

REPORT DOCUMENTATION PAGE

*Form Approved
OMB No. 0704-0188*

The public reporting burden for this collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing the burden, to Department of Defense, Washington Headquarters Services, Directorate for Information Operations and Reports (0704-0188), 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA 22202-4302. Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to any penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number.

PLEASE DO NOT RETURN YOUR FORM TO THE ABOVE ADDRESS.

1. REPORT DATE (DD-MM-YYYY) 09-04-2018	2. REPORT TYPE Master's Thesis	3. DATES COVERED (From - To) 31 July 2017- 09 APRIL 2018
--	--	--

4. TITLE AND SUBTITLE Avoiding a Pilot Retention Death Spiral: The Pilot Shortage and DOD's Challenge to Maintain an Effective Fighting Force	5a. CONTRACT NUMBER
	5b. GRANT NUMBER
	5c. PROGRAM ELEMENT NUMBER

6. AUTHOR(S) Nathan Thompson Lieutenant Colonel, United States Air Force	5d. PROJECT NUMBER
	5e. TASK NUMBER
	5f. WORK UNIT NUMBER

7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) Joint Forces Staff College Joint Advanced Warfighting School 7800 Hampton Blvd Norfolk, VA 23511-1702	8. PERFORMING ORGANIZATION REPORT NUMBER
---	---

9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)	10. SPONSOR/MONITOR'S ACRONYM(S)
	11. SPONSOR/MONITOR'S REPORT NUMBER(S)

12. DISTRIBUTION/AVAILABILITY STATEMENT
Approved for public release, distribution is unlimited

13. SUPPLEMENTARY NOTES

14. ABSTRACT
The U.S. Department of Defense (DOD) faces a pilot shortage. Examination of the current pilot shortage reveals that external pressure from commercial aviation, changes in Congress, legislation, and internal DOD actions exacerbate existing problems within the DOD aviation recruitment and retention programs. Commercial pilot retirements combined with a growing global economy create significant pilot shortages and ample opportunity for military pilots to leave the service. Congressional failure to pass on-time budgets and provide fiscal certainty undermine DOD attempts to retain pilots by forcing DOD to make compromises that negatively affect pay, readiness, quality of life, quality of service, and focus on the mission. The current conditions encourage commercial airlines to benefit from the military investment, while budget limitations force DOD to make choices between systems and personnel, and Congress fails to provide long-term strategic guidance that would alleviate stresses on the system. Without adjustments, the current system will prove unsustainable and without benefit to any stakeholder over the next decade.

15. SUBJECT TERMS
Pilot Retention, Congress, Commercial Airlines, Budget, Readiness, Quality of Life, Quality of Service

16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT Unclassified Unlimited	18. NUMBER OF PAGES 66	19a. NAME OF RESPONSIBLE PERSON	
a. REPORT Unclassified	b. ABSTRACT Unclassified	c. THIS PAGE Unclassified			19b. TELEPHONE NUMBER (Include area code) 757-443-6301	

INSTRUCTIONS FOR COMPLETING SF 298

1. REPORT DATE. Full publication date, including day, month, if available. Must cite at least the year and be Year 2000 compliant, e.g. 30-06-1998; xx-06-1998; xx-xx-1998.

2. REPORT TYPE. State the type of report, such as final, technical, interim, memorandum, master's thesis, progress, quarterly, research, special, group study, etc.

3. DATES COVERED. Indicate the time during which the work was performed and the report was written, e.g., Jun 1997 - Jun 1998; 1-10 Jun 1996; May - Nov 1998; Nov 1998.

4. TITLE. Enter title and subtitle with volume number and part number, if applicable. On classified documents, enter the title classification in parentheses.

5a. CONTRACT NUMBER. Enter all contract numbers as they appear in the report, e.g. F33615-86-C-5169.

5b. GRANT NUMBER. Enter all grant numbers as they appear in the report, e.g. AFOSR-82-1234.

5c. PROGRAM ELEMENT NUMBER. Enter all program element numbers as they appear in the report, e.g. 61101A.

5d. PROJECT NUMBER. Enter all project numbers as they appear in the report, e.g. 1F665702D1257; ILIR.

5e. TASK NUMBER. Enter all task numbers as they appear in the report, e.g. 05; RF0330201; T4112.

5f. WORK UNIT NUMBER. Enter all work unit numbers as they appear in the report, e.g. 001; AFAPL30480105.

6. AUTHOR(S). Enter name(s) of person(s) responsible for writing the report, performing the research, or credited with the content of the report. The form of entry is the last name, first name, middle initial, and additional qualifiers separated by commas, e.g. Smith, Richard, J, Jr.

7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES). Self-explanatory.

8. PERFORMING ORGANIZATION REPORT NUMBER. Enter all unique alphanumeric report numbers assigned by the performing organization, e.g. BRL-1234; AFWL-TR-85-4017-Vol-21-PT-2.

9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES). Enter the name and address of the organization(s) financially responsible for and monitoring the work.

10. SPONSOR/MONITOR'S ACRONYM(S). Enter, if available, e.g. BRL, ARDEC, NADC.

11. SPONSOR/MONITOR'S REPORT NUMBER(S). Enter report number as assigned by the sponsoring/monitoring agency, if available, e.g. BRL-TR-829; -215.

12. DISTRIBUTION/AVAILABILITY STATEMENT. Use agency-mandated availability statements to indicate the public availability or distribution limitations of the report. If additional limitations/ restrictions or special markings are indicated, follow agency authorization procedures, e.g. RD/FRD, PROPIN, ITAR, etc. Include copyright information.

13. SUPPLEMENTARY NOTES. Enter information not included elsewhere such as: prepared in cooperation with; translation of; report supersedes; old edition number, etc.

14. ABSTRACT. A brief (approximately 200 words) factual summary of the most significant information.

15. SUBJECT TERMS. Key words or phrases identifying major concepts in the report.

16. SECURITY CLASSIFICATION. Enter security classification in accordance with security classification regulations, e.g. U, C, S, etc. If this form contains classified information, stamp classification level on the top and bottom of this page.

17. LIMITATION OF ABSTRACT. This block must be completed to assign a distribution limitation to the abstract. Enter UU (Unclassified Unlimited) or SAR (Same as Report). An entry in this block is necessary if the abstract is to be limited.

NATIONAL DEFENSE UNIVERSITY
JOINT FORCES STAFF COLLEGE
JOINT ADVANCED WARFIGHTING SCHOOL



**AVOIDING A PILOT RETENTION DEATH SPIRAL: THE PILOT SHORTAGE AND
DOD'S CHALLENGE TO MAINTAIN AN EFFECTIVE FIGHTING FORCE**

by

Nathan Thompson

Lieutenant Colonel, United States Air Force

Intentionally left blank

AVOIDING A PILOT RETENTION DEATH SPIRAL: THE PRESSURES OF PILOT
SHORTAGE AND DEPARTMENT OF DEFENSE RETENTION EFFORTS TO
MAINTAIN AN EFFECTIVE FIGHTING FORCE

By

Nathan Thompson

Lieutenant Colonel, United States Air Force

A paper submitted to the Faculty of the Joint Advanced Warfighting School in partial satisfaction of the requirements of a Master of Science Degree in Joint Campaign Planning and Strategy. The contents of this paper reflect my own personal views and are not necessarily endorsed by the Joint Forces Staff College or the Department of Defense.

This paper is entirely my own work except as documented in footnotes.

Signature: Nathan Thompson

9 April 2018

Thesis Advisor:

Signature: Bryon Greenwood
Bryon Greenwood, Ph.D., Professor
Colonel (Ret), U.S. Army

Approved by:

Signature: James Golden
James Golden, Colonel, U.S. Air Force
Committee Member

Signature: Jody Owens
Jody Owens, Colonel, U.S. Air Force
Committee Member

Signature: Miguel L. Peko
Miguel L. Peko, Captain, U.S. Navy
Director, Joint Advanced Warfighting
School

Intentionally left blank

Handwritten signature

Abstract

The U.S. Department of Defense (DOD) faces a pilot shortage. Examination of the current pilot shortage reveals that external pressure from commercial aviation, changes in Congress, legislation, and internal DOD actions exacerbate existing problems within the DOD aviation recruitment and retention programs. Commercial pilot retirements combined with a growing global economy create significant pilot shortages and ample opportunity for military pilots to leave the service. Legislation makes qualifying to fly for the airlines a longer more expensive process, driving up the demand for military pilots who arrive virtually fully qualified. Congressional failure to pass on-time budgets and provide fiscal certainty undermine DOD attempts to retain pilots by forcing DOD to make compromises that negatively affect pay, readiness, quality of life, quality of service, and focus on the mission. The current conditions encourage commercial airlines to benefit from the military investment, while budget limitations force DOD to make choices between systems and personnel, and Congress fails to provide long-term strategic guidance that would alleviate stresses on the system. Without adjustments, the current system will prove unsustainable and without benefit to any stakeholder over the next decade.

Intentionally left blank

Table of Contents

Chapter 1: Introduction 1

Chapter 2: Commercial Pilot Shortage 8

Chapter 3: Congressional Effects on Aviation..... 13

Chapter 4: Effects of Budget Uncertainty on DOD Pilot Retention 21

 Pay..... 23

 Quality of Life..... 25

 Budget Effects on Quality of Life..... 29

 Readiness 34

 Quality of Service 36

 Lack of Mission Focus..... 39

Chapter 5: Conclusion and Recommendations 44

Bibliography 50

Vita..... 58

Intentionally left blank

Chapter 1: Introduction

The U.S. Department of Defense (DOD) faces a pilot shortage across all services affecting various year groups and experience ranges. The current high demand for commercial pilots further exacerbates this shortage. Moreover, the demand for civilian pilots from the military will only increase in the near future. Civilian commercial aviation forecasts pilot requirements to exceed the current number of military pilots and future military pilot production capabilities combined. As a result, the military must determine what factors it controls, what steps it must take, and what changes need to occur to ensure it retains the pilots necessary to maintain supremacy in the air domain. Congress, too, has a part to play. Congress affects both civilian commercial aviation demand and DOD retention efforts through legislation, particularly military budgets, which it has failed to pass on time with glaring regularity and is therefore creating tremendous harm to military readiness by worsening the existing pilot shortage. Furthermore, the funding process has direct and indirect impact on DOD pilot numbers. In fact, the current relationship encourages commercial airlines to parasitically benefit from military investment, and Congress fails to provide strategic guidance that may prove unsustainable in the next decade.

The ability of the DOD to retain pilots directly affects national security since much of U.S. defense strategy relies on air power to get forces to the fight or establish and maintain air superiority in any conflict. An inadequate pilot force cripples the nation's ability to project power and execute its strategic plans. The DOD faces a pilot shortage that negatively affects experience levels from the beginning of pilot training all the way through the support provided to combatant commands and service headquarters.

In order to alleviate pilot retention concerns, commercial aviation, Congress, and the military services must make changes to their current processes.

Experts expect the current pilot shortage in the DOD to get worse in the next five to ten years. Due to mandatory retirement and the increasing requirements for pilots needed to operate the growing number of commercial aircraft, civilian airlines also face a growing pilot shortage. Civilian aviation shortfalls will exacerbate the DOD shortage. United Airlines, one of eleven major U.S. carriers, expects an average of 500 pilots to retire annually between 2017 and 2028, resulting in a need for nearly 6,000 pilots over this period.¹ Boeing expects the worldwide fleet of commercial aircraft to double in the next two decades from 23,480 in 2016 to 46,950 in 2036.² In total, U.S. airlines may need more than 95,000 pilots in the next 20 years.³ Experts project European airlines may need another 95,000 pilots.⁴ The growth of air travel in Asia may require an additional 226,000 pilots.⁵ As the forecasts show, the shortfall is global and affects all commercial carriers.

The shortfall in commercial pilots affects the military since the airlines heavily recruit military aviators once they fulfill their commitment.⁶ This action has led to significant shortfalls of pilots across the military services. The U.S. Marine Corps is 238

¹ Langdon Root, provided by electronic correspondence, August 1, 2017, "Air Line Pilots Association: *United Airlines Contract Comparison Guide, Q1-2017*," PowerPoint slides, 5.

² The Boeing Company, *Current Market Outlook 2017-2036*, Seattle, <http://www.boeing.com/commercial/market/current-market-outlook-2017/> (accessed September 15, 2017), 4.

³ Brian Prentice and Philippe Gouel, "Pilot Shortage Threatens to Slow U.S. Airline Growth," ed. Birgit Andersen, *Forbes.com*, January 28, 2016, <https://www.forbes.com/sites/oliverwyman/2016/01/28/pilot-shortage-threatens-to-slow-u-s-airline-growth/#177458a66b4f> (accessed September 15, 2017).

⁴ *Ibid.*

⁵ *Ibid.*

⁶ This paper uses the term commercial pilot to refer to any pilot that flies for a major airline, what the Federal Aviation Administration characterizes as a Federal Aviation Regulation (FAR) part 121 carrier. Technically a pilot can obtain a commercial pilot's license with much lower requirements. A FAR part 121 pilot must have the higher requirements, Airline Transport Pilot rating, flight hours, etc. discussed in this paper. For simplicity, this paper will use commercial pilot and commercial airlines to refer to those carriers and pilots falling under FAR part 121.

officers, or 17 percent, short of the required fixed-wing pilot requirements or billets.⁷ The Army's accumulative shortfall is 731 warrant officers to fly rotary wing aircraft.⁸ As of the end of fiscal year 2016, the Air Force needed 1,544 additional pilots.⁹ The multi-component structure of the Air Force exacerbates and magnifies the shortage. The Air Force relies heavily upon the Air Force Reserves and Air National Guard for pilots. Unfortunately, 80 percent of the Reserve pilots are part-time reservists, and 96 percent of the part-time reservists fly for commercial airlines.¹⁰ Finally, the Navy has failed to meet pilot retention goals for its "three, five, and ten year average continuation rates, a trend that is expected to continue for the foreseeable future."¹¹ Similar to the Air Force, the Navy Reserves also reflect shortages comparable to its active duty.¹²

Beyond the numbers, each pilot that leaves the service represents a loss of experience and investment. The experience loss results from pilots leaving after 8 to 12 years of service. DOD has no way to create a replacement pilot with the experiences and qualifications to fill the void. The loss of experience also equates to a loss of investment. The cost to complete basic military pilot training exceeds \$1 million.¹³ Follow-on

⁷ 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): 28-35, <http://search.proquest.com.nduezproxy.idm.oclc.org/docview/1899689743?accountid=12686> (accessed September 15, 2017), 30.

⁸ Karen Parrish, "Congress Probes Military Pilot Shortage," *DOD News*, Lanham: Federal Information & News Dispatch, Inc., March 30, 2017, <http://search.proquest.com.nduezproxy.idm.oclc.org/docview/1882243589?accountid=12686> (accessed August 18, 2017).

⁹ Jannelle McRae, "Goldfein Meets with Airline Executives," U.S. Air Force, Air Force Public Affairs, May 19, 2017, <http://www.af.mil/News/Article-Display/Article/1187913/goldfein-meets-with-airline-executives/> (accessed September 11, 2017).

¹⁰ *Ibid.*

¹¹ Robert P. Burke, "Statement," *Housed Armed Services Committee Subcommittee on Military Personnel on Pilot Shortages*, 115th Cong., 1st Sess., March 29, 2017, <https://armedservices.house.gov/legislation/hearings/military-pilot-shortage> (accessed October 27, 2017), 2.

¹² *Ibid.*, 6.

