

# The Integration of Female Marine Pilots and Naval Flight Officers, 1990-2000

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**Photography Credit: Captain Jessica M. Moore, an AH-1 Cobra pilot with Marine Light Attack Helicopter Squadron 167, is pictured with her aircraft in Al Asad, Iraq, 2005. Photo By: Cpl James D. Hame, USMC.**

**Approved by:**

**October 2014**

A handwritten signature in black ink that reads "Anita Hattiangadi".

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## Abstract

As part of a broader research project, CNA studied the integration of female Marine aviators during the 1990-2000 period. Using archival and other primary sources, CNA identified key themes that are likely to be relevant as the service considers opening formerly closed occupations and units to women. The history of integration highlights the important role of male peers. If combat arms occupations are eventually opened to women, the Marine Corps should look closely at its assignment policies. For example, a female Marine, upon completion of a combat arms primary military occupational specialty, could be assigned with one or more male peers with whom she graduated.

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## Executive Summary

As part of a broader project on the Marine Corps Force Integration Plan, the Center for Naval Analyses (CNA) was asked to examine the history of the integration of women into Marine Corps aviation. CNA gathered and analyzed primary data, including service archives, congressional testimony, and oral histories, and held discussions with a range of subject matter experts, including male and female aviators, senior military leaders, and former policymakers.

After a brief summary of the history of women in the Marine Corps, this information paper primarily focuses on the years between 1990 and 2000 and the opening of previously closed pilot and naval flight officer (NFO) occupations to female Marines.<sup>1</sup> This integration was part of a decades-long evolution of the role of women in the Marine Corps and the other military services. Change was incremental and sometimes halting. By the early 1990s, ongoing social, economic, and political transformations in American society, and the performance of the thousands of women who deployed during the Persian Gulf War, created a new impetus for expanding opportunities for female Marines.

After legislative revisions and policy modifications in 1993 and 1994, women began competing for pilot and NFO training slots and, by the end of the decade, had joined helicopter, propeller, and jet squadrons. The Marine Corps adopted a low-visibility approach to the integration of women—a “quiet revolution,” as one scholar described it. The service made no broad public announcements, press coverage was minimal in the case of most women, and no particular efforts were made to prepare aviation units for the arrival of female pilots and NFOs.

Subject matter experts (SMEs) we interviewed offered a variety of perspectives on the integration experience. Both women and men described the professionalism of male aviators as well as episodes of unfair treatment and hostility within squadrons. Although generally positive about their overall experiences as aviation pioneers, most of the women highlighted the “macho” atmosphere of their squadrons, the

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<sup>1</sup> The appendix discusses the integration of female enlisted Marines and female Marine officers into the aviation and logistics occupational fields and examines the limited literature available on their performance.

need to prove themselves to each of their fellow officers, and the stress of being a distinct minority. At the same time, SMEs emphasized that a hard-driving, highly competitive, performance-oriented ethos was necessary to develop combat effectiveness.

This information paper does not offer any tight “lessons learned” or a template that can be applied to any formerly closed units and occupations. Clearly, a Marine infantry company differs in important ways from an aviation squadron. Instead, this paper identifies themes that the Marine Corps leadership should consider as it weighs opening ground combat occupations and assignments to women.

Some of these issues and themes have already been mentioned: the influence on the Marine Corps of the wider transformation of women in American life; the incremental nature of the expansion of career opportunities for female Marines; fears about unit cohesion; and the service’s low-key approach to integration. Marine Corps leadership also should consider the following:

- Some aviation communities, such as fixed-wing squadrons, were seen as relatively open to the presence of women, while others, such as light attack helicopter squadrons, sometimes were viewed as hostile. In the judgment of some early female aviators, the presence of men whom they knew from earlier training helped to ease their transition into squadrons.
- All of the SMEs emphasized the importance of senior squadron leadership in the integration of women. Some recalled commanders who insisted on uniform treatment and identical standards for men and women, whereas others described commands where female aviators were considered unwelcome.

