine Corps manpower reacts to the high rate of resignation. The recent amendment to the Airline Safety and Federal Aviation Administration Act of 2010 decreased the flight hour minimum requirement making it easier for military pilots to apply for their airline transportation pilot certificate as they seek higher wages and stability. The Marine Corps must carefully consider a way to compete with airline industry manpower and remain attractive to the pilots they've invested time and money into.

Conclusion: Marine Corps aviation should take a proactive approach to keep experienced aviators from leaving active duty by following basic trends in airline industry demands. Increasing pilot production and implementing retention incentives at first indications of airline industry growth will keep Marine Corps aviation readiness healthy during periods of high airline pilot demand.

DISCLAIMER

THE OPINIONS AND CONCLUSIONS EXPRESSED HEREIN ARE THOSE OF THE INDIVIDUAL STUDENT AUTHOR AND DO NOT NECESSARILY REPRESENT THE VIEWS OF EITHER THE MARINE CORPS COMMAND AND STAFF COLLEGE OR ANY OTHER GOVERNEMENTAL AGENCY. REFERENCES TO THIS STUDY SHOULD INCLUDE THE FOREGOING STATEMENT.

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Preface

Whether to resign your commission and fly for the airlines or remain on active duty is a constant discussion between every aviator in every ready room across the Marine Corps. This discussion becomes a serious decision after an aviator's contract expires. A lot of Marine Corps first tour pilots who have a hard time meeting the high demands and stress of the squadron will seek another flying tour at the training commands or another flying "B" billet to build their flight hours. The goal is to be as attractive as possible to the major airlines who look at total and pilot in command flight hours. Marine Corps pilot contracts typically last anywhere from 6 to 8 years which is right around the time some pilots are finishing their flying "B" billets. If the opportunity is there, some pilots will decide to leave active duty in search of a better lifestyle outside of the Marine Corps.

Other aviators will decide to take a non-flying "B" billet to return to a fleet squadron after it's complete. Their non-flying "B" billet may come with a deployment and when aviators return to a fleet squadron they typically continue to progress in their type, model, and/or series (T/M/S). These seasoned aviators will frequently train and deploy to meet forward deployed staffing goals and in turn get worn out. These pilots are susceptible to airline careers due to the unhealthy balance between work and their families. They know they can still fly and be a positive influence at home or take a week off to enjoy a family vacation if they resign and work for the airlines. On top of the satisfaction of getting reprieve from meeting high deployment and readiness tempos, the airline industry pays their pilots more than a traditional Marine Corps pilot salary after the first few years of employment.

Looking at the big picture, a Marine aviator is paid a salary and trained at no cost to the pilot other than taking the airline transport pilot certification test to qualify for a major airline. At the end of his or her aviation contract the Marine can resign and walk into most major airline job interview and get hired. This is a dream for airline companies who do not have to pay for training and have experienced pilots come to them ready to fly. For the Marine pilot it's a major win! He or she can make more money as a career airline pilot than they would staying in the Marine Corps plus the quality of life increases. The airlines want experienced pilots and they know where and how to get them.

I must first acknowledge all the aviators and crewmasters who have made a positive impact on my career as a KC-130J pilot. The list is too long to name, but they are the reason I wake up every day excited to be a Marine aviator. Second, and most importantly, to my wife (Erica), son (Jack) and daughter (Avery) who sacrifice and endure the daily hardships of being in a Marine family. I could not do what I do for the Marine Corps without their continued love and support.

Introduction

Over the next two decades the airline industry expects to experience pilot shortfalls due to recent economic growth, increased Federal Aviation Administration (FAA) flight hour requirements, and forced retirements.¹ The increased demand on air travel and cargo transport coupled with the mandatory retirement age of sixty-five have opened thousands of pilot positions necessary to meet airline staffing goals.² The Boeing corporation claims the steady demand for commercial aviation pilots and maintenance technicians to meet fleet expansion over this period will require an estimated increase of 88,000 pilots and 102,000 maintenance technicians in North America alone.³ The US airline industry predicts that it will have a shortage of 35,000 pilots by the year 2030 if an aggressive strategy is not put into place to handle the crisis.⁴ Current airline company strategies include pilot signing bonuses and tuition assistance to train future pilots who struggle to afford the cost to earn the necessary certifications and flight hours to apply for airline pilot positions. They are also hiring military trained fixed-wing pilots who already possess the necessary skills and flight hours to fly a commercial aircraft.

Marine Corps aviation manpower departments should consider how fluctuations in US gross domestic product (GDP) and the airline industry market impact Marine Corps staffing goals as the current airline industry pulls experienced Marine aviators off active duty and into their workforce. The US airline industry gave shortfall predictions in pilot labor following the 2008 recession, upcoming airline retirements, and FAA minimum airline transport pilot (ATP) flight hour regulations. The moment the US market recovered, airline companies predicted a pilot shortfall, and the FAA implemented flight hour restrictions on commercial pilots, Marine Corps aviation should have proactively increased fixed-wing pilot production and readied retention incentives to prepare for the predictable shortfall in fixed-wing pilot manpower.

Waiting until there is a fixed-wing aviation manpower shortage to increase production and retain pilots finishing service obligations will cause a reduction in aviation manpower readiness for at least two years. This is largely in part due to the average two years it takes to select and train additional fixed-wing aviators after primary flight training.⁵

Historically, most aviation incentives and manpower programs geared toward training and retaining critical aviation communities are reactionary to airline industry pilot demands. Marine Corps aviation manpower should take a proactive approach to meet staffing goals by studying trends in airline industry demand to project future shortfalls and implement solutions before they become problematic. Manpower should immediately increase production the moment there is a forecast in US airline industry growth and implement appropriate retention incentives for fixed-wing pilots. When US GDP and airline industry revenue per mile (RPM) forecast a decline in growth, Marine Corps aviation should reduce production back to its original model and remove retention incentives to prevent a surplus of fixed-wing aviators. This will keep Marine Corps aviation in unison with the ebbs and flows of the US airline industry and prevent shortfalls in aviation readiness.

This is not the first time the US experienced a substantial growth in its aviation industry nor the first time assistance programs were used to increase pilot production to meet airline industry demands. In 1939, President Franklin D. Roosevelt proposed a bill called The Civilian Pilot Training Act to increase civilian pilot production to solve US commercial pilot manpower shortages. The success of this act not only met civil aviation demands but would unexpectedly produce a clear majority of military aviators during the buildup of World War II.⁶ At the end of the war, most military pilots left active duty service to fly in the commercial airline industry as the US reduced military pilot requirements until the Vietnam War.

In the 1960s, the US experienced an airline industry “jet boom” as new developments in jet aircraft inspired US citizens to travel via the commercial airlines. Airline companies needed pilots with jet training and experience to handle the high demands in air travel, so they turned to the military. Fixed-wing military pilots already possessed the skills necessary to operate jet and/or transport aircraft, and more importantly, already had the flight hour minimums that saved airline companies thousands of dollars in pilot training. Plus, military pilots were drawn to the airline industry’s high-paying salaries and quality of life as a high operational tempo in Southeast Asia took a tremendous toll on the active duty pilot away from home. The airline industry would flourish hiring highly qualified military fixed-wing aviators while sapping manpower resources from the Department of Defense (DoD). Military aviation manpower would not recover until the mid-1970s when the US withdrew from Vietnam and the price of oil rose high enough to slow air travel.⁷ The DoD would finally be able to catch up to their aviation manning goals as the US market, airline industry, and commercial airline pilot hiring went into a temporary decline.

The US economy, aviation industry, and pilot demands continued to ebb and flow throughout the 1980s, 1990s, and turn of the century in unison. Gradual rises in GDP and RPM, both carefully tracked by airline companies to track future profits, provided opportunity for military pilots to resign their commission and find a better quality of life flying for major airline companies as the airline industry grew. The DoD would react by increasing pilot production, enticing experienced active duty pilots with retention incentives, and in some desperate cases implementing a “stop-loss” that prevented active duty pilots from filing for resignation. Today, the airline industry is yet again on the rise as GDP, RPM, and air travel demands steadily increase requiring a significant demand for more aircraft and airline pilot “new-hires” to meet

these needs. US airline pilot demands are not only influenced by today's growing market, but also by Federal Aviation Administration (FAA) rules and regulations.