¹³ U.S. Government Accountability Office, *Military Personnel: Actions Needed to Better Define Pilot Requirements and Promote Retention*, August 20, 1999,

training, including initial aircraft and mission qualification, training on numerous upgrades to initially assigned aircraft, and potentially cross-qualification in other aircraft, all increase the cost of the government's investment. These qualifications and the resources used to maintain basic mission requirements easily equate to an additional \$9 million per pilot.¹⁴ As a result, pilots making decisions to remain in the military or leave for civilian jobs represent a military investment of \$10 million. In the case of the Air Force, the aviator shortage includes 1,211 fighter pilots, which equates to a \$12 billion capital loss for the service.¹⁵ These pilot losses take longer to recover from than a shortage of new pilot applicants because they occur at eight or more years of service. Therefore, it will take at least eight years or longer to develop experienced aviators capable of replacing those separating from the service. The significant loss of capital frustrates DOD leadership's ability to solve the issue due to the many factors influencing retention.

Due to the complex systems affecting pilot retention, it is necessary to review actions by commercial aviation, Congress, and the military services to understand the nature of the retention problem. Commercial airlines represent a pull, or demand, on military aviators to leave the service. Congress affects military aviator retention through legislation and funding. The military services use various retention tools in an effort to maintain an adequate pilot force. This complex series of interacting conditions results in a situation where DOD struggles to address military pilots' concerns with pay, readiness, quality of life, quality of service, and focus on the mission. While previous retention

<http://search.proquest.com.nduezproxy.idm.oclc.org/docview/1820742648?accountid=12686>, (accessed August 18, 2017), 3. As of 1999, the cost was approximately \$1 million.

¹⁴ Ibid., 3.

¹⁵ Parrish.

programs were largely successful, the magnitude of the emerging situation requires changes by the aviation industry, Congress, and the military services to develop solutions for this difficult problem.

Commercial airlines and the salaries they pay their pilots directly link to monetary compensation by military services, and experts anticipate the airlines need for highly skilled pilots to increase in the future. Besides a strong global economy driving airline expansion, the large quantity of current pilots reaching mandatory retirement age will cause the airlines to hire even greater numbers of pilots. The training required of a civilian applicant to receive an airline transport pilot (ATP) rating is long and expensive, resulting in a longer time to create a large pool of qualified pilots. Military pilots, however, have the training and hours required to qualify to fly for the major airlines immediately upon separation from the military.¹⁶ In order to alleviate the situation, the aviation industry must develop a civilian system that adequately meets the industry's pilot production needs.

Congressional actions affect pilot retention in two ways, legislation and funding. Through legislation, Congress controls policy that changes commercial aviation rules, regulations, and requirements that have secondary effects on the military. Congress also exerts direct and indirect control on the DOD through the budget. Failure to pass a budget and relying on last minute continuing resolutions hampers DOD's long term planning. Moreover, actions such as the Budget Control Act of 2011, also known as sequestration, drive across the board cuts that continue to exacerbate retention funding gaps. Congress

¹⁶Michael G. Mattock, James Hosek, Beth J. Asch, and Rita Karam. *Retaining U.S. Air Force Pilots When the Civilian Demand for Pilots Is Growing*, Santa Monica CA: RAND Corporation, January 1, 2016, https://www.rand.org/pubs/research_reports/RR1455.html (accessed August 18, 2017), xii.

must pass legislation that allows pilot monetary compensation commensurate with the growth of civilian pilot pay, and must move beyond continuing resolutions and pass annual appropriations to provide long term planning stability for the military services.

While acting within the boundaries placed by Congress, each of the military services in DOD exercise multiple tools to address its pilot requirements. By assessing the current situation and reviewing the history of pilot retention, the military services can evaluate options for future pilot retention measures. The areas the military services control for pilot retention include pilot production, pay, and operational tempo. When considering the current pilot situation, each service must analyze its production of pilots to include recruiting, graduates, training time and quality, and active duty service commitment (ADSC) following pilot training.¹⁷ DOD has special pay available to pilots in the form of aviation career incentive pay (ACIP) and aviation career continuation pay (ACCP).¹⁸ Each of the military services implements these tools in slightly different ways in order to maximize retention and minimize expenses. Finally, the military operations tempo affects quality of life and quality of service. While the military services have spent tremendous time researching monetary means to ensure pilot retention, they must move beyond solely seeing retention as a money issue and instead address the entire pilot system from production to pay, quality of life, readiness/maintenance, quality of service, and lack of mission focus.

¹⁷ Active duty service commitment (ADSC) is a mandatory length of time to remain on active duty following completion of pilot training. Pilots are not eligible to separate from the service until completing their ADSC.

¹⁸ ACIP replaced flight pay, but some officers still refer to monthly ACIP as flight pay. Some services or individuals refer to ACCP as an aviation bonus or aviation retention bonus which eligible aviators receive annually.

In order to understand the pilot retention factors better, Chapter 2 analyzes the current and forecasted demand from the commercial aviation industry for pilots to include projected retirements and the training requirements for ATPs. Chapter 3 reviews the consequences of legislation on the commercial aviation industry and military that changed the minimum standards for ATPs. It also examines legislation and funding and the effect they have on DOD's retention efforts. Chapter 4 analyzes the effects of budget uncertainty on DOD pilot retention efforts. It also reviews the current pilot shortage for each service and the factors that led to the shortfall for each service. Then it examines five areas of concern for pilots, which include pay, quality of life, readiness/maintenance, quality of service, and lack of mission focus, which are factors for pilots considering separating from the military.

Examination of the current pilot shortage reveals that external actions from commercial aviation, actions by Congress, and internal actions within DOD exacerbated a latent problem within the DOD aviation recruitment and retention programs. Specifically, commercial aviation's inability to develop a system to provide adequate ATP qualified pilots creates a high demand for military pilots within the industry. Second, Congress' passage of the Budget Control Act of 2011, sequestration, and inability to pass on-time appropriations bills and thus a reliance on continuing resolutions (CRs) severely hampers DOD's ability to adjust to external competition for pilots. Finally, DOD's inability to convey to Congress the effects of sequestration and CRs, lead the Services to make compromises that reduce pilot retention incentives.

Chapter 2: Commercial Pilot Shortage

While many people debate whether the current bull market began in 2009 or 2013, the economic turnaround in the global markets drove demand for air travel and the need for additional pilots. The year 2016 marked the seventh consecutive year of profitability for the U.S. airline industry.¹ According to the Federal Aviation Administration (FAA), Pacific airline passengers to/from the United States will double to 85 million passengers annually in the next 20 years, while Latin American passenger growth to/from the United States will increase 3.9 percent per year.² Airbus predicts airlines will add over 22,000 new aircraft by 2036 to meet passenger demand.³ The company also predicts the air traffic in the Asia-Pacific region will triple in the same period.⁴ Ultimately, experts estimate the airlines will need between 534,000 and 637,000 new pilots between 2017 and 2036.⁵ Even if the margin of error is 75 percent, the airlines would still need over 130,000 new pilots in the next 20 years or more than 6,500 new pilots annually. These numbers indicate the basic requirements for commercial pilots, but mask other factors—mandatory retirement age, long and expensive training timeline, and low starting salaries in regional carriers—that expand the need. How commercial aviation attempts to solve this problem will influence the Department of Defense's (DOD's) ability to retain its highly trained pilot force.

¹ Federal Aviation Administration, *FAA Aerospace Forecast: Fiscal Years 2017-2037*, https://www.faa.gov/data_research/aviation/aerospace_forecasts/ (accessed on September 15, 2017), 1.

² *Ibid.*, 18.

³ Airbus, *Global Market Forecast: 2017-2036 Growing Horizons*, Blagnac Codex, France: Airbus, April 4, 2017, <http://www.airbus.com/newsroom/search.html?q=market+outlook> (accessed October 17, 2017), 8.

⁴ *Ibid.*, 24.

⁵ *Ibid.*, 48, 56, 64, 72, 80, 88, 96, 112; The Boeing Company, *Pilot Outlook: 2017-2036*, <http://www.boeing.com/commercial/market/pilot-technician-outlook/2017-pilot-outlook/#/quick-facts> (accessed October 17, 2017).

While the airline industry needs additional pilots to fill the demand of its growing travel and trade, mandatory retirement age adds to the burden of filling cockpits. CAE, formerly Canadian Aviation Electronics, forecasts 105,000 pilots will retire or leave the industry by 2027.⁶ As a consequence of the losses and the growth of the global market, the company predicts the industry will need 255,000 new pilots in the next ten years.⁷ As of June 2014, “more than half of all airline pilots are above the age of 50,” and U.S. airlines expect 30,000 pilots to retire by 2026.⁸ Based on these estimates, U.S. airlines need to hire over 3,000 pilots annually just to replace their employees affected by the mandatory retirement age.

Not only has the demand for pilots increased while the number of mandatory retirees looms, but the time to complete the airline transport pilot (ATP) requirements takes four or more years. The length and expense of training necessary to meet the minimum requirements for an ATP rating are hindrances to civilians filling the open positions with the major U.S. aviation carriers. The length and expense of training interrelate. Pilots progress through numerous ratings and certificates, but average five to seven ratings.⁹ Each certificate requires additional hours of flight time and every hour of flight time represents additional cost to the individual. Embry-Riddle Aeronautical

⁶ CAE, *CAE Airline Pilot Demand Outlook: 10-year view*, Canada: CAE, June 2017, www.cae.com/uploadedFiles/.../CAE-Airline-Pilot-Demand-Outlook-Spread.pdf (accessed October 17, 2017), 2.

⁷ *Ibid.*, 3.

⁸ Nolan Sweeney, *Predicting Active Duty Air Force Pilot Attrition Given an Anticipated Increase in Major Airline Pilot Hiring*, The Pardee RAND Graduate School, June 2014, In PROQUESTMS ProQuest Dissertations & Theses Global, <http://search.proquest.com.nduezproxy.idm.oclc.org/docview/1650613397?accountid=12686> (accessed August 18, 2017), 12; mba, “The Pilot Shortage: A Current and Future Threat,” Arlington, Virginia: Morten Beyer & Agnew, March 13, 2017, <https://www.mba.aero/the-pilot-shortage-a-current-and-future-threat-mba-insight-series/> (accessed October 17, 2017), 4.

⁹ Some examples of the certificates include private pilot, instrument, commercial, multi-engine, flight instructor, flight instructor-instrument, and airline transport pilot (ATP) ratings.

University estimated it costs \$256,000 over four years to receive a college degree and achieve a restricted-ATP rating.¹⁰ If an individual possesses a baccalaureate degree it might only take a year or two to earn the same rating, but the cost is still approximately \$80,000 to complete the ratings.¹¹ Although some pilots offset expenses by instructing others, it hardly diminishes the overall debt most pilots incur. Ratings, however, are only one requirement to fly for an airline. The other requirement necessitates accumulating 750 to 1,500 flying hours, and the amount of the hours is dependent on the individual's other qualifications.¹² These additional hours and experience requirements represent an additional investment the pilot must make or debt the pilot must incur prior to receiving an ATP rating.

Achieving development requirements necessitates planning four or more years in advance, but due to disincentives, the current system is not meeting capacity. Hampering efforts to develop sufficient numbers of pilots is the paltry initial salary regional aviation carriers pay their aircrews. Many airline salaries for first year pilots at regional airlines are less than \$30,000.¹³ This pay compares poorly with starting salaries for other pilot careers such as “test engineer (\$52,500); operations manager (\$55,000); and, second

¹⁰ Dan Pimentel, "The Pilot Pipeline," *Flying*, February 2017: 48-55, <http://search.proquest.com.nduezproxy.idm.oclc.org/docview/1860285068?accountid=12686> (accessed September 15, 2017), 55; Embry-Riddle Aeronautical University, "Flight Course Costs," <https://daytonabeach.erau.edu/college-aviation/flight/flight-course-costs/index.html> (accessed October 17, 2017); Federal Aviation Administration, "Press Release – FAA Boosts Aviation Safety with New Pilot Qualification Standards," July 10, 2013, https://www.faa.gov/news/press_releases/news_story.cfm?cid=TW173&newsId=14838 (accessed October 17, 2017). Whereas an ATP requires 1,500 hours to serve as a copilot, a restricted privileges ATP allows a military pilot with 750 hours, a pilot with a graduate degree and 1,000 hours, or a pilot with an associate degree and 1,250 hours to serve as a copilot.

¹¹ Pimentel, 53.

¹² Federal Aviation Administration, "Press Release – FAA Boosts Aviation Safety with New Pilot Qualification Standards."

¹³ Sam Pool, "Regional Airline Managements Must Create a Job People Want." *ALPA.org*, August 23, 2016, <https://www.alpa.org/news-and-events/Blog/2016/08/23/regional-airline-managements-must-create-a-job-people-want> (accessed October 17, 2017).

lieutenant in the Air Force (\$53,616 in salary and allowances).”¹⁴ Moving the decision making process even earlier, the Air Line Pilots Association wondered if a student would choose the pilot career path when a similar expenditure in college could qualify the individual as a registered nurse with a nearly \$64,000 starting salary.¹⁵ The lower initial salary with the regional airlines acts as a discouragement to civilian pilot production. While the regional airlines suffer the dearth of pilots the most, a shortage at lower end commercial aviation eventually affects major airline pilot supply as pilots eventually progress past these starter jobs into larger carriers.¹⁶ While experienced and high status pilots flying for the major airlines are highly compensated, the low entry-level positions are a barrier for many considering the career.

Low initial income and extensive training requirements, however, are not a hindrance for military aviators looking to transition to jobs in commercial aviation. In contrast to these impediments for a civilian attempting to fly for commercial airlines, these hindrances actually allow military pilots to step in front of the civilians in the hiring process. Most military aviators receive training that meets most of the ATP rating requirements. These pilots only need to take the appropriate military equivalency exams for prerequisite certificates and then complete the ATP requirements. Often military aviators complete the ATP-specific flying requirements in a week or less. In addition, by the time military aviators have the option to leave the service, they have exceeded the

¹⁴ Air Line Pilots Association, “ALPA: Pilot Shortage is All About the Money,” *ALPA.org*, February 27, 2014, <http://www.alpa.org/news-and-events/news-room/2014-02-27-Pilot-Shortage-All-About-Money> (accessed October 17, 2017).

¹⁵ Air Line Pilots Association, “The Landing,” *Air Line Pilot* Vol. 84, No. 6 (August 2015): 37, <http://www3.alpa.org/Publications/air-line-pilot-august-2015/air-line-pilot-august-2015.pdf> (accessed October 17, 2017).

¹⁶ mba, 2.

flying hours experience requirements for the ATP rating. Moreover, many of the major commercial airlines prefer the experience military aviators bring to the company. These military pilots bypass low paying starter jobs with the regional carriers, excel with a better quality of life, and promote quickly into the more lucrative positions found within the major airlines. While the military aviators' prior completion of prerequisites and the currently insatiable demand for pilots from commercial aviation results in a significant retention problem for the military services, Congressional actions also play a substantial role in military pilot retention.