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## Glossary

AFQT	Armed Forces Qualification Test
API	Aviation Preflight Indoctrination
AQT	Academic Qualifications Test
AVF	All-Volunteer Force
CMC	Commandant of the Marine Corps
CNA	Center for Naval Analyses
DCS-M&RA	Deputy Chief of Staff for Manpower and Reserve Affairs
FAC	Forward Air Controller
FAR	Flight Aptitude Rating
FitRep	Fitness Report
FMF	Fleet Marine Force
MACV	Military Assistance Command, Vietnam
MAGTF	Marine Air-Ground Task Force
MOS	Military Occupational Specialty
MSO	Military Service Obligation
NAS	Naval Air Station
NCO	Noncommissioned Officer
NFO	Naval Flight Officer
NSS	Navy Standard Score
Occfield	Occupational Field
OCS	Officer Candidates School
SME	Subject Matter Expert
TBS	The Basic School
YOS	Years of Service

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# Introduction

Aviation has been part of the U.S. Marine Corps since May 22, 1912, when the first Marine reported for training at the Aviation Camp at the U.S. Naval Academy in Annapolis [1].<sup>2</sup> Eighty-two years later, a female Marine completed initial flight training and became the service's first female pilot. As the Marine Corps considers the further expansion of opportunities for women, the service has asked CNA to examine the history of the integration of female Marines into aviation.<sup>3</sup>

This paper explores the entry of women into pilot and naval flight officer (NFO) occupations during the 1990s, after providing an overview of the events leading up to this action. Integration also occurred within the enlisted ranks, and female noncommissioned officers (NCOs) now serve on flight crews, in maintenance, as air traffic controllers, and in avionics. Because it took place most recently, this paper focuses on the integration of female pilots and NFOs.<sup>4</sup>

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<sup>2</sup> The service considers May 22, 1912, to be the “birthday” of Marine aviation.

<sup>3</sup> The appendix discusses the integration of female enlisted Marines and female Marine officers into the aviation and logistics occupational fields and examines the limited literature available on their performance.

<sup>4</sup> All Marine Corps and Navy pilots and NFOs are commissioned officers. NFOs “operate the advanced weapons and electronic systems on board F/A-18 Hornets and EA-6B Prowlers. The division of labor between the pilot and the NFO allows the pilot to focus on flying the aircraft and the NFO to focus on the weapons systems” [2].

## Approach

This paper draws on key primary and secondary sources, including Marine Corps archives—particularly the records of the deputy chief of staff for manpower and reserve affairs (DCS-M&RA)—congressional testimony, and official Marine Corps histories. We also reviewed the relatively few policy studies on the topic. Overall, the written record on the integration is limited. To develop a more complete understanding, we conducted a limited number of discussions with subject matter experts (SMEs) who served during the 1990s. These SMEs included female aviators from the helicopter, propeller, and jet aircraft communities; squadron commanders who served during the early years of integration; and retired civilian officials and Marine Corps leaders.<sup>5</sup>

These discussions were semi-structured in format. Each discussion focused on four areas: initial training, entry into a squadron, professional relationships with fellow officers, and unit leadership.<sup>6</sup> These categories were chosen because they capture key aspects of the Marine aviation experience during this period—aspects that help us to understand more completely how female Marines were moved into aircraft cockpits.

However, it should be noted that this paper is not intended to be comprehensive. Given the project’s resource constraints and relatively short timelines, research focused on the decision-making surrounding integration and the initial entry of women into Marine combat aviation. These limitations also meant that the authors conducted discussions with about a dozen SMEs. Discussions with additional SMEs would no doubt help to provide a more complete picture. In the meantime, this paper should be considered provisional.

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5 These individuals were identified with the help of the small, tight-knit network of former Marine aviators. When quoted directly, SMEs are given pseudonyms to protect their privacy and identities. The SMEs included the following: two female AV-8B Harrier pilots, two female AH-1 Cobra pilots, one female F/A-18 Hornet pilot, one female CH-46 pilot, one female CH-53D pilot, four male squadron commanders, one retired general officer, and one senior Department of Defense official who served in the George H.W. Bush administration. One female Marine jet pilot flew KC-130s later in her career.

6 For the purposes of this paper, “initial training” includes Officer Candidates School (OCS), The Basic School (TBS), pre-flight training, primary training, and advanced training.

The remainder of this paper is divided into four sections. The first part provides background on the period leading up to the early 1990s, when Congress and the executive branch began rolling back restrictions on the participation of women in combat aviation. The second part explores the period between 1991 and 1994, when certain combat exclusion laws and policies were lifted. This section pays particular attention to decision-making within the senior Marine Corps leadership. The paper goes on to examine the experiences of male and female Marines during the late 1990s, as women earned their wings and joined squadrons. The final section summarizes the key themes identified in the research.