Eight years ago, US Congress passed the Airline Safety and FAA Extension Act requiring all airline transport pilots to have a minimum of 1,500 total flight hours, with an exemption for military pilots who are only required to fulfill half the required flight time to receive their ATP certificate; a requirement to fly for major airline companies.⁸ This regulation came in wake of the Colgan Air 3407 crash in February, 2009 where FAA officials believed the pilots did not have enough flight hour experience to overcome an unusual flight condition.⁹ Prior to the incident, first officers otherwise referred to as copilots, were only required to have a commercial rating and 250 hours of total flight time to perform copilot duties.¹⁰ Today, copilots flying commercial aircraft without a military background must now possess a much higher flight hour minimum to perform the same tasks.

Although this law may increase flight safety by requiring greater flight hour experience in the cockpit, it does not take into consideration the possible impact it has on the airline's ability to find qualified pilots who meet the FAA's new standard. It is difficult for civilian pilots to accrue the FAA imposed flight hour requirements due to the high cost per flight hour creating a shortage of civilian pilots to fill airline pilot shortfalls.¹¹ Military pilots, on the other hand, do not have this problem. Military pilots are paid to receive flight training, do not pay out-of-pocket expenses to fly, and are only required to possess half of the new FAA flight hour requirement.

Today, airline companies believe tuition assistance may help offset initial low wages offered by regional and major air carriers while aspiring pilots build flight hour requirements to meet major airline industry standards.¹² According to the Airline Pilot Association (ALPA), a flight officer's average first year salaries with signing bonus and retentions in a regional carrier

are \$40,000 per year.¹³ ALPA also claims sixteen out of seventeen US regional carriers are actively hiring additional pilots to fill pilot shortages caused by the increase in demand in major airline companies such as Delta, United, and American Airlines. To meet the FAA's new flight hour standard, aspiring civilian pilots must build their flight hour resume elsewhere; once this goal is met, they qualify to apply for an airline transportation pilot certificate. Unlike civilian pilots, military aviators do not have this problem since most leave their first tour with enough hours to meet FAA flight hour minimums. While the airline industry struggles to hire qualified aviators to meet FAA standards, fill in future gaps due to mandatory retirement age, and support a growing fleet of aircraft, the United States Marine Corps (USMC) struggles with a similar issue.

Over the past few years Marine Corps aviators in fixed-wing billets have been resigning their commission as they seek higher salaries and quality of life in the airline industry creating shortfalls in Marine Corps aviation manpower.¹⁴ In 2016, Marine Corps aviation manpower reported having only 78% of the required fixed-wing jet pilots to fill critical Military Occupational Specialty (MOS) billets.¹⁵ This comes in wake of the *2015 Aviator Retention Survey* stating that over 75% of pilots were influenced to leave the Marine Corps due to civilian job opportunities.¹⁶ In 2017, US Congress held their first session addressing current DoD military pilot shortages claiming the "military cannot compete with the potential salaries and, in some cases, lifestyle of the commercial airlines."¹⁷ Marine aviators with met service obligations are attracted to the lifestyle and are usually pilots with substantial flying experience who exceed the FAAs 750 hour minimum.

Statistics show the opportunity for salary growth comes at the end of a military pilot's 6 to 8-year contract where aviators can make the decision to resign service obligations and seek

lucrative opportunities in the airline industry. These statistics are strikingly similar to the 1960s when most Vietnam-Era military pilots left the service in search of higher wages and quality of life.¹⁸ History would repeat itself again in the late 1980's and 1990's as the airline industry grew providing ample employment opportunities in the US airline industry. Military aviators could match their active duty pay within two years of flying for a major airline with a much higher pay scale as they continue to climb in seniority.¹⁹ A study done by the RAND corporation found that within five years of leaving active duty service a veteran could earn over \$180,000 a year flying for a major airline.²⁰ The increase in pay and healthier lifestyle found in the civilian professional aviation community is common knowledge among Marine Corps pilots who are worn out from high operational tempos in the active service.²¹ Whether the military aviator decides to leave active duty early is uniquely related to the ebbs and flows of commercial aviation.

Today, Marine Corps pilots interested in leaving active service can fill manpower gaps in the US airline industry due to US economic growth coupled with FAA flight hour minimums and retirement regulations. When GDP increases there is a subsequent increase in airline revenue measured in RPM. The airlines will purchase additional aircraft and hire additional pilots to meet the need for air travel demands. Airline companies capitalize on DoD aviation manpower by hiring military aviators to fly their aircraft; specifically, those with a fixed-wing MOS. Fixed-wing pilot skill translate well when flying commercial aircraft making it easier for fixed-wing military pilots to find employment in the US airlines. Military aviators reaching the end of their military flight contracts typically possess the required FAA flight hours and are highly qualified to perform commercial aircraft duties.²² Marine Corps aviation manpower should be concerned with today's forecast in US aviation industry growth since Marine Corps aviation manpower is already 22% below its required fixed-wing manning goal, and US GDP, RPM, and airline new

hires are gradually on the rise. A historical comparative analysis will show a common link between the ebbs and flows of the US airlines and DoD aviation, and how the Marine Corps should implement production and retention strategies based on US economic trends to prevent future readiness shortfalls.

Historical Links Between Civil and Military Aviation

The Civilian Pilot Training Program

Civil and military aviation have seen periods of high and low demands throughout history and can be tied to global conflicts, economic depressions, and Congressional visions on total DoD force structure. Links between military aviation and airline industry demands date back to World War II when reserve pilots employed by the commercial airlines were called to active duty after the Japanese bombed Pearl Harbor on 7 December, 1941.²³ This recall created a mass shortage of airline pilots as a large portion of airline pilot manpower were activated to defend their nation at war.

President Roosevelt recognized the growing demand for civilian pilots at the end of the Great Depression by signing the “Civilian Pilot Training Act” on 27 June, 1939 that would grant money to specific colleges to train student pilots. That year, the Civilian Pilot Training Program (CPTP) received \$5,675,000 to assist select universities and their students to cover the high cost of aviation training.²⁴ These pilots were trained not only to meet demands in the civilian sector, but also could commission into military service or instruct military pilots in the Navy and Army Air Corps.²⁵

The CPTP became vital to US pilot production as President Roosevelt called for the construction of 50,000 new aircraft in 1940; thus, requiring an increase from 330 to almost 10,000 pilots to meet civilian pilot manpower requirements to operate the substantial number of

aircraft in production. Within the first year of conception, the CPTP would produce just under 10,000 pilots to fill gaps in commercial airline shortages and by 1942 that number would continue to grow as the total number of pilots in the US rose from 31,000 to over 100,000 to include CPTP funded maintenance training for aircraft technicians.²⁶

Before US involvement in World War II, the CPTP started to require student pilots to take a military oath. This was President Roosevelt's proactive way of anticipating the need for military pilots in the unfortunate, but likely event the US went to war. By 1943, the program's sole purpose was military pilot production but would keep its name until 1944 when it was changed to the War Training Service (WTS).²⁷ The WTS produced students solely to meet, and eventually surpass, the needs of the Navy and Army Air Corps high demand for pilots.²⁸ The total number of student pilots trained reached over 435,000 before the program was decommissioned in late 1944 when the five-year congressional mandate expired.²⁹ Although short-lived, this proactive decision by President Roosevelt allowed the War Department to keep up with the growing demand for military pilots often seen during periods of war.

Although decommissioned after meeting military manpower staffing goals, the Civilian Pilot Training Act was remarkably successful in producing pilots to meet high demands in civil and military aviation. The CPTP was attractive to student pilots due to its low cost and structured efficiently to meet ground and flight training objectives at select universities with access to local aviation facilities.³⁰ Backed by government funding, the CPTP was a temporary solution to meet high aviation demands before and during World War II. It was a reactionary response to the recovering global market and boom in global commerce but would be a proactive solution to President Roosevelt's growing concern of future war. Had the CPTP remained active following

World War II with a long-term plan to train future aviators it could have dampened exponential pilot demands in the decades to follow.