Chapter 3: Congressional Effects on Aviation

Commercial Aviation represents the greatest demand or stressor on military pilot retention, but the U.S. Congress is a higher authority that makes changes that affect both commercial airlines and the Department of Defense (DOD). Congress influences commercial aviation through legislation and oversight of the Federal Aviation Administration (FAA), both of which have second and third order effects on military pilots. Additionally, Congress controls legislation and funding that shapes DOD and the military services. As an example, the Fair Treatment of Experienced Pilots Act in 2007 changed the mandatory retirement age for commercial pilots from 60 to 65, and delayed the demand for additional commercial pilots for five years.¹ The action created an increase in the number of retirees from 2012 to 2017.²

While the previous legislation affected the mandatory retirement of pilots, the Airline Safety and Federal Aviation Administration Act of 2010 changed civil aviation rules in two major ways. It adjusted the minimum training and certification requirements necessary to pilot for commercial airlines, and directed the FAA to set flight time and duty time limitations on the aviation industry. In the first instance, the law raised the minimum qualification to fly as a first officer, also known as a co-pilot, for an airline from a commercial pilot license with a minimum of 250 flight hours to an ATP

¹ Sweeney, 13.

² John Boyer, "United Airlines Pilot Hiring Forecast," Presentation at National Training Aircraft Symposium, March 14, 2016,

https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=4&cad=rja&uact=8&ved=0ahUK_EwjgibzMv6fWAhXG7IMKHQSVDWYQFghFMAM&url=http%3A%2F%2Fcommons.erau.edu%2Fcgi%2Fviewcontent.cgi%3Farticle%3D1041%26context%3Dntas&usg=AFQjCNE_IOUFE5YT-KSrlI5WXjYdGTA6nA (accessed September 15, 2017), 6.

certification with a minimum of 1,500 flight hours.³ The law, however, allowed some exceptions to the requirements. Individuals possessing associate degrees from a qualified program are eligible for a restricted privilege ATP (R-ATP) after 1,250 flight hours, pilots with a bachelor's degree from a qualified program are eligible with 1,000 flight hours, and military pilots qualify with 750 flight hours.⁴ In addition to the hours constraint, the FAA also required co-pilots to hold a qualified "aircraft type rating, which involves additional training and testing specific to the airplanes they fly."⁵ The act also directed the FAA to study "pilot fatigue and implement new rules to mitigate it" that resulted in an increase in pilot staffing levels.⁶ The second and third order effects of the act were a decrease in the currently qualified pilots available to fly for the airlines, an increase in the number of pilots required, and an increase in the length of time and the expense to qualify for an ATP rating. As discussed in the last chapter, this act resulted in a reduction in the civilian pilots currently qualified to fly for the major airlines, while simultaneously increasing the amount of time and money it takes to meet the ATP standard.

The acts above had secondary effects on the military, but Congress possesses more direct controls to influence DOD's aviation retention tools. Congress controls the laws that place restrictions on both aviation career continuation pay (ACCP) and aviation career incentive pay (ACIP). Congress created ACIP in 1974 with the goal "to provide

³ *Airline Safety and Federal Aviation Administration Extension Act of 2010*, Public Law 111-216, 111th Congress, (August 1, 2010). <https://www.congress.gov/111/plaws/publ216/PLAW-111publ216.pdf> (accessed October 17, 2017), 22.

⁴ Federal Aviation Administration, "Press Release – FAA Boosts Aviation Safety with New Pilot Qualification Standards."

⁵ Ibid.

⁶ mba, 3.

additional pay for aviation service in order to increase the ability of the uniformed services to attract and retain officer volunteers in a military aviation career.”⁷ The Department of Defense Authorization Act, 1981 and the Uniformed Services Pay Act of 1981 established ACCP to address a shortage of Navy and Marine Corps aviators.⁸ In the National Defense Authorization Act, Fiscal Year 1989, Congress expanded ACCP to aviators of all services.⁹

Congress tends to make increases to ACIP and ACCP only when requested by DOD; services tend to instigate the requests when facing pilot retention concerns. In light of the most recent pilot retention issue, Congress in 2017 increased ACIP from a maximum of \$840 to \$1,000 per month.¹⁰ The last ACIP change occurred in 1999 in response to another pilot retention issue.¹¹ Similarly, in 2004 Congress increased ACCP to \$25,000 per year, and in response to the current crisis Congress increased ACCP to \$35,000 per year.¹² While this amount is a significant increase above the previous ACCP, it was far less than the \$48,000 requested by the Air Force.¹³

Besides control over aviation related pay, Congress directly and dramatically affected DOD through the appropriations process. The Budget Control Act of 2011

⁷ U.S. Department of Defense, Under Secretary of Defense for Personnel and Readiness, *Military Compensation Background Papers: Compensation Elements and Related Manpower Costs Items, Their Purposes and Legislative Background*, Seventh Addition, November 2011, <http://www.loc.gov/rr/frd/mil-comp.html> (accessed September 27, 2017), 281 299.

⁸ *Ibid.*, 301-302.

⁹ *Ibid.*, 309.

¹⁰ U.S. Air Force, Secretary of the Air Force Public Affairs, “Air Force announces initiatives to lessen pilot shortage,” August 25, 2017, <http://www.af.mil/News/Article-Display/Article/1290397/air-force-announces-initiatives-to-lessen-pilot-shortage/> (accessed December 19, 2017).

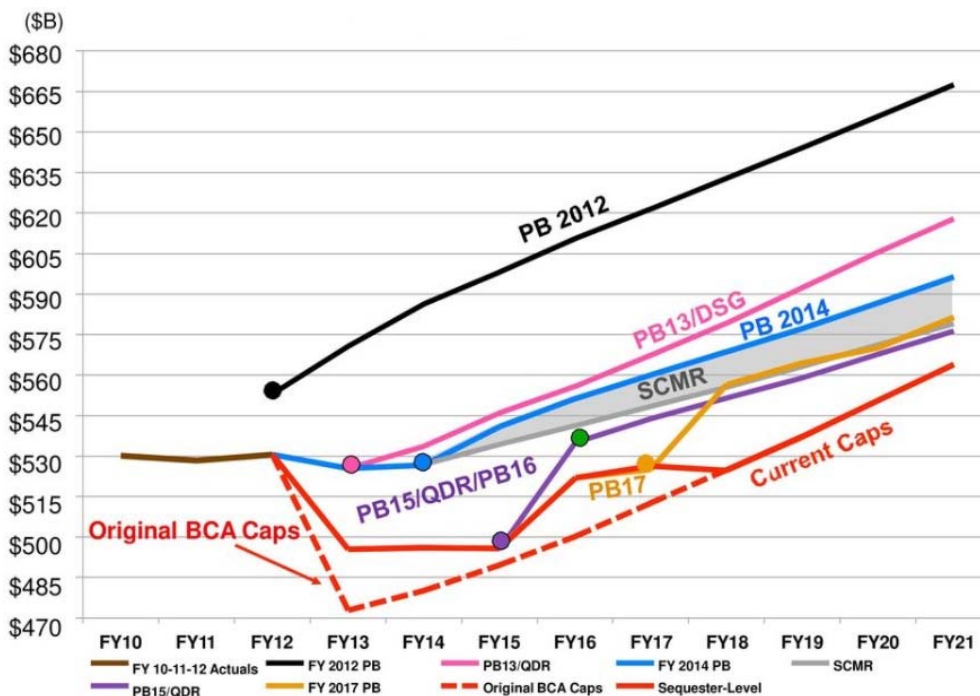
¹¹ U.S. Department of Defense, Under Secretary of Defense for Personnel and Readiness, *Military Compensation Background Papers: Compensation Elements and Related Manpower Costs Items, Their Purposes and Legislative Background*, 9.

¹² Stephen, Losey, “Congress readies smaller pilot bonus hike than James requested,” *AirForceTimes.com*, December 5, 2016, <https://www.airforcetimes.com/news/your-air-force/2016/12/05/congress-readies-smaller-pilot-bonus-hike-than-james-requested/> (accessed December 19, 2017).

¹³ *Ibid.*

(BCA), also known as sequestration, made drastic changes to previously planned and approved DOD budgets. Because of sequestration, the DOD budget decreased from \$530.4 billion in 2012 to \$495.5 billion in 2013.¹⁴ The impact of this change was greater because the DOD budgeting process had planned for budget of approximately \$570 billion in 2013 and higher amounts in following years (see figure 1).¹⁵ Furthermore, the act will continue to limit the growth of the DOD budget through fiscal year 2021 unless Congress acts to revoke sequestration.

Figure 1: DOD Budget Plans vs. BCA Caps



Source: Defense Acquisition University (DAU) Requirements Executive Overview Workshop: Planning Programming, Budgeting and Execution (PPBE) Process¹⁶

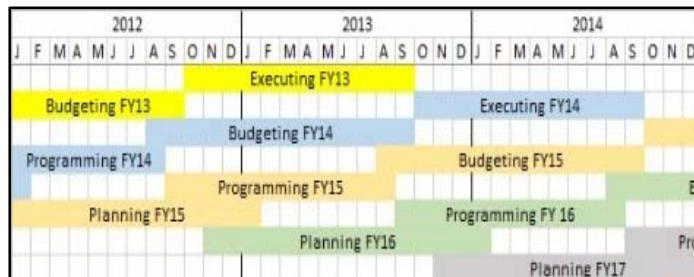
¹⁴ Kimberly Amadeo, "U.S. Military Budget: Components, Challenges, Growth," August 10, 2017, <https://www.thebalance.com/u-s-military-budget-components-challenges-growth-3306320> (accessed December 19, 2017).

¹⁵ Deacon Hoen, "Requirements Executive Overview Workshop: Planning Programming, Budgeting and Execution (PPBE) Process," presentation <http://slideplayer.com/slide/12373613/> (accessed February 16, 2018), slide 27.

¹⁶ Ibid.

These fiscal constraints were more damaging because DOD had already made cuts to the budget and DOD’s planning, programming, budgeting, and execution (PPBE) method is a five-year process (see Figure 2). First, during his time as Secretary of Defense (SecDef) Robert Gates cut \$330 billion from major acquisition programs in 2009.¹⁷ In 2010, he led DOD in trimming another \$180 billion from the budget.¹⁸ In 2011, President Obama asked Secretary Gates to cut an additional \$400 billion over the following 10 years.¹⁹ Then in 2013, sequestration required another \$500 billion budget cut.²⁰ Second, due to the DOD PPBE timeline, changes in the current year budget greatly increase the workload. For example, in 2013 when sequestration took place, DOD was planning its budget for fiscal year 2016 and 2017, programming for 2015, budgeting for 2014, and executing for 2013.²¹ The dramatic reductions forced DOD to complete four years’ worth of work by changing 2013’s budget during execution while simultaneously reviewing and reCompleting previous efforts for 2014 through 2017.

Figure 2: DOD Planning, Programming, Budgeting, & Execution (PPBE) process



Source: created by the author²²

¹⁷ Robert Gates, *A Passion for Leadership: Lessons on Change and Reform from Fifty Years of Public Service* (New York: Alfred A. Knopf, 2016), 190 and 217.

¹⁸ *Ibid.*, 191 and 217.

¹⁹ *Ibid.*, 197, and 217.

²⁰ *Ibid.*, 217.

²¹ Irv Blickstein, John M. Yurchak, Bradley Martin, Jerry Sollinger, and Daniel Tremblay, *Navy Planning, Programming, Budgeting, and Execution: A Reference Guide for Senior Leaders, Managers, and Action Officers*, (Santa Monica, CA: RAND Corporation, 2016), <https://www.rand.org/pubs/tools/TL224.html> (Accessed February 13, 2018), 9, 26-27.

²² *Ibid.*

Finally, Congress' inability to pass an annual budget and only using continuing resolutions (CRs) to fund the government affects the military services in multiple ways. First, Congress bases CR funding on a designated rate, which is often the previous year's funding level.²³ If the CR establishes funding at the previous year's level, it often results in less purchasing power or an actual decrease in the budget due to inflation. Second, as a Government Accountability Office report notes, "In general, CRs prohibit new activities and projects for which appropriations, funds, or other authority were not available in the prior year."²⁴ This limitation places previously planned contracts and purchases off limits. CRs often limit the ability of agencies to hire new workers and may result in delaying contracts that postpone purchases or services leading to increased costs.²⁵ Agencies often feel the effects of the delays caused by CRs even after the agencies receive full year appropriations.²⁶ Beyond delays, CRs often result in increased costs due to entering shorter-term contracts that reflect the duration of the CR.²⁷

Both sequestration and the continuing reliance on CRs multiply the uncertainty of the budget. The last time Congress passed all twelve required appropriations bills prior to the start of the fiscal year was 1996.²⁸ Since 1999, Congress has continually relied on multiple CRs to fund the government (see Figure 3).²⁹

²³ U.S. Government Accountability Office, *BUDGET ISSUES: Effects of Budget Uncertainty From Continuing Resolutions on Agency Operations*, March 13, 2013, <https://www.gao.gov/products/GAO-13-464T> (accessed December 19, 2017), 5; Ben Ritz, "Can Congress Deliver Appropriations Bills On Time?," May 16, 2016, <https://bipartisanpolicy.org/blog/can-congress-deliver-appropriations-bills-on-time/> (accessed December 19, 2017).

²⁴ U.S. Government Accountability Office, *BUDGET ISSUES: Effects of Budget Uncertainty From Continuing Resolutions on Agency Operations*, 5.

²⁵ *Ibid.*, 6-7.

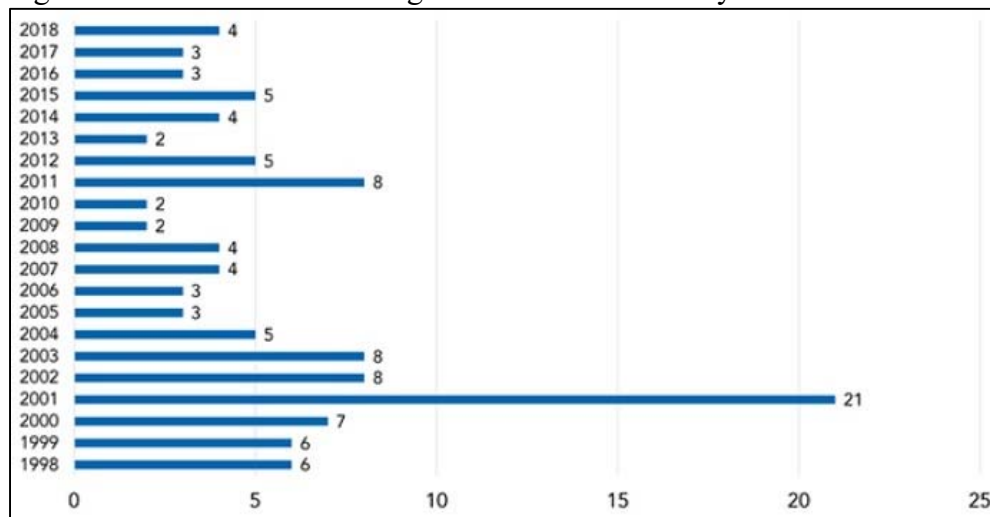
²⁶ *Ibid.*, 8.

²⁷ *Ibid.*

²⁸ Ritz.

²⁹ U.S. Government Accountability Office, *BUDGET ISSUES: Effects of Budget Uncertainty From Continuing Resolutions on Agency Operations*, 4.