## Background

The history of women in the Marine Corps began in August 1918, when the Secretary of the Navy allowed women to enter the service to work in stateside clerical roles and free up male Marines for combat in France [3].<sup>7</sup> During the Second World War, women served in the Marine Corps Women's Reserve, generally (although not exclusively) in administrative and supply positions. As in the previous conflict, the service employed women "to lend a hand" and "free a man to fight." [4, 5, 6]<sup>8</sup>

The elimination of conscription in 1948 led the newly created Department of Defense to expand the pool of potential military applicants. The desegregation of the armed forces and the opening up of permanent careers for women were two steps undertaken to enlarge the recruiting base [7].<sup>9</sup> With the passage of the Women's Armed Services Integration Act in 1948 (Public Law 625), the position of women within the Marine Corps and the other services was formalized, and women officially became part of the "regular" Marine Corps. However, the legislation capped the number of women at no more than 2 percent of active component endstrength (the Marine Corps set an internal cap of 1 percent) and did not allow women to hold a permanent rank above lieutenant colonel [5]. It also included a number of restrictions, including a ban on women serving on combat aircraft or aboard most naval vessels [8].<sup>10</sup> A Marine Corps plan developed at that time allowed for the phasing in of female Marines, with a maximum strength of 100 officers, 10 warrant officers, and 1,000 female Marines by June 1950 [5].

During the 1950s and 1960s, women were eligible to serve in a variety of MOSs, ranging from intelligence to supply to aviation electronics, but the majority of

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7 In the First World War, about 305 women served in the Marine Corps Women's Reserves [6].

8 More than 23,000 officer and enlisted women served in the Marine Corps during World War II.

9 President Harry S Truman desegregated the armed forces in July 1948 under Executive Order 9981, <http://www.trumanlibrary.org/9981.htm>.

10 This combat exclusion statute was reinforced by Congress in 1956 in section 6015 of title 10, United States Code.



women occupied personnel and administrative billets.<sup>11</sup> Combat and combat-support occupations, such as infantry, artillery, aircraft maintenance and repair, and pilot, remained restricted to men. Although the number of women in the Corps had grown between 1948 and 1953 (peaking at 2,662), it hit a low of 1,448 in 1964 [5].

In 1964, the new Commandant of the Marine Corps (CMC) asked the Director of Women Marines to provide recommendations to improve the selection, training, and utilization of female Marines [5]. The resulting study led to the convening of a study group, dubbed the Pepper Board. In November 1964, the CMC approved 75 of the Board's recommendations; about half were Marine Corps policy by the mid-1960s.

Female Marines were first eligible for overseas assignments in 1966. Beginning in 1967, female officers and enlisted women served at the Military Assistance Command, Vietnam (MACV), providing personnel support and working as historians at MACV's Military History Branch [4, p.83].<sup>12</sup> Volunteers were plentiful, but not all were accepted. Particular care was taken in the selection of women for Vietnam assignments. The service, according to an official history, sought "mature, stable WMs [women Marines] who could be expected to adapt to strange surroundings and cope in an emergency" [4, p.83].

Public Law 90-130, passed in 1967, made women eligible to be selected to the permanent rank of colonel, but not the general officer ranks [5]. Female Marine officers were allowed to attend Amphibious Warfare School and the Naval Postgraduate School in 1967 and Command and Staff College in 1968 [5].

## The 1970s and 1980s

Professional opportunities for female Marines expanded slowly and incrementally during the 1970s and 1980s. The strengthening of the women's movement led the Secretary of Defense to direct the services to develop detailed equal opportunity plans for minorities and women by November 1972. In response, the Marine Corps formed the Snell Committee. It developed 17 recommendations for increased gender integration, all of which were approved by the CMC in November 1973 [5]. A goal was set to increase the number of female Marines to 3,100 by 1976; another aimed to recruit 2,500 women annually beginning in FY78 [5]. The Corps had 3,830 female

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<sup>11</sup> During the Korean War, female reservists were mobilized, reaching a peak strength of 2,787 [6].

<sup>12</sup> During the Vietnam era, roughly 2,700 female Marines served stateside and overseas [6].

Marines in 1977, but the CMC announced that it would have 10,000 women in its ranks by 1985 [5].

In November 1973, a pilot program was approved to assign women to stateside division, wing, and force service regiment headquarters in non-combat rear echelon billets (however, they were not required to deploy with the assault echelon) [5]. Deemed a success, the program became Marine Corps policy and the Fleet Marine Force was opened to women. All-women companies were abolished, and women were integrated into posts and stations across the service [9]. In 1977, officer training at Officer Candidates School and The Basic School was integrated [10]. Finally, “nontraditional” jobs, like aircraft maintenance technicians, field communicators, and heavy equipment operators, were opened to women. Female Marine endstrength grew from 2,329 in 1972 to 9,789 in 1987.