Airline Growth and Lifestyle Attract Military Pilots

Following the end of World War II, the US airline industry would not experience another pilot shortage until the 1960s when coincidentally a mass amount of the World War II pilots approached eligibility for military retirement, and military spending cuts put a halt on pilot production and retention during the drawdown in Korea.³¹ With the commercial airline age cutoff limit of thirty-five, veterans retiring from service would not be eligible to fill gaps in commercial airline manpower. Therefore, the commercial airlines had a smaller pool of eligible active duty military aviators to draw from. As the operational tempo rose in Southeast Asia, this small pool of eligible active duty pilots approaching the end of their flight contracts did not hesitate to seek opportunity in the airlines before the airline pilot cut-off age. The growing demand for commercial air travel created new employment opportunities for aspiring pilots, and an improved family lifestyle in civilian aviation made the decision attractive for military pilots to separate. By 1967, a trend started to form in commercial airline new hires.

During the 1960s, the airlines saw a steady rise in new hires having a military aviation background. In 1964, 59.2% of the flight officers employed by the airlines had military flight training.³² From 1964 through 1967 domestic trunk, regional, and international airlines saw a substantial increase in military trained new hires from 59.2 to 75.3%, 13.6 to 33.8%, and 40.0 to 64.5%, respectively.³³ The US military began to fall behind in pilot production and retention as the Vietnam War put high demands on aviation manpower to fulfill national defense requirements. This pilot deficiency caught the attention of high ranking military officials and US

Congress as the Committee of Armed Services launched an investigation into the DoD manpower crisis.³⁴

In 1967, Secretary of Defense Robert S. McNamara acknowledged DoD aviation manpower deficiencies in his statements on the *Fiscal Year 1968 to 1972 Defense Program and 1968 Defense Budget*.³⁵ World War II trained aviators coming to an end in their flying careers, high rotational requirements to support the Vietnam conflict, and the growing size of military aviation programs were to blame for deficiencies in aviation. The Committee of Armed Services investigation also made note of the growing attrition rate in the 8 to 14 years of service (YOS) aviators contributing to their pilot shortage.

According to the investigation, “this growing loss, particularly in the 8 to 14-year group, is due substantially to the significant increase in civil aviation employment.”³⁶ The US Air Force (USAF) experienced an exponential increase in the number of experienced 8 to 14-year pilots resigning commissions to seek airline careers at the beginning of the Vietnam conflict seen in Table 2. In 1964, only 5% of the one hundred nineteen 8 to 14 YOS pilot losses showed interest in leaving the service to seek airline careers. By 1966, that number rose to approximately 60% of the 563 pilots resigning their commission and by 1967 almost 80% of the 828 pilots leaving the service sought employment in the airlines. According to the Committee on Armed Services, the major contributing factors to the mass number of military aviators leaving the service were in large due to high operational tempos in Southeast Asia, long work hours, and the quality of life at home.³⁷

Production deficits began as early as 1958 for the United States Navy (USN) and USMC who were dealing with similar retention issues as the USAF. In 1958, pilot service commitments went from 2.5 to 3.5 years making it difficult to recruit aspiring aviators hesitant to make the

commitment.³⁸ In 1960, the USN recruited only 1,108 of 1,325 authorized student pilots, 1,034 of 1,219 in 1961, and 1,000 of 1,350 in 1962. To compound the recruitment problem, the USN saw an increase in members leaving the service. From 1960 to 1963, 2,836 pilots left active duty leaving the USN 857 pilots short of their manning goal. In 1965 that number would rise to 1,702 and eventually reach a total deficit of 2,430 pilots by the end of 1967.³⁹

The substantial deficit in USAF and USN pilot manpower came at time when the airline industry capitalized on former military aviators to satisfy high commercial airline pilot demands. Table 1 shows an increase in airline new hires with military backgrounds from 1965 and peaks in 1967 coincidentally falling within DoD peak deficits. The Committee of Armed Services acknowledged that high operational tempos, time away from home, and long work hours contribute to the retention issue and conclude with:

...a very important factor in the decline in retention rate is the intensive demand of commercial airlines for military trained pilots. The Navy estimated that about 67% of Navy pilots released to inactive duty in fiscal year 1966 are now employed in flying jobs by the airline industry. Commercial airlines offer tremendous attractive employment conditions compared to military service, and they can well afford to do so, having been saved the cost of pilot training and experience by the Federal Government.⁴⁰

Why Hire Military Pilots?

The USN was correct in recognizing the benefits reaped by commercial airline companies who hire military pilots. A pilot leaving the military was already highly trained and passed all the medical and physiological requirements to operate an aircraft, therefore the airlines did not need to screen as heavily.⁴¹ By the end of their service obligations most military pilots possessed the FAA required flight hours to carry passengers, and were exposed to and/or had the skills necessary to handle stress.⁴² They also fell below the cutoff age for commercial aviation hire at the time of thirty-five, and were likely to have been in a flying billet prior to resignation.

Anywhere from 8 to 12 YOS allowed military pilots to accrue enough flight hours and experience to achieve the necessary qualifications to fly a commercial plane, and after this 8 to 12 YOS mark, most aviators saw less flying tours and more non-flying staff jobs.⁴³ Aviators who have a love and passion for flight would opt to leave military service to avoid the unavoidable monotony of staff work. US commercial airlines would also capitalize on military trained pilots due to the reduction in time and money required to make new hires eligible for flight.

In the 1960s, the average cost saved by airlines companies per military pilot hired reached upwards of \$100,000 since military pilots required less flight hours and ground instruction prior to obtaining the necessary commercial airline qualifications.⁴⁴ The airline industry estimated approximately 70% of separating military pilots would apply for commercial airline positions following their service obligations.⁴⁵ An increase in military pilot production with a decrease in military retention was most favorable to keep airline industry pilot manpower healthy and that is exactly what happened.

Reactive Solutions to a Growing Crisis

During the Vietnam War, the DoD would react to the airline industries growing demand by increasing service contracts and pilot throughput, providing incentive bonuses, denying resignations and retirements, reducing staff and “B” billet requirements, and improving career opportunities.⁴⁶ In 1968, the DoD increased total pilot production from just under 5,000 to just over 13,500 and maintained this approximate rate into the 1970s to meet staffing goals.⁴⁷ Overall, the commercial airline industry would plague all DoD services as military pilots sought a more lucrative and satisfying lifestyle flying civilian aircraft. The reactive DoD approach to their predictable aviation manpower shortage would not recover until after the Vietnam War

when the demand for military pilots subsided and oil prices increased enough to put a halt on GDP and RPM growth.

Aviation manpower shortfalls continued to hurt armed service readiness until the mid-1970s when the US left Vietnam, and coincidentally, the US experienced a brief economic depression briefly halting pilot demands in the airlines. If Congress had continued to fund the CPTP following World War II, the US could have produced civilian pilots at a regulated rate providing the airlines with enough pilots to meet staffing goals; thus, reducing the commercial airline employment opportunity for military aviators. Without reliance on this government funded program, the DoD could have predicted an upcoming pilot shortage by analyzing aviation industry market growth. Instead, the DoD waited for the results of an aviation retention survey to tell them the commercial airlines were their biggest competitor in pilot retention. Within a decade, the DoD would have to compete with the US airline industry to keep their pilot workforce on active duty.

History Repeats Itself?

By 1986, the aviation industry was back on the rise as it led US industry markets with over 355,000 employees spending \$12.4 billion on employee compensations.⁴⁸ Since a portion of the airline pilots at the time were approaching the mandatory retirement age of sixty, commercial airline companies took little hesitation in reaching into military aviation manpower to access quality pilots. The USN and USAF noticed a significant amount of pilot attrition in fiscal year (FY) 1985 due to the growing industry and the Pentagon projected this shortage to reach well into the 1990s.