Figure 3: Number of Continuing Resolutions Enacted by Fiscal Year



Source: Peter G. Peterson Foundation³⁰

Since 2009, Congress failed to pass appropriations bills on time and relied on multiple CRs prior to passing appropriation bills.³¹ From 1999-2013, Congress averaged five CRs prior to approving funding.³² The appropriations occurred between mid-October and mid-April, a month to nearly seven months after the start of the fiscal year (see Figure 4).³³

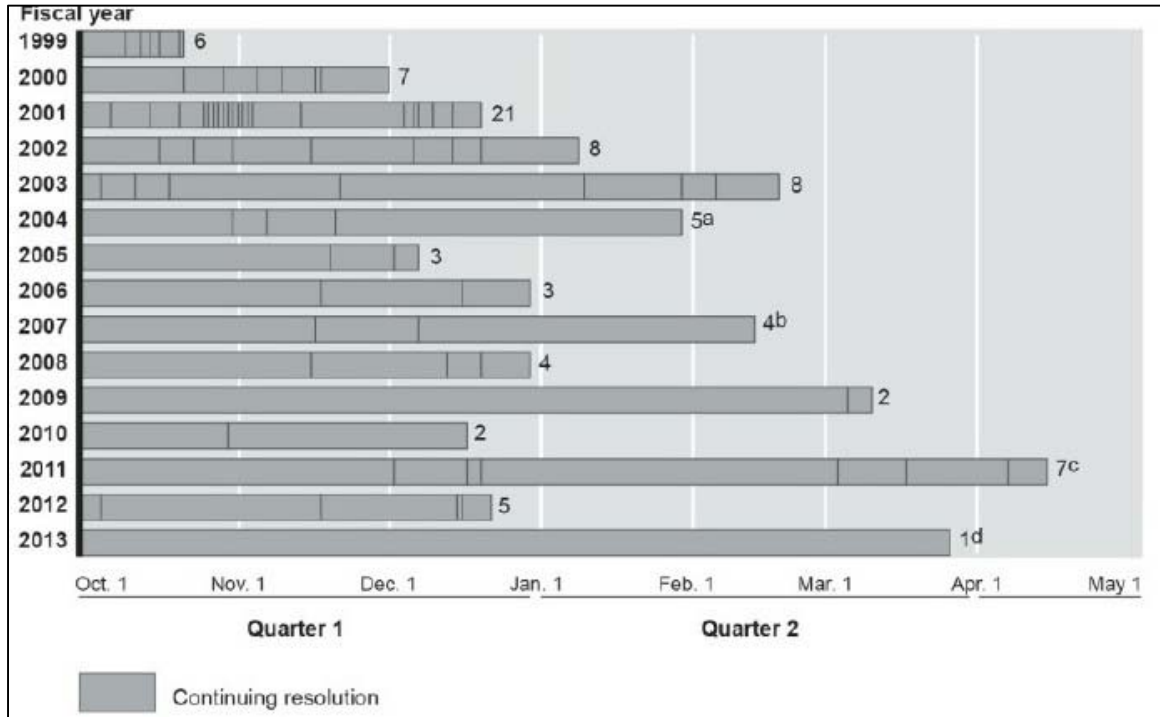
³⁰ Peter G. Peterson Foundation, “What is a Continuing Resolution?,” *PGPF.org*, December 11, 2017, <https://www.pgpf.org/blog/2017/12/what-is-a-continuing-resolution> (accessed December 24, 2017).

³¹ *Ibid.*

³² *Ibid.*

³³ *Ibid.*

Figure 4: Duration and Number of Continuing Resolutions
Fiscal Years 1999-2013



Source: U.S. Government Accountability Office, *BUDGET ISSUES: Effects of Budget Uncertainty From Continuing Resolutions on Agency Operations*³⁴

While a greater number of CRs results in increased anxiety and workload for government agencies, the later Congress passes appropriations for the remaining fiscal year the less the time available to use those funds thereby compressing a year's worth of work (maintenance, contracts, etc.) into the time remaining until 30 September. Second, in 2007 and 2011, Congress failed to pass any appropriations and instead passed multiple CRs with the last one funding the remainder of the fiscal year.³⁵ This uncertainty and lack of funding affects multiple factors that tend to drive military pilots from DOD and to commercial aviation.

³⁴ U.S. Government Accountability Office, *BUDGET ISSUES: Effects of Budget Uncertainty From Continuing Resolutions on Agency Operations*, 2.

³⁵ *Ibid.*

Chapter 4: Effects of Budget Uncertainty on DOD Pilot Retention

The demand for pilots to fly for commercial aviation provides an alternative to continued service in the military, and tends to reinforce the common reasons given by pilots for leaving the service, which include pay, quality of life, readiness, quality of service, and lack of focus on the mission. As noted, Congress creates strategic issues that limit the Department of Defense's (DOD's) ability to make adjustment to improve retention efforts. DOD's inability to convey to Congress the effects of sequestration and continuing resolutions (CRs), led the services to make compromises that reduced pilot retention incentives. Each service made separate and distinct choices, but every concession negatively affected retention. Before reviewing how the compromises caused by sequestration and CRs affect these areas, it is important to review the extent of the problem facing each service and the path that led to the current pilot shortage.

Every service faces a shortage of pilots, but the magnitude of the current shortfall and the challenges faced by each service differ greatly. Overall pilot shortages may not seem great, but the numbers continue to deteriorate, and when one examines fixed wing and fighter specific shortages, they are worse. The Navy currently estimates it is short 40 of the 7,165 pilots and 2,896 naval flight officers in service.¹ The Marine Corps estimates it is shy about 170 pilots out of 3,373 flying officers.² The Army's accumulative shortfall is 731 pilots.³ The Air Force has felt the brunt of the shortage and it continues to increase. In May 2017, the Air Force was short about 1,500 pilots.⁴ By December 2017, that

¹ Barrie Barber, "Air Force facing growing crisis in pilot shortage," *DaytonDailyNews.com*, November 24, 2017, <http://www.daytondailynews.com/news/local-military/air-force-facing-growing-crisis-pilot-shortage/7HehaEvvUUzXKg8JUndBDP/> (accessed November 27, 2017).

² Ibid.

³ Parrish.

⁴ McRae.

shortfall had grown to around 2,000 pilots out of the approximately 23,000 pilots required in the Air Force.⁵ An examination of the whole or total numbers of the pilot shortfall fails to capture the scale of this issue because it does not reflect the magnitude of the shortfall in pilots qualified to fly fixed wing and/or fighter aircraft.

The pilot shortage is greatest in fixed wing aircraft and especially fighter aircraft. The Navy and the Marine Corps shortages are of greatest concern for fixed wing pilots. Naval TACAIR Community, consisting of Strike Fighter (VFA) and Electronic Attack (VAQ) squadrons, drives Navy retention trends and concerns.⁶ This community is approximately 37 percent of Navy Aviation or 3,723 pilots and naval flight officers.⁷ The Navy continues to experience retention rates below historical averages as loss rates exceed 115 percent for O-6s, 112 percent for O-5s and 125 percent for O-4s. Additionally the Navy has experienced increase post-command (O-5) losses that have risen from a low of five in 2009 to 27 in 2017.⁸ The Marine Corps' gap in fighter pilots represents a 15.9 percent of the 1,070 fighter pilot billets.⁹ The Marine Corps is also experiencing reduced retention of MV-22 pilots.¹⁰ The Air Force was short 1,276 or over 23 percent of 5,343 fighter pilots at the close of fiscal year 2017.¹¹ Although the Army accessed 731 fewer

⁵ Barber.

⁶ Richard V. Spencer, Office of the Secretary of the Navy, Secretary of the Navy, to Secretary of Defense James N. Mattis, Office of the Secretary of Defense, informational memorandum on SecDef Requests for Information: Naval Pilot Retention, October 3, 2017, 1-2.

⁷ *Ibid.*, 2.

⁸ *Ibid.*, 1; Guy Snodgrass, "Keep a Weather Eye on the Horizon: A Navy Officer Retention Study," *U.S. Naval Institute Blog*, March 20, 2014, <https://blog.usni.org/posts/2014/03/20/keep-a-weather-eye-on-the-horizon-a-navy-officer-retention-study> (accessed October 30, 2017), 3.

⁹ Barber; Scherrer and Ramthun, 28.

¹⁰ Anthony M. Kurta, Office of Undersecretary of Defense for Personnel and Readiness, Performing the Duties of Undersecretary of Defense for Personnel and Readiness, to Secretary of Defense James N. Mattis, Office of the Secretary of Defense, informational memorandum regarding pilot shortages, November 20 2017, 2.

¹¹ Langdon Root, provided by electronic correspondence, December 18, 2017, "SAF_MR slides_5 Dec 17," PowerPoint slides, 1.

aviation warrant officers over the previous seven years than necessary to maintain a healthy force, its current pilot rates remain acceptable in all but the Apache fleet.¹²

The Army so far has avoided most of the pilot shortage because the preponderance of its pilots primarily train in and fly helicopters. The other services start pilot training in fixed-wing aircraft. Similar to the Army, the majority of Navy pilots fly helicopters. The commercial airlines prefer fixed winged pilots because it is easier transitioning those pilots to fly commercial aircraft, but the commercial airlines have recently expanded their recruiting efforts at rotary wing association meetings.¹³ In 2015, zero commercial airlines recruited at the Naval Helicopter Association annual symposium, but by 2017, three regional airlines attended.¹⁴

Congressional budget decisions exacerbate uncertainty and make it more desirable for pilots to migrate to commercial aviation. The challenge will become greater as the commercial airlines seek new ways to fill their demand for pilots. Besides the uncertainty caused by Congressional budgetary decisions, or lack thereof, Congressional oversight also limits pay and bonuses—historically, DOD’s most used retention tools.

Pay

The DOD has primarily used pay to incentivize members to continue in service. A report requested by Secretary of Defense (SecDef) James Mattis showed that a lieutenant general (O-9) non-pilot with 34 years of service earned \$238,000 per year in

¹² Erik C. Peterson, “Statement,” *Housed Armed Services Committee Subcommittee on Military Personnel on Pilot Shortages*, 115th Cong., 1st Sess., March 29, 2017, <https://armedservices.house.gov/legislation/hearings/military-pilot-shortage> (accessed October 29, 2017).

¹³ Bradford Wallace, email message to author, December 30, 2017.

¹⁴ Naval Helicopter Association Symposium, *2017 Exhibit Hall Floor Plan*, <http://www.navalhelicopterassn.org/symposium-2017-in-review> (accessed February 14, 2018); Naval Helicopter Association, *2015 Symposium Exhibit Hall Floor Plan*, <http://www.navalhelicopterassn.org/symposium-2015-in-review> (accessed February 14, 2018).

compensation while a major or lieutenant commander (O-4) pilot with 12 years of service and a \$65,000 retention bonus would earn approximately \$199,000 per year.¹⁵ The report signed by Anthony Kurta, who was performing the duties of the Under Secretary of Defense for Personnel and Readiness, does not explain the reason for the Mattis's request for the comparison in annual salaries, but the Air Force has requested a pilot bonus as high as \$65,000 in the past. The Air Force currently offers the highest retention bonus up to \$35,000 annually, but the amount offered and the length of the bonus varies depending upon aircraft qualification.¹⁶ The Navy offers the second highest bonus at \$30,000 per year.¹⁷ The Marine Corps plan to offer 2-year contracts at \$20,000 per year.¹⁸ Recently, the Army made \$21,000 annual bonuses available to some warrant officers.¹⁹

Unfortunately, the comparison provided to Secretary Mattis is more about organizational structure, pay, hierarchy, and culture than the salary that most officers use for making a decision on remaining in the military. Most officers contemplating leaving the service show little concern about general officer pay and benefits.

The DOD's main competitors are the commercial airlines, and as Daniel Pink argues, due to the nature of pilot duties the military must pay enough that salary is no longer part of the consideration for leaving the service.²⁰ It is very plausible that commercial pilots might exceed the current O-4 salary that includes a \$35,000 bonus

¹⁵ Kurta, 1.

¹⁶ Ibid., 2.

¹⁷ Ibid.

¹⁸ Ibid.

¹⁹ Ibid.

²⁰ The RSA, "RSA ANIMATE: Drive: The surprising truth about what motivates us," Filmed [April 2010], YouTube video, 10:47, Posted [April 2010], <https://www.youtube.com/watch?v=u6XAPnuFjJc> (accessed December 23, 2017). Daniel Pink suggests pay is not the issue. He argues that for cognitive tasks employers should pay employees enough to take the issue of money off the table. This statement begs the question, "what is enough?"

equaling \$169,000 annually by their third year serving as a copilot with the major airlines.²¹ Regardless, pay alone is not enough of an incentive to keep pilots in military service when considering quality of life, readiness, quality of service, and lack of mission focus.

Quality of Life

Many reports and articles on this subject attempt to determine an appropriate monetary amount to stem pilot losses, but some question the validity of pay as an incentive. Senator John McCain, as head of the Senate Armed Services Committee, remains unconvinced that pay drives pilots to leave the military and has stated he has “no intention of entering a ‘bidding war’ with the airlines.”²² He believes the other factors of quality of life, readiness, and quality of service drive pilots to leave. While pay contributes to military pilots’ decision-making process regarding whether to remain in the service, Air Force Secretary (SECAF) Heather Wilson notes that “while civil aviation salaries can be attractive, Air Force pilots leaving the service often cite personal and professional stability... as factors in their decision to separate.”²³ The personal and professional stability officers cite is part of the quality of life discussion. Aviators also

²¹ Airline Pilots Central, “Delta Air Lines,” pay scales, https://www.airlinepilotcentral.com/airlines/legacy/delta_air_lines (accessed December 31, 2017); Airline Pilots Central, “United Airlines,” pay scales, https://www.airlinepilotcentral.com/airlines/legacy/united_airlines (accessed December 31, 2017); Airline Pilots Central, “American Airlines,” pay scales, https://www.airlinepilotcentral.com/airlines/legacy/american_airlines (accessed December 31, 2017). Delta, American, and United pay first officers serving for three years in their largest aircraft salaries that result in greater than \$169,000 annually when flying 885, 890, and 904 hours annually. Each estimate does not include bonus, per diem, or any other pay. These annual hours are well below the 1000-hour annual limit set by the FAA.

²² Kurta, 1.

²³ Heather Wilson, Office of the Secretary of the Air Force, Secretary of the Air Force, to Secretary of Defense James N. Mattis, Office of the Secretary of Defense, informational memorandum on Pilot Shortages, September 20, 2017, 1.

cite operational tempo and time away from family as reasons for separating from the service. To Senator McCain and Secretary Wilson's points, increasing pay leads to diminishing rewards and returns on investment. People who focus exclusively on pay as the solution miss the point. If they ignore the other factors affecting retention, they risk fulfilling the old adage that it does not matter how much money people make if they never have opportunity to spend or enjoy it.