Two factors external to the Marine Corps contributed to this expansion. First, as in 1948, the end of the draft (in 1973) and the creation of the All-Volunteer Force (AVF) required the service (as well as the other armed services) to expand its recruitment pool.<sup>13</sup> Offering women expanded opportunities was one way to do that. Second, American society was changing—increasingly, the American public and its leaders demanded a wider role for women in all aspects of American life, including national defense [12, 13].

Although the Marine Corps’ history; ethos of “toughness,” self-sacrifice, and professionalism; and its “narratives of exceptionalism” helped to set it apart from American society, it was not impervious to the country’s shifting attitudes [14].

As mentioned above, career opportunities for female Marines expanded considerably during the 1970s and 1980s. At the same time, the service’s senior leadership opposed the entry of women into combat arms occupations and assignments. Under service policy, four occupational fields remained closed to female Marines: infantry, artillery, armor, and naval aviators [15].

In 1988, then-CMC General Al Gray evaluated a proposal to open up KC-130 occupations to women but rejected the idea on the grounds that the aircraft was an “assault/combat support” platform and, thus, part of combat aviation and off limits to women. Certain KC-130 units, according to the commandant, “will conduct clandestine troop insertion into battle zones, support noncombatant evacuation operations, provide low-level assault support into the battle area [and] conduct rapid ground fueling” [15, p. 3-24].

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<sup>13</sup> For more on the creation of the AVF, see [11].

## Panama and the Persian Gulf War

The role of American servicewomen in armed conflicts during the presidency of George H.W. Bush helped to set the stage for congressional and executive branch action. The invasion of Panama (December 1989–January 1990) reenergized the public discussion of the role of women in the military, in part because of the actions of Army Captain Linda Bray, who was reportedly the first woman to lead U.S. troops in combat [16].<sup>14</sup> The Persian Gulf War (August 1990–January 1991) created additional political momentum to expand the role of women in the U.S. armed forces. Significant numbers of women—including an estimated 2,000 female Marines—deployed to theater [18]. In the view of some senior Marines, the contributions of these women demonstrated the significance of their place in the service. General Charles C. Krulak, who served with many women as commander of the 2<sup>nd</sup> Force Service Support Group during the Persian Gulf War, concluded that female Marines were a “combat multiplier and we needed them” [19]<sup>15</sup>

Among other things, the Gulf War highlighted the erosion of the formerly fixed distinction between “front” and “rear.” Although technically serving in noncombat roles, women in the rear echelons were exposed to artillery fire and other threats, and suffered casualties, including 13 deaths. The American public generally reacted to these casualties in the same way that they reacted to casualties among male servicemembers, thereby calling into question the assumption that Americans would be unwilling to accept female casualties [12, p. 5].

Within Congress, some members attempted to chip away at the long-standing restrictions on women serving in combat-related occupations. In January 1990, Representative Patricia Schroeder, a strong proponent of gender integration in the armed forces, introduced legislation calling for the U.S. Army to begin a four-year test program to evaluate the elimination of the ban on women serving in combat and combat-support occupations [20]. Although the legislation was defeated, it foreshadowed more dramatic congressional and executive branch action during the following three years.<sup>16</sup>

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<sup>14</sup> In addition, two female Blackhawk pilots received Air Medals for their participation in what turned out to be an air assault operation against the Panamanian Defense Forces [17].

<sup>15</sup> General Krulak served as the CMC from 1995–1999.

<sup>16</sup> Also contributing to the increased focus on the role of women in the military was the 1991 Tailhook incident, in which Navy and Marine aviators were reported to have sexually assaulted at least 83 women and 7 men. For more on the episode and the resulting scandal, see [21, 22].

## Rolling Back Combat Aviation Exclusion, 1991–94

As of 1991, according to the Navy Department, there were no female pilots or NFOs in the Marine Corps, and “no women flight crews organic to squadrons that deploy” [23]. In this respect, the Marine Corps was unique; women were flying in the Army, Navy, and the Air Force, and had been doing so since the 1970s [24].<sup>17</sup>

### Senior Marine leadership and combat exclusion

In 1991, Congress began considering legislation that would repeal the combat exclusion law regarding Navy and Marine Corps aviation. Both publicly and internally, the senior leadership advanced a number of arguments for keeping existing restrictions in place. The ability of women to fly aircraft or serve as flight officers was not an issue, insisted General Carl Mundy, who served as CMC from 1991 to 1995. In his view, there was “no doubt about the operational competency of women. They can fly.” [27].