The combination of expanding airlines and widespread retirement of World War II veterans led to a hiring spree by commercial carriers. They took on 6,500 pilots in fiscal year 1985 and are expected to hire another 7,000 this fiscal year, mostly

from the Navy and Air Force. The Pentagon projects there will be a national pilot shortage in the early 1990s, further aggravating the military shortage.⁴⁹

For the USN pilot attrition seemed to be less about the money and more about the quality of life at home. In 1985, USN manpower shortfalls fell below 15% of their 7,100 Lieutenant and Lieutenant Commander pilot billets as high operational tempos caused family separations and the collateral duties that detract pilots from flying decreased morale among Navy pilots. This coincided with USAF shortfalls as attrition rates continued to rise from 22 to 40% mainly plaguing the Military Airlift Command who consistently deployed for weeks at a time on short notice.⁵⁰

In FY 1989, the DoD reacted to their manpower crisis by conducting a retention study to identify shortfalls in aviation manpower and implement solutions through incentive pay programs. The *DoD Aviator Retention Study* concluded that only 64% of fixed-wing pilots entering active duty were interested in making military service a career. The reason for leaving the service weighed heavily on personal experiences internal to their service department while other military pilots used it to open commercial airline opportunities.⁵¹

The DoD had little time to react to aviation manpower shortages following the Cold War as the US shifted focus to the Middle East. The only way to handle their manpower shortage during the Gulf War was to create a “stop-loss” essentially denying pilot service members the ability to resign commission or retire. Just like the DoD missed early signs of possible aviation manpower shortages during Vietnam, history would repeat itself during the Gulf War with the only solution being to prevent service members from leaving during crisis.⁵² This would provide a reactive short-term solution to the looming impact of commercial aviation on their pilot manpower for the next decade.

Correlation Between Airline Growth and Military Pilot Attrition

From 1990 through 2010, the USAF saw a correlation between the ebbs and flows of USAF pilot manpower and major airline hiring. Figure 1 illustrates the correlation between major airline hires and USAF pilot attrition. The attacks on 9/11 show a direct impact on both major airline hires and USAF pilot attrition as air travel took a substantial decline putting a halt on airline new hires, thus keeping USAF pilots from leaving the service since civilian job opportunities were no longer available. Since commercial airline hires are expected to increase pilot demand and air travel through 2035, aviation manpower should expect a similar increase in future military pilot attrition.⁵³

Another important factor to consider when predicting future pilot demands is the transportation industry's RPM. This measures the total number of paid passengers per mile traveled and is used by airline companies to measure business performance levels in their company. There is a direct correlation between RPM, new airline hires, and USAF attrition. In Figure 1, any level off or reduction in major airline RPM had a drastic reduction in new major airline hires and USAF attrition. In 1993, there was a steady rise in RPM resulting in an increase demand for airline pilots to keep up with the growing need for air travel. Subsequently, the USAF saw attrition rates rise rapidly until 9/11 when there was a significant decrease in RPM, new hires, and USAF attrition. As the RPM rose two years later, the need for commercial airline pilots increased, thus resulting in the sudden rise in USAF attrition. It wouldn't be until the 2008 recession when RPM, new hires, and USAF pilot attrition saw a significant and similar decrease in value.

From 2007 to 2009, the US economy and commercial airline industry went into a sudden decline commonly referred to as "The Great Recession." The US GDP, RPM, and housing

market went into a recession with an estimated loss of 30,000,000 jobs increasing unemployment towards 10%.⁵⁴ Business travel fell 8%, almost as low as the 11.5% loss after the 9/11 attacks.⁵⁵ In response to the reduction in travel, the US airlines “cut capacity, downsized their fleets, and reduced their workforce.”⁵⁶ The decline in travel would be temporary as the economy recovered with a steady growth in both US GDP and major airline company RPM. In 2010, the economy started to recover at the same time the FAA implemented strict flight hour requirements for commercial aviation transport pilots, thus creating civilian job opportunities for pilots while simultaneously restricting the number of qualified pilots for hire. This was the first indicator of a potential future problem for DoD aviation. By 2014, predictions on a major jump in commercial airline pilot demand started to surface as “aviation stakeholders” began to discuss concerns over the need for pilots due to approaching retirement dates and new restrictions on first officer qualifications.⁵⁷ These predictions should have been another indicator to DoD aviation that a looming pilot shortfall was on the horizon. Figure 1 shows a steady rise in RPM with a dramatic rise in airline new-hires from 2012 to 2016 resulting in today’s current DoD aviation manpower crisis.

The Problem Today

FAA Mandates

The mandatory age for commercial airline pilot retirement was set at sixty by the FAA in 1959 and eventually changed to sixty-five on July 15, 2009. The new retirement age extended a large pool of airline pilots five years beyond the previous age resulting in a commercial airline pilot mass exodus in the 2010s. The commercial airline industry would have to hire additional pilots to make up for the large loss of retiring captains and first officers in their fleet. To make matters worse, the FAA also implemented a new regulation requiring all first officers to have at

least 1,500 hours of total flight time and their air transportation pilot certificate to hire onto major airline companies and regional carriers.⁵⁸ Before this regulation, first officers were only required to obtain a commercial pilot rating with 250 hours while they built the hour requirements necessary to achieve their 1,500 and ATP.⁵⁹ This restriction put a significant constraint on airline companies in search of qualified pilots that meet strict FAA standards.

One stipulation to the ATP FAA requirement was the waiver of 1,500 to 750 total flight hours for military pilots. Military pilots are thought to have more experience having been exposed to more rigorous flight hours during flight training and in their operational fleet aircraft. This made the transition to commercial aviation much easier for the military service member resigning a commission in search of a civilian career in aviation and put a hinderance on the civilian pilot paying out of pocket to build the hour requirement. The only expense not covered for the military service member is the ATP test, check ride, and certificate making the transition to the airlines cost-effective with less competition. In addition to saving on out-of-pocket expenses to achieve the necessary ratings to fly for a commercial airline, military aviators could make higher wages leaving active duty to fly commercial aircraft.

Competitive Salaries

Today's growing aviation industry and available commercial airline job opportunities are allowing military pilots with 750 total flight hours to fly for major airline companies with annual salaries that exceed the military pilots. Even with pilot Aviation Career Incentive Pay (ACIP) the Marine Corps falls short in compensating their pilot workforce with competitive salaries available in the airlines.⁶⁰ The ACIP has not changed since 1990 and since then inflation has nearly doubled leaving military pilots believing they're worth half the value as the same officer before the Gulf War.⁶¹ To prevent any further loss of Marine Corps fixed-wing aviators to the

US airlines, the Marine Corps released Marine Administrative Message (MARADMIN) 614/17 stating it will provide a bonus to specific aviation MOS in FY 2018.⁶² The MARADMIN describes it as a proactive short-term aviation incentive to remain on active duty and retain AV-8, F-35, F-18, and MV-22 pilots with less than 14 years of commissioned service. This 2-year, \$40,000 bonus, although described as “proactive,” is reactionary in nature. Marine Corps manpower should have made this aviation bonus eligible to fixed-wing pilots before today’s fixed-wing shortfalls became problematic by simply analyzing future trends in a growing aviation industry market.

Marine Corps Aviation Shortfalls

Today, Marine Corps aviation is faced with a multitude of challenges. High active duty pilot attrition rates, fiscal constraints, aircraft availability, and low morale all contribute to the lack of aviation readiness fleetwide. In 2014, the Marine Corps signed an agreement with Boeing to refurbish and reuse 30 decommissioned F/A-18 hornets in the Marine Corps boneyard at Davis-Monthan Air Force Base in a desperate attempt to solve its readiness issues.⁶³ Returning retired F-18 aircraft back into the fleet inventory may increase the number of aircraft, but without making new pilots or retaining their existing workforce the manpower crisis will continue to get worse as the USMC finds itself short F-18 aircraft pilots to operate them. At the beginning of FY 2017 the Marine Corps had only 78% of the required 1,070 fixed-wing jet pilots leaving them over 200 short to fill critical positions in its force.⁶⁴ Figure 2 shows this common trend following FY 2013 when a Temporary Early Retirement Authority (TERA) and the Voluntary Separation Program (VSP) released aviators from active duty depleting their fixed-wing inventory. VSP and TERA reduced fixed-wing MOS communities enough to make up for the surplus, however the exponential increase in commercial airline pilot positions caused retention to drop further below

intended glide slope through FY 2017.⁶⁵ This shortage fell around the same year major airline company RPM's started to grow, and major airline companies and manufacturers predicted higher demands in the commercial aviation workforce.⁶⁶ Marine Corps aviation manpower analysts should suspect a continual decline in pilot retention as commercial airline domestic RPM increased to 5.5% in 2016 and is forecasted to increase no less than 2.1% annually with an additional increase in 1,126 aircraft to the US carrier fleet through 2037.⁶⁷