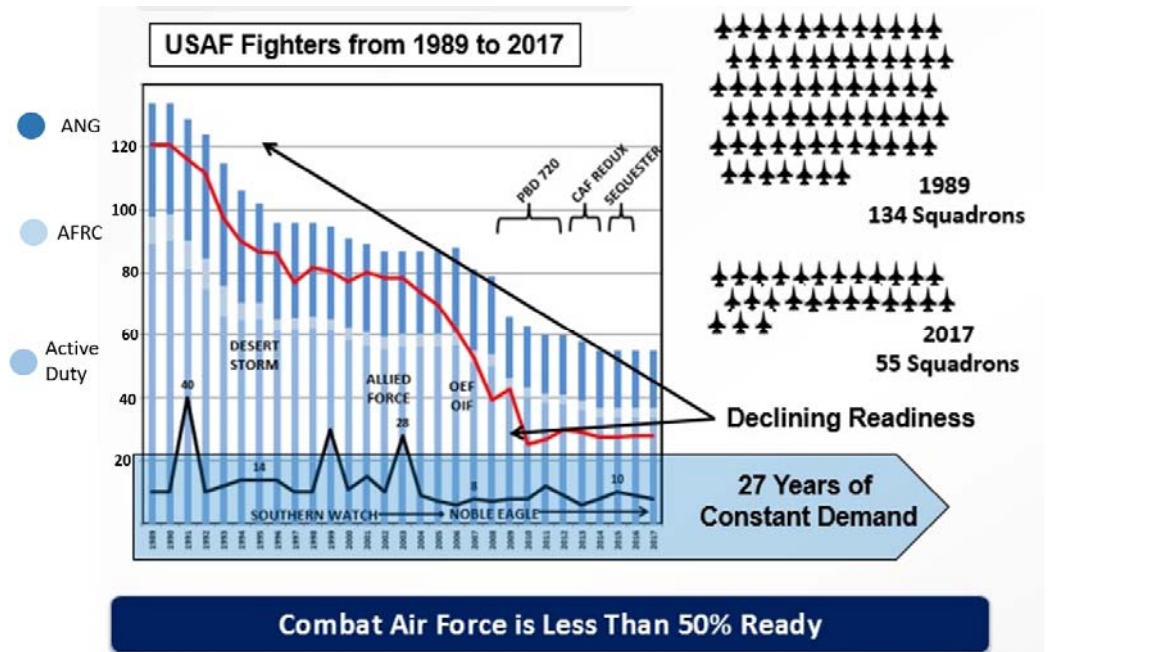
The high and increasing operational demand for fighter squadrons in the Air Force illustrates the combined negative effects of budget uncertainty and decades of constant demand resulting in diminishing quality of life that create pilot retention shortages (See Figure 5: United States Air Force Fighters, Deployments & Readiness). In 1989, the Air Force had 134 fighter squadrons.²⁴ By 1991 and DESERT STORM, the Air Force had drawn down to less than 100 fighter squadrons.²⁵ That year marks the beginning of a constant demand for fighter squadrons with support for NORTHERN and SOUTHERN WATCH as well as other operations and exercises around the world that continues today. The collapse of the Warsaw Pact saw a decrease in every services' force structure as Congress and the American people were quick to claim a "peace dividend." The Air Force started to close squadrons to save money, but it still maintained greater than 80 fighter squadrons through 2007.²⁶

²⁴ John Diercks, provided by electronic correspondence, February 6, 2018, "A3TR Brief Placemat v17," PowerPoint slides, 2.

²⁵ Ibid.

²⁶ Ibid.

Figure 5: United States Air Force Fighters, Deployments & Readiness



Source: United States Air Force, A3TR Brief Placemat v17²⁷

Since 2001 with the invasion of Afghanistan, and 2003 with the invasion of Iraq, the military has been at war to include operations in Syria and lesser-known deployments to Africa. At the same time, the military continued its exercise schedule around the world. The Air Force still maintained around 80 fighter squadrons through 2008 to share the burden of these efforts.²⁸ In 2009, the Air Force oversaw a dramatic reduction in fighter squadrons that resulted in only 60 fighter squadrons remaining by 2011.²⁹ The following years resulted in the closure of at least five additional squadrons, leaving 55 fighter squadrons currently in the Air Force.³⁰ The consequences of the Air Force's compromises in the face of budget uncertainty led to reduced numbers of fighter

²⁷ John Diercks, provided by electronic correspondence, February 6, 2018, "A3TR Brief Placemat v17," PowerPoint slides, 2.

²⁸ Ibid.

²⁹ Ibid.

³⁰ Ibid.

squadrons and the loss of pilots and personnel associated with those units. For various reasons—peace dividend, and compromises due to budget uncertainty—the number of fighter squadrons decreased, but became too small to account for the increased operational tempo that came with Operation ENDURING FREEDOM (OEF) and Operation IRAQI FREEDOM (OIF).

The result is that the Air Force continues to average 10 deployed fighter squadrons at any time, but there are less than 55 total squadrons share the burden. The number, however, may be closer to only 30 fighter squadrons because of limitations on some squadrons due to forward stationing or training requirements. Over 10 squadrons provide the initial training in fighters and therefore are not eligible to deploy. DOD removes other squadrons from deployment eligibility due to threats close to their home station in South Korea or other key areas in the Pacific or Europe. The result is that at any time the Air Force has nearly a third of its fighter squadrons deployed. This operational tempo creates significant stress on pilots and their families and increases maintenance costs while reducing aircraft lifespan. Furthermore, those pilots not deployed experience greater demands on their time at home station. These factors create a situation that leads pilots to perceive the rate of travel associated with the commercial airline pilots as an improvement in quality of life compared to the military. Consequentially, more pilots consider leaving DOD.

Similar to the Air Force, the Navy has experienced increased time at sea. Prior to the current conflicts, the average deployment length was approximately 180 days.³¹ Since the initial focus on Afghanistan shifted to Iraq and now continues in the greater Middle

³¹ Snodgrass, 3.

East, deployments have continued to grow longer. At the end of fiscal year 2013, a Navy pilot averaged 8 months at sea as part of a carrier strike group, but some sailors experienced an even more extreme operational tempo.³² In 2012 and 2013, the Stennis Carrier Strike Group (CSG) was at sea for a total of 15.5 months with only five and a half months at home between the two deployments.³³ Later, the Eisenhower CSG deployed twice for an at sea time of 10.5 months with only a two-month break between deployments.³⁴ Commander Guy Snodgrass gathered information from more than 200 naval officers spanning surface, submarine, aviation, SEAL, and EOD communities and ranging from the newest Ensigns to Rear Admirals from July 2011 through May 2014.³⁵ Snodgrass summarized his findings noting that “All respondents . . . [cited] unreliable cruise schedules and consistently long deployments (> 7 months) as factors affecting their decision making regarding continued naval service. In short, sustained high operational tempo is perceived as placing an incredibly large burden on service members.”³⁶ Such an irregular schedule with large demands for extending time away from family does not exist for commercial aviators.

Budget Effects on Quality of Life

While many aspects of budget uncertainty affect DOD compromises to save money, increased operational tempo leads to additional maintenance costs and reduced life span of equipment. These two areas force the services to modernize their equipment earlier than planned. Due to bureaucratic procurement processes, the weapons systems

³² Ibid.

³³ Ibid.

³⁴ Ibid.

³⁵ Ibid.

³⁶ Ibid., 4.

often exceed cost estimates. First, as Marine Corps General James E. Cartwright, Vice Chairman of the Joint Chiefs, noted in 2008, the quest for weapon systems modernization results in equipment that is too costly, does not reach troops quickly enough, and results in quantities too small to address ever-changing threats.³⁷ Several examples of these weapons systems include the F-22, B-2, the Littoral Combat Ship, the Zumwalt class destroyer, and, some experts might argue, the F-35.³⁸ The services did not plan for these programs to break their budgets, yet they inherited the ever-growing expenses due to issues in the procurement process.

The F-22 is an example of one of these weapon systems. As expenses increased, the Air Force sought ways to make room in the budget to cover the cost. These steps included closing fighter squadrons flying older aircraft. In the process, instead of producing more aircraft and reducing per unit costs, the Air Force paid a higher price per unit.³⁹ In the end, two secretaries of defense determined the program became too expensive for the capabilities it provided.⁴⁰ The result for the Air Force was 187 F-22s versus the 750 aircraft in the original proposal.⁴¹ The initially planned purchase provided enough F-22s to equip 27 to 30 fighter squadrons, but due to the smaller acquisition, the

³⁷ Tom Philpott, "Military update: Vice Chairman: 'Exquisite' weapons are too expensive," *Stars and Stripes*, November 22, 2008, <https://www.stripes.com/news/military-update-vice-chairman-exquisite-weapons-are-too-expensive-1.85556> (accessed December 22, 2017).

³⁸ T. X. Hammes, "The Future of Warfare: Small, Many, Smart vs. Few & Exquisite?," *WarOnTheRocks.com*, July 16, 2014, <https://warontherocks.com/2014/07/the-future-of-warfare-small-many-smart-vs-few-exquisite/> (accessed December 22, 2017).

³⁹ *Ibid.*

⁴⁰ Flight International, "In Focus: End of F-22 production closes chapter in eventful history," *FlightGlobal.com*, April 2, 2012, <https://www.flightglobal.com/news/articles/in-focus-end-of-f-22-production-closes-chapter-in-eventful-369881/> (accessed December 22, 2017).

⁴¹ Hammes; Flight International.

Air Force has aircraft for only seven squadrons.⁴² Clearly, the increased costs contribute to budgetary pressure, but it also shows how attempts to free up room in the budget to modernize weapons systems places additional strains on retention efforts. The desire to save money for the increasingly expensive weapons systems modernization leads to less likelihood of increasing retention pay. It also reduces the number of squadrons available for deployments and decreases the number of personnel available to deploy, thus decreasing quality of life and, as explained later, quality of service for those members remaining in the military.

Second, DOD had varying levels of success when attempting to save money.

DOD as a whole has requested another Base Realignment and Closure (BRAC) Commission. BRAC makes recommendations to DOD and Congress that reshape DOD bases, organizations, or structures with the goal of saving money. Congress refused to allow DOD to conduct a BRAC analysis for more than 14 years, and fiscal year 2017 was the fifth consecutive year that DOD requested BRAC.⁴³ The last BRAC decision occurred in 2005. Congress tends to avoid BRAC because the closure of a military base

⁴² Dave Majumdar, "America's F-22 Raptor Stealth Fighter Is a Killer (But it Can Be Defeated)," *NationalInterest.org*, October 15, 2015, <http://nationalinterest.org/blog/the-buzz/americas-f-22-raptor-stealth-fighter-killer-it-can-be-14088> (accessed December 31, 2017).

⁴³ Jane Edwards, "James Mattis Asks Congress To Authorize New BRAC Round," *ExecutiveGov.com*, October 23, 2017, <http://www.executivegov.com/2017/10/james-mattis-asks-congress-to-authorize-new-brac-round/> (accessed February 14, 2018); Leo Shane III, "McCain blasts congressional 'cowardice' avoiding base closings," *MilitaryTimes.com*, January 24, 2017, <https://www.militarytimes.com/news/pentagon-congress/2017/01/24/mccain-blasts-congressional-cowardice-in-avoiding-base-closings/> (accessed February 14, 2018); Leo Shane III, "Latest DoD plan to close U.S. bases gets mild response in Congress," *MilitaryTimes.com*, March 3, 2016, <https://www.militarytimes.com/news/pentagon-congress/2016/03/03/latest-dod-plan-to-close-u-s-bases-gets-mild-response-in-congress/> (accessed February 14, 2018).

has detrimental economic effects on the community. Congress continues to oppose any BRAC attempts.⁴⁴

Since BRAC was not an option the Air Force cut personnel and squadrons and attempted to save money by reducing the number of F-15C, A-10, and F-16 squadrons. By attempting to retire the A-10 in 2013, the Air Force's goal was to create budgetary savings, but Congress forced the service to keep the aircraft.⁴⁵ This action by Congress forced the Air Force to seek savings elsewhere such as reducing additional personnel. The Air Force chose to shrink its manpower end strength from 328,000 in fiscal year 2014 to 311,000 personnel by the end of fiscal year 2015.⁴⁶ The consequences from this decision saved money in the short term, but negatively affected quality of life, quality of service, readiness, and perceptions of mission focus furthering pilot separations.

Third, budget uncertainty in sequestration and CRs leads to increased operational tempo and a decrease in the quality of life. Navy Secretary Richard Spencer complains that the U.S. government has “put \$4 billion in a trash can, poured lighter fluid on it, and burned it. Four billion is enough to buy a squadron of F-35s, two Arleigh Burke-class destroyers, 3,000 Harpoon missiles. It's enough money to buy us additional capacity that we need. Instead, it's lost, because of inefficacy in the ways of the continuing

⁴⁴ Edwards; Leo Shane III, “McCain blasts congressional ‘cowardice’ avoiding base closings” and “Latest DoD plan to close U.S. bases gets mild response in Congress.”

⁴⁵ Larry Abramson, “Air Force's Beloved ‘Warthog’ Targeted For Retirement,” *NPR.org*, December 24, 2013, <https://www.npr.org/2013/12/24/256614707/air-forces-beloved-warthog-targeted-for-retirement> (accessed February 14, 2018); Dan Grazier, “The Air Force Is Slowly Killing Off the A-10 Warthog,” *NationalInterest.org*, January 18, 2018, <http://nationalinterest.org/blog/the-buzz/the-air-force-slowly-killing-the-10-warthog-24111?page=show> (accessed February 14, 2018).

⁴⁶ John Diercks, provided by electronic correspondence, February 6, 2018, “A3TR Brief Placemat v17,” PowerPoint slides, 2.

resolution.”⁴⁷ The fiscal irresponsibility that led to lost capacity had the potential to reduce the deployment burden by increasing the number of units eligible to deploy. In a letter to Senator McCain, Secretary Mattis described how CRs prevented the Air Force from opening two F-16 squadrons and expanding F-16 training, thereby reducing fighter pilot production in the service.⁴⁸

Pilots that choose to leave the service also negatively affect quality of life. Unfortunately, the DOD experienced this trend in the past. In reference to the pilot crisis faced in the 1990s, A RAND reported that “a spiral developed whereby the remaining pilots had to carry more of the load, making them overworked, and providing an increased impetus to join the airlines. The more experienced pilots that left, the more pressure it put on others to leave.”⁴⁹ Pilots considering remaining in the military face similar issues today. The longer hours and lack of time with family make the travel associated with commercial aviation appear to be less of a sacrifice than the current sacrifices of military aviators. Additionally, the increased workload for remaining military pilots correlates with diminished quality of service.

The combination of the effects from weapon systems modernization, DOD efforts to save money, and budget uncertainty resulted in a DOD and military services too small to balance the operational demands placed on them with the quality of life concerns desired by service members and pilots. SECAF Wilson, in a memo to Secr Mattis, explained that the Air Force’s current size limits its ability to produce and absorb new

⁴⁷ Jared Serbu, “Navy says it’s wasted \$4 billion on continuing resolutions since 2011,” *Federal News Radio*, December 5, 2017, <https://federalnewsradio.com/defense-main/2017/12/navy-says-its-wasted-4-billion-on-continuing-resolutions-since-2011/> (accessed December 20, 2017).

⁴⁸ James N. Mattis, Secretary of Defense, Office of Secretary of Defense, to Senator John McCain, Chairman of Committee on Armed Services, letter, September 8, 2017, 2.

⁴⁹ Sweeney, 18.

pilots.⁵⁰ Consequently, the Air Force seeks to expand the number of squadrons using various means to increase pilot absorption, and to spread the deployment burden across more units. If pilot production increases too much, the result is squadrons overrun with inexperienced pilots and no ability to provide the training or experience necessary to develop an experienced and ready pilot force.⁵¹

Readiness

Readiness also affects pilots' decisions on whether to remain in the service. Readiness tends to be an ill-defined term that at times individuals categorize with quality of service. DOD's lack of standardization between the services in reporting readiness to Congress contributes to the confusion. What is not in doubt is the message from all DOD leadership that CRs negatively affect readiness. Secretary Mattis, in his letter to Senator McCain, wrote, "Long term CRs impact the readiness of our forces and their equipment at a time when security threats are extraordinarily high. The longer the CR, the greater the consequences for our force."⁵² In order to better differentiate between readiness and quality of service, Secretary Mattis combines readiness and maintenance in his letter to Senator McCain.⁵³ Furthermore in his address to the Air Force Association Conference, Secretary Mattis elaborated on this idea when he stated, "Nothing has done more damage to the readiness of our armed forces than the CRs that stop us from taking initiative than the lack of budgetary predictability."⁵⁴ Budget uncertainty leads to delayed maintenance

⁵⁰ Wilson, 1.