The real issue, said senior Marine leaders, was that there was no military *requirement* to place women in cockpits. In the CMC’s view, integration was a social and political issue, not a military one [28]. The integration of women offered no prospect of increased readiness or effectiveness—all-important objectives for the Marine Corps. As General Mundy later said in an oral history, there was “no specific enhancement of a squadron’s capability or indeed an aviator’s capability by including women” [29]. There was no shortage of highly qualified aviation applicants; in fact, there was a considerable surplus of men who wanted to fly [29, p. 287].

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17 In February 1974, Lieutenant Barbara Rainey was the first female Navy officer to qualify as a jet pilot. As of 1991, 175 women aviators were on active duty in the Navy [25]. On graduating from the Army Aviation School at Ft. Rucker, Alabama in 1974, Sally D. Murphy became the Army’s first female helicopter pilot [26].

Nor did the service agree with the proposition that current restrictions impeded the careers of female Marines. Writing in May 1991, Lieutenant General Norman Smith, the DCS-M&RA, concluded that current laws and policies did not “unfairly limit the career opportunities” of female Marines [30]. The cost of refitting amphibious ships to accommodate women also was a concern, as were anthropometric factors, such as “problems meeting the buttock to knee measurements” [31].

Finally, some senior Marines argued that women should not be responsible for what Mundy termed “delivering close combat to the enemy” [27, p. 1]. Safety per se was not the concern. The Persian Gulf War had demonstrated that the modern battlefield posed risks to all deployed Marines. Rather, as Mundy declared in 1992, the service’s combat exclusion policy was intended “to keep women out of direct combat units and their attachments, not out of danger” [32]. Women in combat raised issues of unit morale, cohesion, and readiness, and the question of whether women had the physical strength and other attributes to succeed.<sup>18</sup> Moreover, across the Marine Corps—and particularly among older Marines—there was an understanding of the horrors of battle and a deeply held belief that women should not be subjected to the brutality, cruelty, and indignities of contemporary conflict [34].

However, the service was aware that prospects for change were looming. In a September 1991 memorandum to Mundy, Smith noted that the “national mood” demanded larger roles for women in the armed forces. “If we do not do it ourselves, Congress will do it for us,” he advised. Smith proposed that female officers be given the opportunity to fly selected support aircraft, such as the C-9 and C-12, and certain tactical aircraft, such as the KC-130 and UH-1N, “when a sufficient quantity of male aviation candidates is unavailable”—a fairly remote prospect, given the surfeit of qualified men who wanted to become aviators [35]. However, this relatively modest proposal appears to have gone nowhere.<sup>19</sup>

## Congressional and executive branch action

Congress rejected the service’s arguments. The National Defense Authorization Act for Fiscal Years 1992 and 1993 repealed the combat aviation ban and permitted the service secretaries to designate the conditions under which women could be assigned. But the effects of the repeal were limited. Female Marines had entered a

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<sup>18</sup> See, for example, [33].

<sup>19</sup> The proposal for opening support aircraft to women represented something of a reversal for the deputy chief of staff, who a year earlier told Congress that flying such aircraft was not an acceptable assignment and that it would be “occupational constipation” for women, since unlike male aviators, they were unavailable for assignment to combat aircraft [36].

period of uncertainty in which they were legally permitted to serve as pilots and NFOs—but had not yet been assigned to those occupations. The New York City Bar Association characterized this time of anticipation and ambiguity as like “waiting for Godot.” [37]<sup>20</sup> The armed services were permitted, but not required, to open combat aviation to women, and none of the service secretaries chose to allow such assignments [39, 40]. At the top of the Pentagon, Secretary of Defense Dick Cheney decided to wait until a presidential commission on women in the armed forces made its recommendations in November 1992. The commission, by a narrow margin, voted in favor of retaining the restrictions on combat aviation [41].<sup>21</sup>

During 1993 and 1994, the period of uncertainty came to an end as a result of Pentagon and congressional initiatives. On April 28, 1993, Secretary of Defense Les Aspin directed the services to open more positions to women, including combat aircraft, and in November, Congress repealed the ban on woman serving on combat vessels and aircraft [42]. The following October, Aspin repealed the risk rule intended to limit the exposure of women to combat conditions but allowed the services to make restrictions based on physical requirements and the availability and cost of berthing on ships. In addition, the services were permitted to restrict the assignment of women to combat units below the brigade level and to keep special operations forces entirely male [43].