Marine Corps pilots, frustrated with a high operational tempo that did not subside after drawdowns in Iraq and Afghanistan, find themselves frustrated and tempted to seek opportunity elsewhere. The *2015 Aviation Retention Survey*, administered by the Deputy Commandant of Aviation to USMC pilots, show a general dissatisfaction among its aviators. Overall there was a common dissatisfaction among fixed-wing and rotary-wing pilots regarding flight hours/training, manning level, and personal family time. Tiltrotor pilots were dissatisfied with the lack of opportunity for professional development, poor training and high deployment cycles. Between 72.7 and 73.5% of Lieutenants and Captains, respectively stated they were unsure or had already decided to separate after their 6 to 8-year service agreements. 33.1% of Captains and 40.9% Lieutenants are expected to leave after the completion of their next term.⁶⁸

Themes among common response to survey question dissatisfaction include lack of parts and finances, and extensive work hours and its impact on family life. Depicted in Table 3, more than half of the USMC pilots who took the survey are dissatisfied with the number of flight hours/training with only 31.7% showing satisfaction. Of the same pilots, 60% were dissatisfied with their personal/family time and 72.8% were dissatisfied with available parts and resources.⁶⁹ The lack of parts and resources have a direct relation to flight hours because the lack of parts

equate to aircraft not available for flight and the lack of fiscal resources limit the ability to conduct training necessary to achieve flight hours and readiness.

Table 4 address factors that influence Marine aviators to leave active service following service obligations. Quality of family life influences 72.9% of USMC pilots making it the number one reason to leave active duty. Civilian opportunity and pay are a close second and third with 66.7 and 41.7%, respectively.⁷⁰ This comes as no surprise since commercial aviation employment opportunities are on the rise, military service members are highly qualified and possess the FAA requirements to pursue a career in commercial aviation, and the quality of life and pay are higher. Due to these factors, USMC aviation manpower shortages should continue until civil aviation demands are met or USMC aviation becomes more attractive than its current appeal.

Comparative Analysis

There are many similarities between military aviation in 1967, 1989 through 2010, and today. Commercial airline pilot demands were high due to the growing economy, aviation industry, and FAA restrictions. When GDP goes up there is a direct correlation to the rise in civil aviation demands, and military pilot attrition rates. A growing economy means more demand for air travel. Companies such as the United Parcel Service and Federal Express will ship more products to businesses and consumers, and major airline companies will have to meet the high demand of pedestrian air travel for both business and pleasure. Any indication of GDP growth is a clear indicator that a demand for commercial airline pilots will increase opening job opportunities for those qualified for hire. President Roosevelt was correct in anticipating the future needs of the commercial airline industry through his CPTP as the US climbed out of the

Great Depression. Subsequent rises in GDP resulted in noticeable losses in military aviation manpower.

If the aviation industry show signs of growth through future prediction models an increase in pilot job opportunities should be expected. Any large purchase of aircraft should be a clear indication that a subsequent demand for aviation personnel will follow. President Roosevelt knew that the purchase of 50,000 new aircraft would require pilots, so he proposed the CPTP to facilitate high demands in specialized personnel. The 1960s saw their share of this during the airline boom as the country bought more jet powered aircraft to meet air travel demands resulting in military attrition to seek opportunity in the civilian sector. Today's example is the increased production of Airbus and Boeing aircraft to meet a growing global market. Growth in the aviation industry combined with a steady rise in GDP is a good trigger for Marine Corps aviation to implement production and retention strategies to meet the predictable loss of active duty pilots to fill civil aviation demands.

In conjunction with a growing economy and aviation industry, recent indicators of an upcoming mass retirement for airline pilots approaching age sixty-five should be an alarming indication that attrition rates will rise faster than it did just prior to US involvement in Southeast Asia. Just like the mass retirement of World War II service members still on active duty just prior to US involvement in Vietnam, and airline retirements of World War II veterans in the 1980s, the upcoming retirement of commercial pilots will open job opportunities for military service members interested in civilian job opportunities.

The *2015 aviation retention survey* show the same indicators as the one conducted in 1967 and 1989 when DoD aviation faced a crisis in pilot manning. Military pilots with 8 to 14 YOS were leaving active duty prior to Vietnam in search of better lifestyles provided in the

airline industry before the maximum hire cutoff age of thirty-five. Military aviators had enough hours and credibility to fly for major airline companies and were young enough to meet FAA restrictions. Today, Marine Corps pilots are leaving after their commitments to do the same thing. They are in search of higher wages, opportunity, and most importantly an improvement in lifestyle. The commercial airlines show the same attractiveness it had during the 1960's through today, and if history is to repeat itself, the Marine Corps can expect a shortage in the future.

The Solution

The Marine Corps should study trends in future airline industry growth, and commercial airline production to anticipate shortfalls in Marine Corps fixed-wing aviation. These two factors have driven military and civil pilot demands throughout history and will be important when making proactive pilot production and pilot retention decisions. Marine Corps aviation manpower should use a growth analysis graph like Figure 1 to determine the percentage of additional initial accession fixed-wing pilot slots to request. Since RPM and new hires directly influence attrition rates, anytime there is a positive trend in RPM and/or commercial airline new hires, Marine Corps aviation manpower can expect a positive rate of attrition. When forecasted RPM and new hires portray a level off or decline, manpower should anticipate a decline in attrition and reduce production to its original model. Aviation manpower specialists can pull forecasted GDP, RPM, and aircraft production data annually from the FAA to predict an increase or decrease attrition.

Every year the FAA releases the *FAA Aerospace Forecast* that provides a twenty-year projected forecast of commercial aviation growth.⁷¹ This document includes forecasts in GDP, RPM, and pilot requirements necessary to build a graphic model. Figure 3 illustrates a twenty-year trend in GDP (Billions x 10) and RPM (Billions) from 2017 to 2037. There is a direct linear

correlation between the steady 2.1 and 2.0% increase of GDP and RPM, respectively. Since historically a steady state rise in GDP and/or RPM indicate a need for commercial pilots, Marine Corps manpower personnel can assume a steady state of attrition will result. To look at Marine Corps fixed-wing pilot shortages from a near term perspective, Figure 4 illustrates historical RPM, commercial airline new hires, and Marine Corps fixed-wing pilot attrition from 2012 to 2017, and a representation of what the average trend looks like through 2019.

Based on historical data discussed early, with RPM on a steady rise and forecasted to continue, commercial airline new hires and USMC fixed-wing pilot shortages should follow in unison. This two-year outlook provides Marine Corps aviation manpower planners to increase fixed-wing pilot production and implement fixed-wing retention incentives to prevent further damage to Marine Corps fixed-wing aviation readiness. If fixed-wing pilot production is not increased by 2018, the Marine Corps fixed-wing pilot shortage will rise from 300 to 360 pilots by the end of 2019 pending any additional modifications to FAA commercial airline pilot qualifications.

If the FAA decides to further implement standards on flight hour requirements or change mandatory retirement ages, the Marine Corps should do a careful analysis of what impact that may have on their aviation manpower. Marine Corps aviation manpower should request an increase in pilot production at least two years prior to the projected impact of commercial aviation workforce loss. This will allow initial accession students to arrive at their fleet units just as potential Marine Corps pilots decide to end their careers on active duty to pursue opportunity in the commercial fleet.⁷² Requesting aviation retention incentives in advance may assist in receiving funds necessary to attract experienced aviators who are thinking about leaving the

service and, depending on the length of contract associated with the incentive, keep them on active duty until the commercial demands are met.⁷³

Even if MARADMIN 614/17 is successful in keeping experienced fixed-wing military aviators approaching the end of their contract, it will only level off the trending decline in fixed-wing aviators. Therefore, an increase in initial accession throughput will have to make up for the high loss of attrition experienced from 2013 to 2017 that cannot be made up by an aviation retention bonus. Once target inventory is met, Marine Corps aviation manpower should increase or decrease pilot production based on future GDP, RPM, and airline new hire growth. Once the US airlines have met their shortfall quotas there should be a decrease in new-hires followed by a decrease in pilot attrition. If GDP or RPM forecasts a future level off or decline, the Marine Corps should decrease fixed-wing production to prevent a future surplus of fixed-wing aviators. Also, although unpredictable at times, any sudden reduction in air travel may cause a dramatic decline in new-hires like the 2008 recession and 9/11 attacks. Marine Corps aviation manpower should analyze these unforeseen events carefully and address how this may impact GDP and RPM; thus, affecting future US commercial airline pilot demands. While analyzing future projection models and the occasionally unforeseen event, aviation manpower should disseminate intentions immediately to the fleet replacement squadrons to prepare for changes in pilot production.