⁵¹ Ibid.

⁵² Mattis, 1.

⁵³ Ibid., 2.

⁵⁴ U.S. Department of Defense, "Mattis Speaks at AFA Conference," Filmed (September 20, 2017), YouTube video, 46:06, Posted [September 20, 2017], <https://www.youtube.com/watch?v=dYXMxB-XYNM&t=1> (accessed October 20, 2017).

and replacement parts that in turn reduce readiness rates across DOD. When viewed as readiness and maintenance, the distinction from quality of service becomes clearer and the interaction between operational tempo, readiness, and quality of service becomes more visible. High operational tempo during budget uncertainty often results in decreased readiness at non-deployed units, and lack of readiness diminishes quality of service.

DOD sacrifices readiness and maintenance to ensure forces involved in combat receive complete support. Secretary Mattis wrote to Senator McCain, “The Military Departments will realign or execute CR and existing budgetary resources within the limits of their authorities to fully support forward-deployed operations, direct support activities, and urgent operations of the Combatant Commands.”⁵⁵ In order to fulfill that promise, the services make sacrifices in readiness/maintenance. Because of sequestration and previous CRs, “60 percent of the Navy’s F/A-18s cannot fly and the sea service is short more than 100 aircraft.”⁵⁶ Sixty percent is a significant number, but might be slightly under the actual figure. In February 2017, 27 percent of the Hornets and Super Hornets were undergoing major depot work and another 35 percent awaited minor maintenance or parts.⁵⁷ Regardless of the actual number, aircraft availability at non-deployed squadrons is much more limited when considered that close to 100% of the F/A-18s supporting combat operations must fly. As an example, in 2016 the commodore of Strike Fighter Wing Atlantic had to borrow parts from three different F/A-18 squadrons “to keep four Hornet squadrons in the USS Harry S. Truman’s Carrier Wing 7

⁵⁵ Mattis, 1.

⁵⁶ Barber.

⁵⁷ David Axe, “The U.S. Navy’s F/A-18 Squadrons Are Broken,” *NationalInterest.org*, February 20, 2017, <http://nationalinterest.org/blog/the-buzz/the-us-navys-f-18-squadrons-are-broken-19505> (accessed December 23, 2017).

in combat over Iraq longer than originally planned.”⁵⁸ Such begging and borrowing shows those squadrons not directly supporting the areas described by Secretary Mattis have a higher percentage of F/A-18s that cannot fly and the aircraft that remain often suffer from maintenance shortfalls. Budget uncertainty raises concerns about readiness because it cuts into pilot training and proficiency.

The Air Force faces similar readiness/maintenance concerns. Vice Chief of Staff of the Air Force (VCSAF) General Stephen Wilson warned that failure to pass appropriations this year might force the Air Force to stop \$500 million in depot production.⁵⁹ Additionally, the Air Force would only fix things that break; preventative maintenance would not occur.⁶⁰ Moreover, the Air Force faces a shortage of maintainers to fix the aircraft. This shortage originated with personnel cuts and reduced accessions in attempts to limit expenses, but complicates attempts to address readiness and maintenance issues. The compromises DOD and each of the services make to survive during budget uncertainty and simultaneously remain faithful to those forces deployed in support of U.S. strategic goals results in decreased readiness that increases the likelihood military aviators will consider leaving the service for commercial aviation.

Quality of Service

Quality of life and readiness issues directly contribute to military pilots’ issues with quality of service. Quality of service is another vague category. When Air Force leadership discusses quality of service, they often frame it in terms of the mission of

⁵⁸ Ibid.

⁵⁹ Scott Maucione, “Military service chiefs say 2017 CR would be the worst yet,” *FederalNewsRadio.com*, April 5, 2017, <https://federalnewsradio.com/defense-news/2017/04/military-services-chiefs-say-2017-cr-worst-yet/> (accessed December 21, 2017).

⁶⁰ Ibid.

DOD. They believe the military has an advantage in quality of service compared to commercial aviation in that the mission of the military is a higher calling to support and defend the Constitution and the nation while the mission of the airlines is to take goods and people from one location to another. Nevertheless, framing the issue in this way glosses over the nuances of motivation.

Daniel Pink in his book *Drive: The Surprising Truth About What Motivates Us* notes that motivation for tasks involving cognitive skills comes from autonomy, mastery, and purpose.⁶¹ Autonomy refers to “the desire to be self-directed.”⁶² He offers that allowing employees freedom and self-direction is better than over management and leads to employee engagement at work.⁶³ Mastery is the “urge to get better at stuff.”⁶⁴ Challenge and mastery along with contributing to a transcendent purpose, the mission of the DOD, are highly motivational.⁶⁵ Mastery most closely relates to quality of service issues.

For pilots, mastery requires the time, equipment, and training necessary to hone their craft. As previously discussed, DOD already recognizes that budget uncertainty negatively affects and is a further danger to readiness and maintenance. The lack of aircraft leads to a lack of flight time. Senator McCain made a statement that “the Chinese and Russian pilots fly more than U.S. military pilots.”⁶⁶ Whether this statement is factually true matters little, pilots leaving the military *know* they are not flying enough to

⁶¹ RSA. Daniel Pink suggests pay is not the issue. He argues that for cognitive tasks employers should pay employees “enough to take the issue of money off the table.” This statement begs the question, “what is enough?”

⁶² Ibid.

⁶³ Ibid.

⁶⁴ Ibid.

⁶⁵ Ibid.

⁶⁶ Mattis, 1.

maintain the skills necessary for combat. Furthermore, DOD leadership knows their skills are in danger as well. Secretary Mattis explains that CRs result in individual and unit-level training completed during the CR being re-scoped and scaled back to protect funding for support to combat operations.⁶⁷ Admiral Bill Moran, Vice Chief of Naval Operations, spoke in general terms about the effects of sequestration and CRs resulting in deferred maintenance, but also the Navy's inability to give its "warfighters the time and tools to build capability through their own experiences."⁶⁸

Besides the decreased training, budget uncertainty results in a lack of flight time that affects not only DOD's ability to execute the mission but also pilots' motivation due to the negative effects on mastery. General Stephen Wilson, VCSAF stated that funding cuts caused by sequestration would result in cutting "\$500 million of flying hours that's about two months flying time."⁶⁹ Air Force Chief of Staff (CSAF) General David Goldfein warned:

We actually haven't completely recovered from the last sequester, when we were required to find \$10 billion in a single year. When you're required to find \$10 billion in a single year, you stop flying all squadrons who are not either preparing for or executing combat operations. . . . If we don't get past sequester in its current form, we will have to find \$15 billion in a single year. We sometimes talk about no-fly zones. If you want to see a no-fly zone, go find any base that's not either preparing for or executing combat operations. You will see no more flying.⁷⁰

The lack of flying from sequestration, CRs, or the lack of aircraft due to readiness and maintenance issues leads to a reduction in pilots' skills. SECAF Wilson described the current situation and potential consequences to Secretary Mattis when she wrote, "Our

⁶⁷ Ibid., 2.

⁶⁸ Serbu.

⁶⁹ Maucione, "Military service chiefs say 2017 CR would be the worst yet."

⁷⁰ Serbu.

deployed squadrons maintain high readiness rates, but only 50% of our squadrons are ready to perform all of their assigned missions. Left unchecked, this crisis will risk our ability to successfully meet our obligations to the nation in both the near and long-term.”⁷¹ Anecdotal evidence provided by an anonymous survey on social media asked pilots if they flew too much or not enough.⁷² Of the 246 respondents, 167 complained about not flying enough.⁷³ The perception of military pilots that they are unable to train and fly enough to achieve the level of competency necessary to complete their missions and defend the country leads them to consider separating and working for commercial aviation.

Lack of Mission Focus

The pilots’ belief that the services hinder their ability to achieve competency further undermines their willingness to remain in the service when combined with the pilots’ perception that the services have a lack of mission focus or Pink’s idea of purpose.⁷⁴ This lack of focus or support for the mission manifests itself in several ways. First, and related to quality of service, is the pilots’ view of administrative tasks or in the aviator vernacular, the term queep. Queep applies to any tasks that do not directly improve flying skills. Major General Michael Fortney, Vice Commander, Global Strike

⁷¹ Wilson, 1.

⁷² Non-attributable due to the NDU Non-attribution policy available at http://www.ndu.edu/Portals/59/Documents/AA_Documents?AA%205.00.pdf (accessed July 27, 2017).

⁷³ Non-attributable due to the NDU Non-attribution policy available at http://www.ndu.edu/Portals/59/Documents/AA_Documents?AA%205.00.pdf (accessed July 27, 2017).

⁷⁴ RSA.

Command defined queep as “mandates that exceed wing capacity, ‘don't make sense,’ and/or add little or no value to mission accomplishment (and possibly detract from it).”⁷⁵

The Navy faces similar areas of concern. A Navy report from aviators that have left the service lists administrative burdens as one of the reasons cited for separating from the service.⁷⁶ Efforts to eliminate complex issues including suicide, sexual assault, or commanding officer reliefs for cause result in annual online training, general military training, and safety stand-downs.⁷⁷ The Navy Task Force Resilient team in 2013 discovered there was substantial opportunity cost in attempting “to eradicate behavior that is, by its very nature ineradicable.”⁷⁸ Commander Snodgrass expressed the concerns of his research participants when he noted, “The perception is that these efforts are not undertaken because they are incredibly effective, but rather because of significant political and public oversight.”⁷⁹ His comments apply equally well to the Air Force or the Navy. Anecdotal evidence provided by an anonymous survey on social media that asked, “Do you have enough time to focus on your primary mission?” showed that 205 of the 220 respondents felt they did not spend enough time focusing on their primary mission even though they were working over 50 hours a week.⁸⁰ This idea potentially links back to Daniel Pink’s notion of autonomy, where he describes employers treating employees as dumb animals motivated by carrots and sticks.⁸¹ The constant mind-numbing tasks

⁷⁵ Stephen Losey, “2-star general puts wasteful ‘queep’ duties in crosshairs,” *AirForceTimes.com*, May 3, 2017, <https://www.airforcetimes.com/news/your-air-force/2016/05/03/2-star-general-puts-wasteful-queep-duties-in-crosshairs/> (accessed December 24, 2017).

⁷⁶ Spencer, 1.

⁷⁷ Snodgrass, 9.

⁷⁸ Ibid.

⁷⁹ Ibid.

⁸⁰ Non-attributable due to the NDU Non-attribution policy available at http://www.ndu.edu/Portals/59/Documents/AA_Documents?AA%205.00.pdf (accessed July 27, 2017).

⁸¹ RSA.

create similar feelings, and the recurring lectures lead pilots to feel like children. The feedback from pilots is that they feel obligated to complete tasks that do not contribute to mastery or purpose and potentially detract from both.

Second, the perception of lowering standards undermines pilots' desire to remain in the military. The standards referred to are those for pilots and those used for promotion. The lowering of standards for pilots and especially fighter pilots is subjective. A decrease in the historical elimination rate from pilot training leads aviators to question if the standards are lower. The debate about pilot retention and calls for increased pilot production lead to concerns from current aviators that standards will decrease to solve the problem.⁸² Additionally, the Air Force's decision to increase the promotion opportunity to 100 percent for officers eligible for the rank of major led to pilots claiming standards are lower.⁸³ In this situation, the Air Force's attempt to reduce the administrative burden and queep had the unintended consequence of the perception of lowering standards. To an outsider, some of these views appear to be pilots complaining regardless of what action the DOD takes, but pilots considering leaving the service view it as a lack of mission focus.

Third, similar to the lowering of standards discussion, a lack of support and belief that there is a lack of a similar level of effort from others in the service leads to a perception of a lack of mission focus. This lack of support is a result of budget

⁸² The discussions include the increased risk of everyone passing pilot training. Additionally, much of the debate surrounds whether the services have become too risk averse and as a result, pilot training takes longer than it should.

⁸³ U.S. Air Force, Secretary of the Air Force Public Affairs, "Air Force announces 100 percent promotion opportunity to major," September 14, 2017, <http://www.afpc.af.mil/News/Article-Display/Article/1309786/air-force-announces-100-percent-promotion-opportunity-to-major/> (accessed December 24, 2017).

uncertainty. General Goldfein explains that during a CR, “You cease all civilian hiring, and the civilian workforce in our depots are magicians. When you cease civilian hiring, you don’t cease civilian retiring, you just lose the workforce.”⁸⁴ This reduction of civilian workforce affects maintenance and administrative personnel, and leads to more responsibilities and duties for remaining military personnel in the form of administrative duties and queep. Furthermore, the perception exists that support agencies work less hours and are unavailable to help those executing the mission.⁸⁵ When combined with the reduction in personnel, attempts to save costs in order to purchase exquisite weapons systems, or in response to previous budget uncertainty, the services now place many activities that support personnel provided, particular civilians, on military members. This action further undermines pilot retention efforts because it forces the military member to sacrifice quality of life or service in order to complete all the additional tasks required due to the lack of support.

Leadership is right. Most pilots join the military out of a sense of service to a higher calling, but they also desire to become masters of their craft and act with autonomy and purpose. However, the high demand for commercial pilots combined with the effects of over twenty years of budget uncertainty lead pilots to consider leaving the service. After two decades of compounding effects from sequestration and 113 CRs, the DOD continues to struggle to balance the strategic compromises necessary to maintain readiness and high levels of quality of service, while also continuing to support combat operations and deployed forces.⁸⁶ These compromises affect pay, quality of life,

⁸⁴ Serbu.

⁸⁵ There is debate over whether this perception is true. Unfortunately, perception is reality to those pilots considering leaving the service.

⁸⁶ Peter G. Peterson Foundation.

readiness, quality of service, and a perceived lack of focus on the mission that drives pilots to consider separating from the military.

Chapter 5: Conclusion and Recommendations

The Department of Defense (DOD) faces a pilot retention problem that experts forecast will continue and possibly grow worse in the foreseeable future. The primary vector for loss of military pilots is the commercial aviation industry. Congress has vast powers that influence the commercial aviation industry and DOD. Amongst those powers, Congress influences DOD's ability to address pilots' concerns regarding pay, quality of life, readiness, quality of service, and lack of focus on purpose, which are the primary areas that lead to pilots separating to commercial aviation. The current relationships encourage commercial airlines to benefit from the military investment, while budget limitations force DOD to make choices between systems and personnel, and Congress fails to provide long-term strategic guidance that would alleviate stresses on the system. Without adjustments, the current system will prove unsustainable and without benefit to any stakeholder in the next decade.

Experts project commercial aviation pilot vacancies to increase in the coming decades, and the sheer number of pilots requires the industry to develop alternatives to deriving all or even a majority of pilots from military service. General Goldfein estimates commercial aviation needs 4,500 new pilots annually for at least a decade.¹ The Air Force and Navy only produced 2,200 pilots in 2016. Even with Air Force plans to increase its pilot production from 1,200 today to 1,400 by 2019, with some calling for 1,600 pilots annually, the total pilots produced by the military would still be nearly 2,000 short of

¹ Scott Maucione, "Airline meeting is the beginning of a long road for Air Force on pilot shortage," *FederalNewsRadio.com*, April 7, 2017, <https://federalnewsradio.com/air-force/2017/04/airline-meeting-beginning-long-road-air-force-pilot-shortage/> (accessed September 11, 2017).

commercial aviation's need.² Commercial airlines must find another system to develop the pilots necessary to fill their needs. This action will not eliminate the opportunity or demand for military pilots with commercial aviation, but it would reduce the magnitude of loss and reduce stress on military pilot production.

Congressional power levies requirements on the airline industry and exercises direct and indirect control over DOD that influences areas that both lead pilots to leave the service and the services' attempts to retain those same pilots. Through the Fair Treatment of Experienced Pilots Act in 2007, Congress increased the age for mandatory retirement, but through the Airline Safety and Federal Aviation Act of 2010, it also increased the minimum standards for pilots and placed other restrictions on pilots, which resulted in the airlines needing more pilots. The immediate consequence of the legislation decreased the available applicants and lengthened the timeline to develop pilots to meet new standards. Coincident with these acts, Congress continued its habit of failing to pass appropriations on time and instead relying on continuing resolutions (CRs) to fund the government. Congressional reliance on CRs and its failure to pass long-term appropriations on time creates uncertainty for the DOD that might help reduce pilot shortages and address the causes for pilot attrition to commercial airlines. While this practice created uncertainty for DOD, the passage of the Budget Control Act of 2011 and the subsequent sequestration, results in budget cuts that required significant compromises by DOD affecting operational tempo and readiness/maintenance. This legislation also created more uncertainty limiting DOD's ability to address quality of service and lack of

² Barber; David Thorton, "Air Force generals: CR would 'devastate readiness'," *FederalNewsRadio.com*, April 3, 2017, <https://federalnewsradio.com/air-force/2017/04/air-force-generals-cr-devastate-readiness/> (accessed January 3, 2018).

focus on mission, two areas that affected pilot retention. Congress must act and provide budgets on time in order for DOD to recover and repair the damage done.

Budget uncertainty, in the form of sequestration and CRs, results in increased costs and negatively affects DOD's ability to plan and adjust spending in order to meet the competing demands of current operations and future capabilities. DOD must continue to inform Congress and the public regarding the damage caused by the strategic compromises required due to budget uncertainty. DOD must concentrate on the areas within its control to adjust its behavior to address the concerns of military pilots regarding pay, quality of life, readiness/maintenance, quality of service, and focus on mission, but DOD also must engage in a public relations campaign to highlight the damage caused by budget uncertainty.

DOD leadership and Congress both acknowledge that the military cannot compete with commercial airline salaries. Moreover, the current fiscal environment limits the ability of DOD, and Congress' willingness to increase bonuses. DOD has used pay historically as its preferred retention tool, but this practice overlooks its limitations and diminished returns inherent within its use. Instead, DOD should invest time and resources addressing quality of life, readiness/maintenance, quality of service, and perceptions of lack of focus on mission.

Operational tempo and the increased demands caused by the pilot shortage primarily influence pilots' quality of life concerns. DOD must address operational tempo in two ways. First, it must examine its procurement process to address weapon systems modernization. Thankfully, both the Air Force and the Navy have taken steps in this direction. The Air Force is examining a Light Attack Fighter aircraft. The Navy is

considering additional F/A-18 purchases while waiting for the F-35C to enter fleet service.³ By using these less expensive aircraft options, the services increase the number of units available to deploy and increase their capacity to absorb additional pilot production. The second action might be the more difficult. At some point, DOD must tell the President and Congress that the military cannot execute its mission as directed because it is too small. DOD leadership must understand and articulate to Congress the burden of constant deployments and the costs associated with quality of life and readiness. While these two steps will help address the operational tempo component affecting quality of life concerns, DOD must address the other interconnected areas of concern including readiness, quality of service, and lack of focus on purpose.

DOD's efforts to address operational tempo has the additional benefit of potentially providing some relief to readiness and maintenance concern. The Navy's acquisition of additional F/A-18s addresses some of the aircraft shortage that affects both deployed and non-deployed units. A Light Attack Fighter operating in a non-contested environment is much cheaper to fly than F-16s and F-15s, let alone fifth generation aircraft like the F-22 and F-35. Whether discussing the Navy or Air Force, the cost savings then become available to address readiness and maintenance issues or other areas of concern. The additional aircraft and fewer deployments would allow non-deployed units more time to train on their mission requirements that would result in increased readiness across the services and DOD. Moreover, additional accessions to increase maintenance personnel, such as the Air Force has done, will lead to improved readiness

³ Axe.

in the long term. This decreased operational tempo leading to increased readiness cascades into improved quality of service.

The most direct method for DOD to improve quality of service is through the potential benefits from improvements in operational tempo and readiness. Improved operational tempo through fewer deployments will allow pilots more time to train for diverse and complex missions. Improved readiness and maintenance will increase aircraft availability for training and result in better aircraft for training missions. Additional flight time desired by pilots and Senator McCain require greater budget stability. Further improvements in pilot's perceptions of quality of service require greater focus on DOD's mission and reduction of requirements that fail to contribute to mission accomplishment.

Increased attention to pilot's concerns about a lack of focus on mission may cost less, make changes quicker, and provide greater return on investment. Both the Navy and the Air Force have taken action to identify and address queep and administrative burdens on service members. Some steps require Congressional action to relieve or adjust legal restrictions and requirements. In either case, alleviating the burden of excessive regulation and training requirements is a move in the right direction. Concerns about the lowering of standards will require a consistent message and corresponding actions that reduce pilot's concerns. Finally, improved support through additional administrative personnel or improved responsiveness from support agencies will lessen concerns that the services are distracted from the mission. A secondary benefit from these actions is additional time for pilots to concentrate on competency resulting in improved views of quality of service.

DOD efforts to address pilots concerns regarding pay, quality of life, readiness, quality of service, and focus on purpose will only be minimally effective without Congressional action to provide long-term budget stability. If Congress continues to fail to pass on time appropriations bills, DOD will continue to struggle and have to make compromises that negatively affect pilot retention. Whether DOD addresses pilot retention concerns, commercial airlines must develop alternate means to fill their empty cockpits. Without changes, the current system will continue a downward spiral resulting in decreased combat capabilities and continued and increasing pilot shortages.

Bibliography

- Abramson, Larry. "Air Force's Beloved 'Warthog' Targeted For Retirement." *NPR.org*. December 24, 2013. <https://www.npr.org/2013/12/24/256614707/air-forces-beloved-warthog-targeted-for-retirement> (accessed February 14, 2018).
- Airbus. *Global Market Forecast: 2017-2036 Growing Horizons*. Blagnac Codex, France: Airbus, April 4, 2017. <http://www.airbus.com/newsroom/search.html?q=market+outlook> (accessed October 17, 2017).
- Air Line Pilots Association. "ALPA: Pilot Shortage is All About the Money." *ALPA.org*. February 27, 2014. <http://www.alpa.org/news-and-events/news-room/2014-02-27-Pilot-Shortage-All-About-Money> (accessed October 17, 2017).
- . "The Landing." *Air Line Pilot* Vol. 84, No. 6 (August 2015): 37. <http://www3.alpa.org/Publications/air-line-pilot-august-2015/air-line-pilot-august-2015.pdf> (accessed October 17, 2017).
- Airline Pilot Central. "American Airlines." Pay Scales. https://www.airlinepilotcentral.com/airlines/legacy/american_airlines (accessed December 31, 2017).
- . "Delta Air Lines." Pay Scales. https://www.airlinepilotcentral.com/airlines/legacy/delta_air_lines (accessed December 31, 2017).
- . "United Airlines." Pay Scales. https://www.airlinepilotcentral.com/airlines/legacy/united_airlines (accessed December 31, 2017).
- Airline Safety and Federal Aviation Administration Extension Act of 2010*. Public Law 111-216, 111th Congress. (August 1, 2010). <https://www.congress.gov/111/plaws/publ216/PLAW-111publ216.pdf> (accessed October 17, 2017).
- Ashcroft, Bruce. *We Wanted Wings: A History of the Aviation Cadet Program*. U.S. Air Force, Headquarter Air Education and Training Command Office of History and Research. (2005). <http://www.aetc.af.mil/Portals/88/Documents/history/AFD-061109-026.pdf?ver=2016-01-12-160019-363> (accessed September 11, 2017).
- Amadeo, Kimberly. "U.S. Military Budget: Components, Challenges, Growth." *TheBalance.com*. August 10, 2017. <https://www.thebalance.com/u-s-military-budget-components-challenges-growth-3306320> (accessed December 19, 2017).
- . "What is Sequestration? Causes and Impact." *TheBalance.com*. January 17, 2017. <https://www.thebalance.com/what-is-sequestration-causes-and-impact-3305775> (accessed December 19, 2017).

- Axe, David. "The U.S. Navy's F/A-18 Squadrons Are Broken." *NationalInterest.org*. February 20, 2017. <http://nationalinterest.org/blog/the-buzz/the-us-navys-f-18-squadrons-are-broken-19505> (accessed December 23, 2017).
- Barber, Barrie. "Air Force facing growing crisis in pilot shortage." *Dayton Daily News*. November 24, 2017. <http://www.daytondailynews.com/news/local-military/air-force-facing-growing-crisis-pilot-shortage/7HehaEvvUUzXKg8JUdBDP/> (accessed November 27, 2017).
- Barrett, Eileen M., David Shircliffe, Donald S. Luther, Dick J. Burkard, and Richard H. Emmons. *Major Changes in Undergraduate Pilot Training, 1939-2002*. U.S. Air Force, Air Education and Training Command Office of History. (January 30, 2007) <http://www.aetc.af.mil/Portals/88/Documents/history/AFD-070130-081.pdf?ver=2016-01-12-160015-923> (accessed September 11, 2017).
- Blickstein, Irv, John M. Yurchak, Bradley Martin, Jerry Sollinger, and Daniel Tremblay. *Navy Planning, Programming, Budgeting, and Execution: A Reference Guide for Senior Leaders, Managers, and Action Officers*. Santa Monica, CA: RAND Corporation, 2016. <https://www.rand.org/pubs/tools/TL224.html> (Accessed February 13, 2018).
- The Boeing Company. *Current Market Outlook 2017-2036*. Seattle. <http://www.boeing.com/commercial/market/current-market-outlook-2017/> (accessed September 15, 2017).
- . *Pilot Outlook: 2017-2036*. <http://www.boeing.com/commercial/market/pilot-technician-outlook/2017-pilot-outlook/#/quick-facts> (accessed October 17, 2017).
- Boyer, John. "United Airlines Pilot Hiring Forecast." Presentation at National Training Aircraft Symposium, March 14, 2016. https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=4&cad=rja&uact=8&ved=0ahUKEwjgibzMv6fWAhXG7IMKHQSVDWYQFghFMAM&url=http%3A%2F%2Fcommons.erau.edu%2Fcgi%2Fviewcontent.cgi%3Farticle%3D1041%26context%3Dntas&usg=AFQjCNE_IouFE5YT-KSrlI5WXjYdGTA6nA (accessed September 15, 2017).
- Brikalis, Mark A. "Statement." *Housed Armed Services Committee Subcommittee on Military Personnel on Pilot Shortages*. 115th Cong., 1st Sess., March 29, 2017. <https://armedservices.house.gov/legislation/hearings/military-pilot-shortage> (accessed October 29, 2017).
- Budget Control Act of 2011*. Public Law 112-25, 112th Congress. (August 2, 2011). <https://www.congress.gov/bill/112th-congress/senate-bill/365?q=%7B%22search%22%3A%5B%22budget+control+act+of+2011%22%5D%7D&r=6> (accessed October 17, 2017).
- Burke, Robert P. "Statement." *Housed Armed Services Committee Subcommittee on Military Personnel on Pilot Shortages*. 115th Cong., 1st Sess., March 29, 2017. <https://armedservices.house.gov/legislation/hearings/military-pilot-shortage> (accessed October 27, 2017).

- CAE. *CAE Airline Pilot Demand Outlook: 10-year view*. Canada: CAE, June 2017. www.cae.com/uploadedFiles/.../CAE-Airline-Pilot-Demand-Outlook-Spread.pdf (accessed October 17, 2017).
- Edwards, Jane. “James Mattis Asks Congress To Authorize New BRAC Round.” *ExecutiveGov.com*. October 23, 2017. <http://www.executivegov.com/2017/10/james-mattis-asks-congress-to-authorize-new-brac-round/> (accessed February 14, 2018).
- Embry-Riddle Aeronautical University. “Flight Course Costs.” <https://daytonabeach.erau.edu/college-aviation/flight/flight-course-costs/index.html> (accessed October 17, 2017).
- Emmons, Richard H. *Specialized Undergraduate Pilot Training and the Tanker-Transport Training System*. U.S. Air Force. History and Research Office Air Training Command. July 1991. <http://www.aetc.af.mil/Portals/88/Documents/history/AFD-061109-025.pdf?ver=2016-01-12-160029-710> (accessed September 11, 2017).
- Fair Treatment for Experienced Pilots Act*. Public Law 110-135, 110th Congress. (December 13, 2007). <https://www.congress.gov/110/plaws/publ135/PLAW-110publ135.pdf> (accessed October 17, 2017).
- Federal Aviation Administration. *FAA Aerospace Forecast: Fiscal Years 2017-2037*. https://www.faa.gov/data_research/aviation/aerospace_forecasts/ (accessed on September 15, 2017).
- . “Press Release – FAA Boosts Aviation Safety with New Pilot Qualification Standards.” July 10, 2013. https://www.faa.gov/news/press_releases/news_story.cfm?cid=TW173&newsId=14838 (accessed October 17, 2017).
- Flight International. “In Focus: End of F-22 production closes chapter in eventful history.” *FlightGlobal.com*. April 2, 2012. <https://www.flightglobal.com/news/articles/in-focus-end-of-f-22-production-closes-chapter-in-eventful-369881/> (accessed December 22, 2017).
- Gates, Robert. *A Passion for Leadership: Lessons on Change and Reform from Fifty Years of Public Service*. New York: Alfred A. Knopf, 2016.
- Grazier, Dan. “The Air Force Is Slowly Killing Off the A-10 Warthog.” *NationalInterest.org*. January 18, 2018. <http://nationalinterest.org/blog/the-buzz/the-air-force-slowly-killing-the-10-warthog-24111?page=show> (accessed February 14, 2018).
- Grimes, Tyler. “Solving the Pilot Shortage: Air Force Reserve, airlines fishing in the same pond” U.S. Air Force, Headquarters Air Force Reserve Command Public Affairs. July 25, 2017. <http://www.citamn.afrc.af.mil/News/Features/Article/1255374/solving-the-pilot-shortage-air-force-reserve-airlines-fishing-in-the-same-pond/> (accessed on August 17, 2017).