Vignette

There are second and third order effects when adjusting initial accession pilot requirements to keep up with commercial aviation market demands. Using future projection models not only provides an outlook into aviation manpower shortfalls, but also allows initial accession training units to prepare for the change in throughput. Imagine being the operations

officer at the KC-130J Fleet Replacement Detachment (FRD) who oversees the production and development of initial accession pilots. To do this, the operations officer must provide an effective and efficient learning environment for his or her students by managing contracts required for instruction, computer-based training, simulator usage, and general support. Any increase or decrease in production has a direct effect on existing contracts, mainly in the number of personnel resources required to handle the throughput of students. If aviation manpower decides to suddenly increase production, current contracts may not be able to support the increase of student throughput. For example, if throughput is increased, the KC-130J FRD may not have the required number of civilian instructors, maintenance personnel, and resources since existing contracts are designed for a lower student throughput. While government contract officers request additional funding to handle the increase in throughput, students waiting to train will increase creating a backlog of initial accession pilots. Therefore, initial accession pilots will not get to the fleet in time to prevent a shortfall in fleet squadron manning.

On the other side of the spectrum, a sudden decrease in student throughput will put existing KC-130J FRD contracts at risk due to the surplus of support personnel and unused simulator time. If simulator usage drops below 80%, government contracting officers will look to reduce the scope of existing contracts to increase efficiency. Once these contracts are reduced it takes time and effort to reengage contracting officers to request additional instructors, maintenance personnel, and resources when aviation manpower decides to bring production back to its original model. Once a request for contract modification is approved it typically will not go into effect until the next FY. Following the FY, the contracted company will have to search for additional qualified instructors and maintenance technicians which takes time. Chances are the civilian personnel “let-go” from the previous contract reduction will not be available for hire.

This could cause major delays in student production while contracted companies search for qualified instructors and maintenance personnel in their specialized field.

It is imperative for Marine Corps aviation manpower to understand that any adjustment to initial accession throughput has second and third order effects on production operations and these adjustments take time to have an impact. If these adjustments are not anticipated with commercial aviation market growth, the desired endstate will not be achieved until years later and by that time it may be too late if the commercial aviation market changes. Therefore, Marine Corps aviation manpower fleet staffing goals will always be behind in matching fleet squadrons requirements while fleet replacement squadrons inefficiently adjust and readjust their contracts to handle aviation manpower's reactive decision-making.

Conclusion

Historically, the DoD has reacted to commercial aviation demands that attract trained military aviators on active duty. DoD reactions come too late as commercial aviation job opportunities present themselves to military pilots that have already made the choice to pursue a healthier and lucrative lifestyle. As US economy and aviation industry continue to grow through 2035, the Marine Corps should proactively increase pilot production and implement retention incentives until the deficit is satisfied and fixed-wing pilot quotas are maintained. This will reduce the impact of predictable resignations of Marine Corps active duty pilots seeking better financial and lifestyle opportunities provided by a growing commercial airline industry.

Examples of delayed response to US commercial airline growth date back to World War II when President Roosevelt reacted to the recovering economy after the Great Depression with the CPTP. By 1967, the DoD scrambled to boost pilot production to keep up with 8 to 14 YOS pilot resignations to compete with the growing demand for air travel. The exodus of experienced

military aviators to include retiring active duty World War II veterans should have been an indicator to DoD aviation manpower that a boost in production and retention would be necessary prior to Vietnam. In the 1980s, US commercial airlines were forecasting future manpower shortfalls as a large amount of their workforce approached the mandatory retirement age of sixty. By 1989, after numerous cuts in military spending and high DoD attrition rates, the DoD launched an investigation to discover aviation readiness shortfalls were largely due to higher pay and quality of life in the growing US airlines. These reactions came after the fact and could have been avoided by carefully monitoring economic and workforce factors that influence civil aviation demands.

Today, the Marine Corps should be concerned with the growing economy, the large production in aircraft manufacturing, commercial airline hiring predictions, and FAA mandates making civil aviation careers attractive to their workforce.⁷⁴ The decision is easy for Marine Corps fixed-wing aviators coming up on expiring contracts who possess the experience for hire and are in search of higher salaries and a better lifestyle at home. In the *2015 Aviation Retention Survey*, almost 75% of Marine Corps aviators are dissatisfied with the quality of life and show interest in leaving the service for civilian career opportunities. Marine Corps aviation manpower already has only 78% of the required number of aviators to fill critical MOS billets and that number should continue to fall as aviators leave active duty for their new civilian aviation careers.

The Marine Corps needs to stay competitive with the airline industry by increasing fixed-wing pilot production and implementing proactive fixed-wing career incentive bonuses. Marine Corps aviation manpower should use a US GDP, RPM, and commercial airline new hire trend analysis to predict future shortfalls in Marine Corps fixed-wing aviation. Today, with US GDP,

RPM, and new hires on the rise, the Marine Corps can expect a similar trend in fixed-wing aviation attrition. The moment US GDP, RPM, and new hires begin to decline, Marine Corps aviation manpower should relax production and career incentives to prepare for less commercial airline new hires. As a result, Marine Corps fixed-wing pilots will likely remain on active duty due to the lack of commercial airline employment. Marine Corps aviation readiness is currently in a deficit and a proactive strategy is a must to keep it from getting worse. Marine Corps aviation manpower should stay two years ahead of its biggest “adversary,” the US commercial airlines, by forecasting potential shortfalls in Marine Corps aviation if the Marine Corps truly wants to remain the premier expeditionary force in readiness and be ready to respond to today’s crisis.

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⁶ Theresa L. Kraus, “The CAA Helps America Prepare for World War II.” *FAA Milestones and Events*, last modified July 10, 2017.

⁷ George A. Hopkins, “A Short History of Pilot Shortages,” *Air Line Pilot* (February, 2001): 18, http://public.alpa.org/portals/alpa/magazine/2001/Feb2001_ShortHistory.htm

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⁹ *Testimony of Bryan Bedford, Chairman, President and Executive Officer of Republic Airways: Hearing before the House Committee on Transportation and Infrastructure Subcommittee on Aviation*, (April, 2014) (statement of Brian Bedford, Chairman, Presidents, and Chief Executive Officer of Republic Airways), 6. <http://transportation.house.gov/uploadedfiles/2014-04-30-bedford.pdf>

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¹⁴ Mateo Salas. ASM-30, Deputy Commandant for Aviation, Manpower and Support Branch, *2015 Aviator Retention Survey Results Information Paper*, November 10, 2015.

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APPENDIX A

Acronyms

ALPA	Air Line Pilots Association
ACIP	Aviation Career Incentive Pay
CPTP	Civilian Pilot Training Program
MARADMIN	Marine Administrative Message
MOS	Military Occupational Specialties
DoD	Department of Defense
FAA	Federal Aviation Administration
FRD	Fleet Replacement Detachment
FY	Fiscal Year
GDP	Gross Domestic Product
RPM	Revenue per Mile
TERA	Temporary Early Retirement Authority
T/M/S	Type, Model, and/or Series
USAF	United States Air Force
USN	United States Navy
USMC	United States Marine Corps
VSP	Voluntary Separation Pay
WTS	War Training Service
YOS	Years of Service

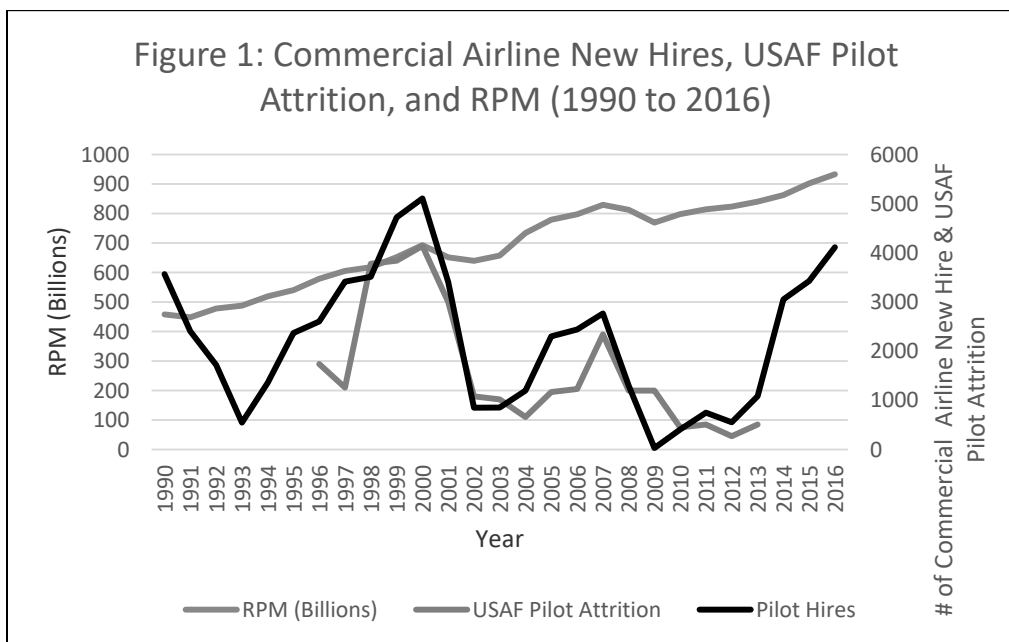
APPENDIX B

Table 1			
% of Civilian Pilots with Military Training			
Air Carriers	Fiscal Year		
	1965	1966	1967
Commercial Airlines	59.2	59.6	75.3
Local or Regional Service	13.6	11.2	33.8
International Airlines	40.0	39.0	64.5
Inter-Hawaii, Air Cargo, and Helicopter	49.3	36.6	51.0
* Source: Robert Marchand Simons, "Manpower Projections, Recruitment Needs and Training Requirements for Commercial Airline Pilots in the United States 1968-1979," University of Southern California, 1969, 113.			

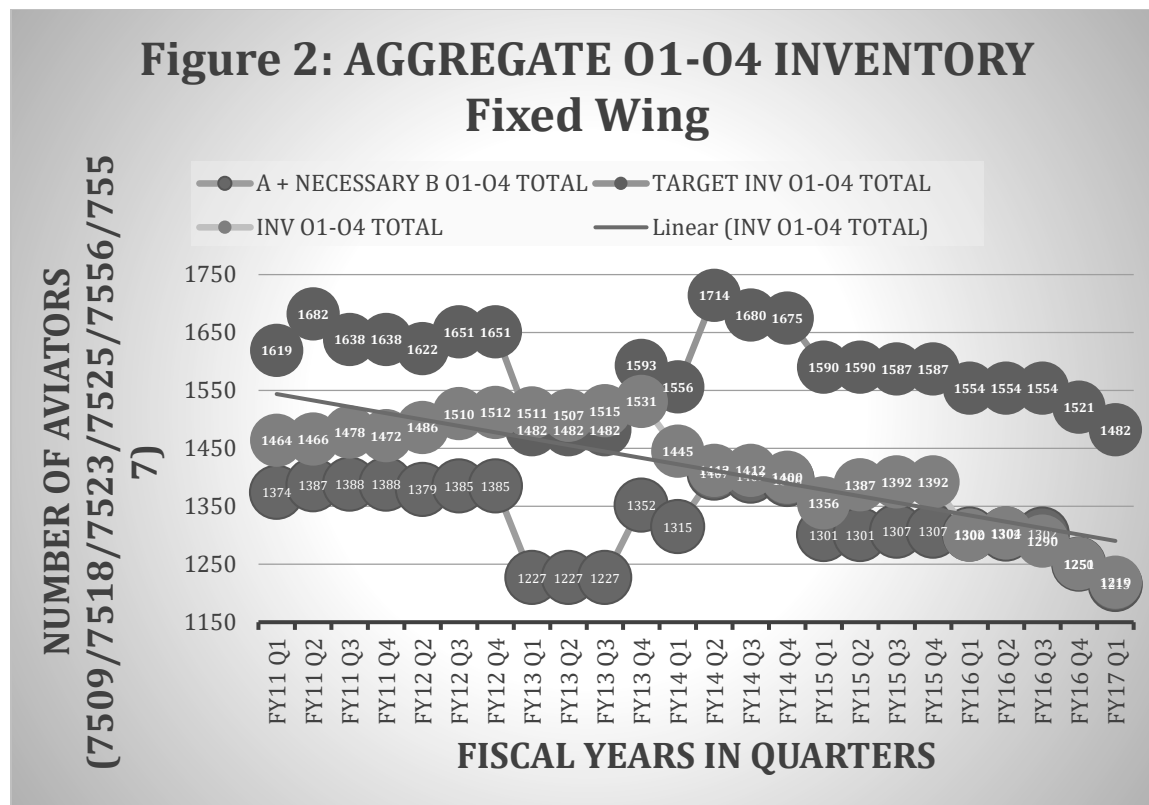
Table 2									
USAF Voluntary Resignation Rates and Interest in Airlines									
	1964			1966			1967		
	Number	Percent	Interest	Number	Percent	Interest	Number	Percent	Interest
4-7	263	3.6		630	10.5		778	13.8	
8-14	119	0.6	5%	563	3.3	60%	828	5.1	80%

Table 3					
2015 Aviation Retention Survey Part 1					
	Very Dissatisfied	Dissatisfied	Neither	Satisfied	Very Satisfied
Amount of Flight hours/training	21.1%	32.0%	14.1%	28.0%	3.7%
Personal/Family Time You Have	22.5%	37.5%	16%	22.0%	1.9%
Parts and Resources	39.2%	33.6%	13.9%	12.1%	1.2%

Table 4 2015 Aviation Retention Survey Part 2					
	Strong Influence to Leave	Influence to Leave	Neither	Influence to Stay	Strong Influence to Stay
Your Civilian Job Opportunities are a....	30.7%	36.0%	25.1%	7.4%	0.8%
Current Civilian Job Opportunities are a...	27.2%	25.1%	38.6%	7.3%	1.8%
Your Current Pay and Allowances are a...	13.0%	28.7%	30.2%	24.2%	4.0%
Quality of Family Life is...	33.8%	39.1%	17.6%	8.4%	1.0%



*Source: Nolan Sweeney, “Predicting Active Duty Air Force Pilot Attrition Given an Anticipated Increase in Major Airline Pilot Hiring,” (dissertation, The Pardee RAND Graduate School, June, 2014), 56. <https://search-proquest-com.lomc.idm.oclc.org/docview/1650613397?accountid=14746>.



*Source: Eric A. Scherrer and A. J. Ramthun, “Proposed Solutions to Marine Corps Aviation's Fixed-Wing Pilot Shortage.” *Marine Corps Gazette* 101, no. 5 (May, 2017): 29.