- Grosso, Gina M. "Statement." *Housed Armed Services Committee Subcommittee on Military Personnel on Pilot Shortages*. 115th Cong., 1st Sess., March 29, 2017. <https://armedservices.house.gov/legislation/hearings/military-pilot-shortage> (accessed October 29, 2017).
- Gultekin, Zeki, Engin Abdan, and Y. Selim Kilic. "A Military Application of Human Capital Management: Military Pilot Turnover." *Scientific Research & Education in the Air Force - AFASES 1*, (May 2012): 107-112. Military & Government Collection, EBSCOhost (accessed August 18, 2017).
- Hammes, T. X. "The Future of Warfare: Small, Many, Smart vs. Few & Exquisite?" *WarOnTheRocks.com*. July 16, 2014. <https://warontherocks.com/2014/07/the-future-of-warfare-small-many-smart-vs-few-exquisite/> (accessed December 22, 2017).
- Hussey, Ann Krueger. *Air Force Flight Screening: Evolutionary Changes, 1917-2003*. U.S. Air Force, Office of History and Research Headquarters Air Education and Training Command. December 2004. <http://www.aetc.af.mil/Portals/88/Documents/history/AFD-061109-020.pdf?ver=2016-01-12-160013-593> (accessed September 11, 2017).
- Imhoff, Patrick J. "The Impact of Commercial Aviation on Naval Aviation." Naval Postgraduate School Monterey CA Monterey United States Defense Technical Information Center, June 1, 2016. (accessed August 18, 2017).
- Kurta, Anthony M. Office of Undersecretary of Defense for Personnel and Readiness, Performing the Duties of Undersecretary of Defense for Personnel and Readiness. To Secretary of Defense James N. Mattis, Office of the Secretary of Defense. Informational memorandum regarding pilot shortages, November 20, 2017.
- Losey, Stephen. "Congress readies smaller pilot bonus hike than James requested." *AirForceTimes.com*. December 5, 2016. <https://www.airforcetimes.com/news/your-air-force/2016/12/05/congress-readies-smaller-pilot-bonus-hike-than-james-requested/> (accessed December 19, 2017).
- . "2-star general puts wasteful 'queep' duties in crosshairs." *AirForceTimes.com*. May 3, 2017. <https://www.airforcetimes.com/news/your-air-force/2016/05/03/2-star-general-puts-wasteful-queep-duties-in-crosshairs/> (accessed December 24, 2017).
- Majumdar, Dave. "America's F-22 Raptor Stealth Fighter is a Killer (But it Can Be Defeated)." *NationalInterest.org*. October 15, 2015. <http://nationalinterest.org/blog/the-buzz/americas-f-22-raptor-stealth-fighter-killer-it-can-be-14088> (accessed December 31, 2017).
- Mattis, James N. Secretary of Defense, Office of Secretary of Defense. To Senator John McCain, Chairman of Committee on Armed Services. Letter, September 8, 2017.
- Mattock, Michael G., James Hosek, Beth J. Asch, and Rita Karam. *Retaining U.S. Air Force Pilots When the Civilian Demand for Pilots Is Growing*. Santa Monica CA: RAND Corporation, January 1, 2016.

- https://www.rand.org/pubs/research_reports/RR1455.html (accessed August 18, 2017),
- Maucione, Scott. "Airline meeting is the beginning of a long road for Air Force on pilot shortage." *FederalNewsRadio.com*. April 7, 2017. <https://federalnewsradio.com/air-force/2017/04/airline-meeting-beginning-long-road-air-force-pilot-shortage/> (accessed September 11, 2017).
- . "Mattis says CR hurts personnel, contracting and readiness." *FederalNewsRadio.com*. September 12, 2017. <https://federalnewsradio.com/defense/2017/09/mattis-says-cr-hurts-personnel-contracting-and-readiness/> (accessed December 22, 2017).
- . "Military service chiefs say 2017 CR would be the worst yet." *FederalNewsRadio.com*. April 5, 2017. <https://federalnewsradio.com/defense-news/2017/04/military-services-chiefs-say-2017-cr-worst-yet/> (accessed December 21, 2017).
- mba. "The Pilot Shortage: A Current and Future Threat." Arlington, Virginia: Morten Beyer & Agnew, March 13, 2017. <https://www.mba.aero/the-pilot-shortage-a-current-and-future-threat-mba-insight-series/> (accessed October 17, 2017).
- McRae, Jannelle. "Goldfein Meets with Airline Executives." U.S. Air Force, Air Force Public Affairs. May 19, 2017. <http://www.af.mil/News/Article-Display/Article/1187913/goldfein-meets-with-airline-executives/> (accessed September 11, 2017).
- Mehl, Cortland E. "Managing the United States Airline Pilot Shortage." Capella University, August 2016. In PROQUESTMS ProQuest Dissertations & Theses Global, <http://search.proquest.com.nduezproxy.idm.oclc.org/docview/1850448383?accountid=12686> (accessed September 15, 2017).
- Myers, Meghann. "The Army is bringing back pilot retention bonuses." *ArmyTimes.com*. September 8, 2017. http://www.armytimes.com/news/your-army/2017/09/07/the-army-is-bringing-back-pilot-retention-bonuses/?utm_source=Sailthru&utm_medium=email&utm_campaign=09.08.2017&utm_term=Editorial+-+Early+Bird+Brief (accessed September 11, 2017).
- Naval Helicopter Association, *2015 Symposium Exhibit Hall Floor Plan*. <http://www.navalhelicopterassn.org/symposium-2015-in-review> (accessed February 14, 2018).
- . *2017 Exhibit Hall Floor Plan*. <http://www.navalhelicopterassn.org/symposium-2017-in-review> (accessed February 14, 2018).
- Ostrower, Jon. "The U.S. Will Face a Staggering Shortage of Pilots." *CNN.com*. July 31, 2017. <http://money.cnn.com/2017/07/27/news/companies/pilot-shortage-figures/index.html> (accessed September 11, 2017).

- Parrish, Karen. "Congress Probes Military Pilot Shortage." *DOD News*. Lanham: Federal Information & News Dispatch, Inc., March 30, 2017. <http://search.proquest.com.nduezproxy.idm.oclc.org/docview/1882243589?accountid=12686> (accessed August 18, 2017).
- Peter G. Peterson Foundation. "What is a Continuing Resolution?" *PGPF.org*. December 11, 2017. <https://www.pgpf.org/blog/2017/12/what-is-a-continuing-resolution> (accessed December 24, 2017).
- Peterson, Erik C. "Statement." *Housed Armed Services Committee Subcommittee on Military Personnel on Pilot Shortages*. 115th Cong., 1st Sess., March 29, 2017. <https://armedservices.house.gov/legislation/hearings/military-pilot-shortage> (accessed October 29, 2017).
- Philpott, Tom. "Military update: Vice Chairman: 'Exquisite' weapons are too expensive." *Stripes.com*. November 22, 2008. <https://www.stripes.com/news/military-update-vice-chairman-exquisite-weapons-are-too-expensive-1.85556> (accessed December 22, 2017).
- Pimentel, Dan. "The Pilot Pipeline." *Flying*, February 2017: 48-55. <http://search.proquest.com.nduezproxy.idm.oclc.org/docview/1860285068?accountid=12686> (accessed September 15, 2017).
- Pool, Sam. "Regional Airline Managements Must Create a Job People Want." *ALPA.org*. August 23, 2016. <https://www.alpa.org/news-and-events/Blog/2016/08/23/regional-airline-managements-must-create-a-job-people-want> (accessed October 17, 2017).
- Prentice, Brian and Philippe Gouel. "Pilot Shortage Threatens To Slow U.S. Airline Growth." ed. Birgit Andersen. *Forbes.com*. January 28, 2016. <https://www.forbes.com/sites/oliverwyman/2016/01/28/pilot-shortage-threatens-to-slow-u-s-airline-growth/#177458a66b4f> (accessed September 15, 2017).
- Ritz, Ben. "Can Congress Deliver Appropriations Bills On Time?" *BipartisanPolicy.org*. May 16, 2016. <https://bipartisanpolicy.org/blog/can-congress-deliver-appropriations-bills-on-time/> (accessed December 19, 2017).
- Robbert, Albert A., Anthony D. Rosello, Clarence R. Anderegg, John A. Ausink, James H. Bigelow, William W. Taylor, and James Pita. *Reducing Air Force Fighter Pilot Shortages*. RAND Corporation, 2015. <http://search.proquest.com.nduezproxy.idm.oclc.org/docview/1820820718?accountid=12686> (accessed August 18, 2017).
- The RSA. "RSA ANIMATE: Drive: The surprising truth about what motivates us." Filmed [April, 2010]. YouTube video, 10:47. Posted [April 2010]. <https://www.youtube.com/watch?v=u6XAPnuFjJc> (accessed December 23, 2017).
- Scherrer, Eric A. and A. J. Ramthun. "Proposed Solutions to Marine Corps Aviation's Fixed-Wing Pilot Shortage." *Marine Corps Gazette* 101, no. 5 (May 2017): 28-35.

- <http://search.proquest.com.nduezproxy.idm.oclc.org/docview/1899689743?accountid=12686> (accessed September 15, 2017).
- Serbu, Jared. "Navy says it's wasted \$4 billion on continuing resolutions since 2011." *FederalNewRadio.com*. December 5, 2017. <https://federalnewsradio.com/defense-main/2017/12/navy-says-its-wasted-4-billion-on-continuing-resolutions-since-2011/> (accessed December 20, 2017).
- Shane, Leo III. "Latest DoD plan to close U.S. bases gets mild response in Congress." *MilitaryTimes.com*. March 3, 2016. <https://www.militarytimes.com/news/pentagon-congress/2016/03/03/latest-dod-plan-to-close-u-s-bases-gets-mild-response-in-congress/> (accessed February 14, 2018).
- . "McCain blasts congressional 'cowardice' avoiding base closings." *MilitaryTimes.com*. January 24, 2017. <https://www.militarytimes.com/news/pentagon-congress/2017/01/24/mccain-blasts-congressional-cowardice-in-avoiding-base-closings/> (accessed February 14, 2018).
- Skelton, Renea M. "United States Air Force Retention: A Qualitative Descriptive Research Study on Reasons Airmen Remain in Service." University of Phoenix, 2015. In PROQUESTMS Military Database; ProQuest Dissertations & Theses Global, <http://search.proquest.com.nduezproxy.idm.oclc.org/docview/1802288996?accountid=12686> (accessed September 11, 2017).
- Snodgrass, Guy. "Keep a Weather Eye on the Horizon: A Navy Officer Retention Study." *U.S. Naval Institute Blog*, March 20, 2014. <https://blog.usni.org/posts/2014/03/20/keep-a-weather-eye-on-the-horizon-a-navy-officer-retention-study> (accessed October 30, 2017).
- Spencer, Richard V. Office of the Secretary of the Navy, Secretary of the Navy. To Secretary of Defense James N. Mattis, Office of the Secretary of Defense. Informational memorandum on SecDef Requests for Information: Naval Pilot Retention, October 3, 2017.
- Stone, Brice, Vince Wiggins, Kathryn Turner-Holland, and Larry T. Looper. "Air Force Pilot Retention: Evaluating the Results of Alternative Models." *Armed Forces & Society* vol 25, no. 1 (Fall 1998): 121-135. International Security & Counter Terrorism Reference Center, EBSCOhost (accessed August 18, 2017).
- Sweeney, Nolan. "Predicting Active Duty Air Force Pilot Attrition Given an Anticipated Increase in Major Airline Pilot Hiring." The Pardee RAND Graduate School, June 2014. In PROQUESTMS ProQuest Dissertations & Theses Global, <http://search.proquest.com.nduezproxy.idm.oclc.org/docview/1650613397?accountid=12686> (accessed August 18, 2017).
- Thorton, David. "Air Force generals: CR would 'devastate readiness'." *FederalNewsRadio.com*. April 3, 2017. <https://federalnewsradio.com/air->

- [force/2017/04/air-force-generals-cr-devastate-readiness/](#) (accessed January 3, 2018).
- U.S. Air Force. Secretary of the Air Force Public Affairs. “Air Force announces initiatives to lessen pilot shortage.” August 25, 2017. <http://www.af.mil/News/Article-Display/Article/1290397/air-force-announces-initiatives-to-lessen-pilot-shortage/> (accessed December 19, 2017).
- . Secretary of the Air Force Public Affairs. “Air Force announces 100 percent promotion opportunity to major.” September 14, 2017. <http://www.afpc.af.mil/News/Article-Display/Article/1309786/air-force-announces-100-percent-promotion-opportunity-to-major/> (accessed December 24, 2017).
- U.S. Government Accountability Office. *BUDGET ISSUES: Effects of Budget Uncertainty From Continuing Resolutions on Agency Operations*. March 13, 2013. <https://www.gao.gov/products/GAO-13-464T> (accessed December 19, 2017).
- . *Military Personnel: Actions Needed to Better Define Pilot Requirements and Promote Retention*. August 20, 1999. <http://search.proquest.com.nduezproxy.idm.oclc.org/docview/1820742648?accountid=12686>. (accessed August 18, 2017).
- U.S. Department of Defense. “Mattis Speaks at AFA Conference.” Filmed (September 20, 2017). YouTube video, 46:06. Posted [September 20, 2017]. <https://www.youtube.com/watch?v=dYXMxB-XYNM&t=1> (accessed October 20, 2017).
- . Under Secretary of Defense for Personnel and Readiness. *DOD Instruction 7730.67: Aviation Incentive Pays and Bonus Program*. October 20, 2016. https://search.usa.gov/search?affiliate=dod_esd&query=7730.67 (accessed September 27, 2017).
- . Under Secretary of Defense for Personnel and Readiness. *Military Compensation Background Papers: Compensation Elements and Related Manpower Costs Items, Their Purposes and Legislative Background*. Seventh Addition, November 2011. <http://www.loc.gov/rr/frd/mil-comp.html> (accessed September 27, 2017).
- Wilson, Heather. Office of the Secretary of the Air Force, Secretary of the Air Force. To Secretary of Defense James N. Mattis, Office of the Secretary of Defense. Informational memorandum on Pilot Shortages, September 20, 2017.
- Yeo, Mike. 2017. "Improving the Quality of Pilot Training." *Asia-Pacific Defence Reporter* 43, no. 3 (April 2017): 60-62. International Security & Counter Terrorism Reference Center, EBSCOhost (accessed August 18, 2017).

Vita

Lieutenant Colonel Nathan Thompson, United States Air Force, received his commission in 2000 from the United States Air Force Academy. He is a command pilot with over 1,800 hours in the T-37, T-38, and F-15C. He has flown the F-15C in Alaska, Florida, Hawaii, and in the United Kingdom with various deployments throughout Europe. He has been an instructor in both Undergraduate Pilot Training and Introduction to Fighter Fundamentals. He has served as an Air Liaison Officer in the Republic of Korea working in a Combined Air Support Operations Center and later served on the Seventh Air Force Staff. He most recently served as Commander, 469th Flying Training Squadron as part of European North Atlantic Treaty Organization Joint Jet Pilot Training at Sheppard AFB, Texas.

AVOIDING A PILOT RETENTION DEATH SPIRAL: THE PRESSURES OF PILOT
SHORTAGE AND DEPARTMENT OF DEFENSE RETENTION EFFORTS TO
MAINTAIN AN EFFECTIVE FIGHTING FORCE

By

Nathan Thompson

Lieutenant Colonel, United States Air Force

A paper submitted to the Faculty of the Joint Advanced Warfighting School in partial satisfaction of the requirements of a Master of Science Degree in Joint Campaign Planning and Strategy. The contents of this paper reflect my own personal views and are not necessarily endorsed by the Joint Forces Staff College or the Department of Defense.

This paper is entirely my own work except as documented in footnotes.

Signature: Nathan Thompson

9 April 2018

Thesis Advisor:

Signature: Bryon Greenwood
Bryon Greenwood, Ph.D., Professor
Colonel (Ret), U.S. Army

Approved by:

Signature: James Golden
James Golden, Colonel, U.S. Air Force
Committee Member

Signature: Jody Owens
Jody Owens, Colonel, U.S. Air Force
Committee Member

Signature: Miguel L. Peko
Miguel L. Peko, Captain, U.S. Navy
Director, Joint Advanced Warfighting
School

Intentionally left blank

Handwritten signature