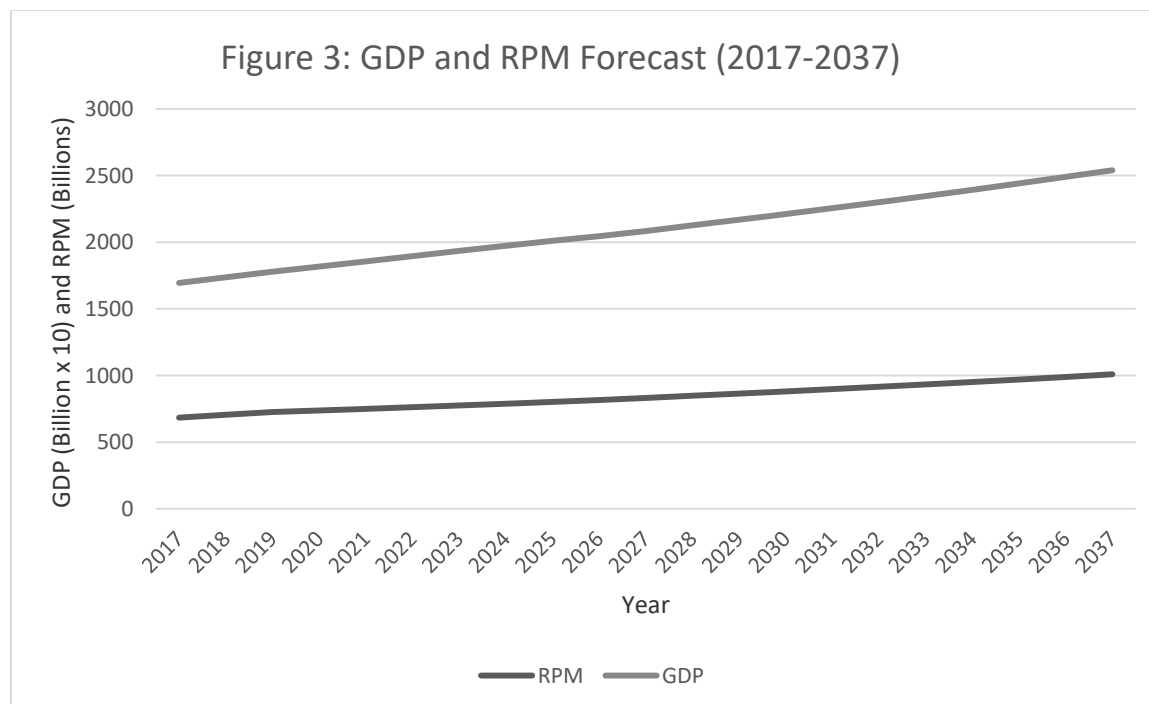
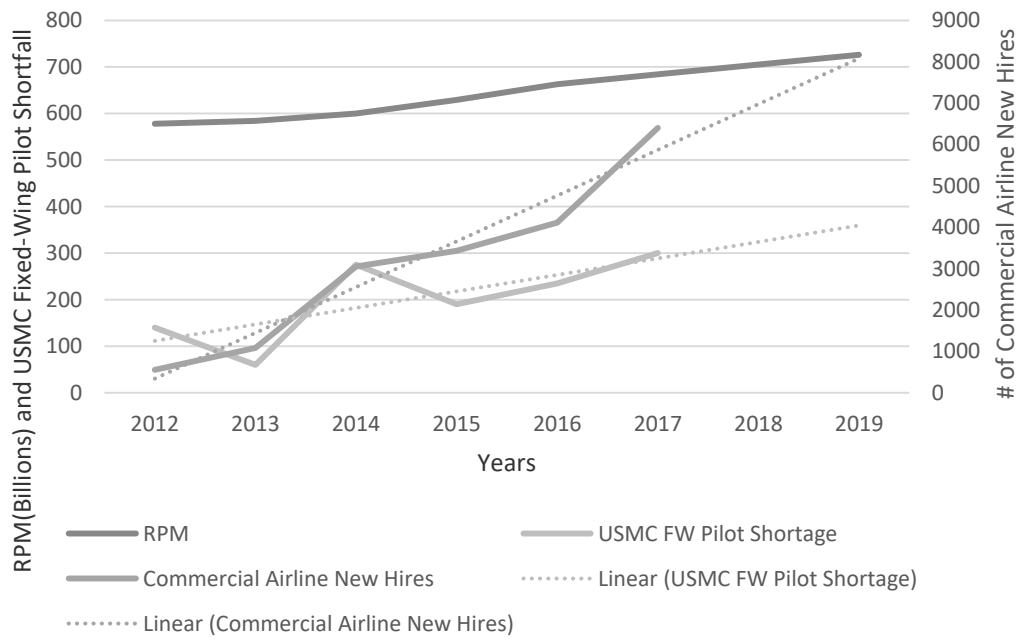


Figure 4: RPM, USMC Pilot Shortfalls, and Commercial New Hires (2012-2019)



APPENDIX C

2015 Aviator Retention Survey Results Overview

10 Nov 2015

INFORMATION PAPER

Subject: 2015 Aviator Retention Survey Results

Purpose: To inform leadership on the survey results and to identify areas for further analysis. Questions in the survey are intended to identify areas for policy change and development. The available answers are intended to provide magnitude on sentiments.

Background: Manpower & Reserve Affairs uses historical data to develop models that are intended to forecast future conditions. The model results are then used to support decisions on how to utilize USMC manpower resources. This method has proven productive but also has potential flaws due to its reactive nature. Additionally, past behavior does not always predict future results due to the dynamic nature of reality.

Key Points:

- Aviation Attrition Rates according the MP, M&RA (Aug 2015):
 - NO attrition issues in the aviation community.
 - Attrition in FY 15 among 75XX Marines were approximately 3 percentage points or 58% lower than the 26 year average.
 - US Bureau of Labor Statistics shows little change in US commercial airline employment until 2022.
 - US military pay and benefits are greater than those in the private sector.
 - Manning/Staffing difficulties are attributed in part to CNATRA production shortfalls.
- DCA sponsored Aviator Retention Survey:
 - Modified M&RA officer retention survey used as template
 - E-mail notifications sent out to 3,517 officers with a 7315 and 75XX PMOS.
 - 2,173 (60.7%) usable results were generated.
 - Participation was commensurate with MOS and grade representation.
- Survey results:
 - #1-20 uses Likert scaled questions intending to measure satisfaction with current USMC/aviation/MOS conditions.
 - Overall and when filtered by O4, O3, FW and RW; "Dissatisfied" responses occur with *amount of flight hours/training, manning level and personal/family time*. "Very dissatisfied" with *availability of equipment, parts and resources*.
 - Tiltrotor O3 and O4 return an increased number of "Dissatisfied" responses including *training/professional development and deployments*. UAS was returned several more "Dissatisfied" responses to include the only breakout group with an overall dissatisfaction with their primary MOS.
 - #21-32 uses Likert scaled questions intending to measure intention toward retention or separation from the Marine Corps.
 - Most responses fell into the "influence to leave" category to include "strong influence to leave."
 - 72.7% of Lieutenants and 73.5% of Captains state intention to either separate after their term or obligation or are unsure if they will separate. 40.9% of Lieutenants and 33.1% of Captains intend to leave after the completion of their next term.

- With the exception of Majors, each breakout groups expressed large increases for intent to separate from active duty from when they first entered to their current intent.
- #33-42 uses Likert scaled questions obtaining individual impressions on differences between civilian and USMC incentives.
 - Most responses fell into the “much better as a civilian” category to include “strong influence to leave” for *amount of personal/family time, hours worked per week and how would improvements in the civilian job market influence your decision to remain on active duty.*
 - In all filtering options, each group felt that finding civilian employment with similar incentives as their USMC incentives was “easy” or “neither” difficult or easy.
- #43-44 uses the same Likert scale as questions #21-32 and attempts to expand on previously asked civilian employment and pay questions.
 - In all filtering options, each group expressed an influence to leave active duty if they felt their civilian career options were expanded.
- #45-47 seeks inputs on which factors weigh heavier on separation decisions and which factors would incentivize a retention decision.
 - 191,602 words were provided in these 3 questions.
 - “Bonus”, “ACP”, and “money” were used over 1,000 times
 - In general, the comments were spread across the spectrum of possibilities.
 - General themes were displeasure with a lack of flight training, extensive time away from family, pay not commensurate with work load or responsibilities.
 - Comments seemed to differ generationally with younger individuals concerned with a lack of operational experience while older individuals concerned by extensive operational tempo.

Talking Points:

- The survey shows a greater intent to separate from active duty in comparison to historical separation rates.
- Re-occurring themes included insufficient equipment, parts and resources that negatively affect opportunities for flight training. Another theme is with extensive hours at work with its negative affect on personal/family time.
- Bonus money appears to be a positive influence toward retention but its absence is not a sole factor toward separation.

Action: None. Information only.

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