## The Marine Corps begins integration

Immediately after Aspin’s April 1993 decision, the Marine Corps commandant sent a message to the field announcing that women were now permitted to compete for flight training and that selection and assignment would be made without regard to gender and with no numerical quotas [44].<sup>22</sup> In a 1993 memorandum to the Navy secretary, the deputy chief of staff for manpower and reserve affairs, Lieutenant General Matthew T. Cooper, described a plan for integrating women. This included “gender-neutral contracting” for all future pilots and NFOs [46]. All aircraft would be open to women, Cooper said, stressing that a woman’s standing at the end of flight

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20 However, Marine Corps policy with respect to women did undergo at least one change during this period. In February 1992, the Marine Corps revised its assignment policy for female Marines, permitting them “to serve in the combat service support element (CSSE) of an airlifted Marine expeditionary brigade” [38].

21 The majority recommendation cited issues such as the increased possibility of becoming a prisoner of war, readiness, morale, and pregnancy [41, p. 67].

22 In addition, enlisted women became eligible for assignment as aircrew members aboard KC-130s [45].

training would determine which aircraft would have the first female Marines [46]. Given the length of required training, Cooper added, it would be approximately three years before the first aviator could be expected to join an operational squadron [46].

By February 1994, the first woman had completed initial training at Naval Air Station (NAS) Pensacola and was receiving helicopter training at NAS Whiting Field, and six other women had received flight guarantees [47].<sup>23</sup> By October, Lieutenant General George R. Christmas, the DCS-M&RA, was reporting to Congress that all helicopter, AV-8B Harrier, and air support squadrons were open to women and, as aircraft carriers were converted, women would almost certainly become members of fighter-attack squadrons [48].

Putting aside their earlier concerns, senior leaders offered public predictions about the likely salubrious effects of integration on morale and retention. According to Christmas, personnel tempo within the rotary-wing and Harrier communities would likely drop. Including women in deploying squadrons, he said, “will ease the deployment burden of male Marines [and this] may, in turn, improve overall morale and increase retention of these highly skilled people” [48, p. 28-29]

However, two challenges to complete integration were emerging. First, there was what some officers at Marine Corps headquarters considered to be the sluggish pace of the Navy’s efforts to convert ships to accommodate women. According to a staff officer at Headquarters, Marine Corps, the Navy had adopted a “go slow approach,” most notably with LSD-41 amphibious ships, which, in his view, were the easiest and cheapest to modify” [49].

The second concerned assignments as forward air controllers (FACs). Officially, FACs were seen as important to individual career development and the success of the Marine Air Ground Task Force (MAGTF).<sup>24</sup> But most Marine aviators saw matters differently. Any time out of the cockpit, including assignment as a FAC, was widely viewed as a distraction that eroded aviation skills. Relatively few pilots or naval aviation officers served as FACs—roughly 20 percent, according to one estimate [44]. As nearly all FACs served with infantry battalions, women were effectively barred from FAC assignments. This provoked grumbling among some male aviators. According to a junior male aviator, the burden was unfairly confined to men: “John has to do it because Jane can’t,” he wrote, adding that morale could be eroded if men perceived that women were not carrying their fair share of the load [50].

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23 Sarah Deal was the first woman Marine selected for flight training, and the service’s first female aviator. In April 1995, she was the first to pin on naval “wings.”

24 See, for example, [31].

By the end of the decade, the number of female Marine aviators was small, both in absolute and relative terms. In the third quarter of 1998, for example, 3 out of the service's 301 CH-53E pilots were women. There was one female Marine among the Marine Corps' UH-1 pilots, and no women were flying jets [51].

Overall, the initial integration phases were remarkably low key. Some female aviation pioneers attracted considerable media attention, although many worked to avoid the limelight. The Marine Corps introduced no special policies, programs, or training concerning the introduction of women. When viewed from a macro or institution-wide perspective, it seems appropriate to characterize this period, as one scholar has done, as one of "quiet revolution" [52].

The effects of integration on unit morale, cohesion, and readiness—a focus of concern among critics of opening up combat aviation options to women—is difficult to judge. As mentioned in the introduction, there is little policy research from that period to draw on. Moreover, the little that does exist is far from comprehensive. A RAND study, published in 1997 concluded that integration in the Army, Navy, Air Force, and Marine Corps "has had a relatively small effect on readiness, cohesion, and morale" [53]. However, the authors did not address Marine combat aviation specifically.



## Integration: Findings From Discussions With SMEs

This section presents findings from discussions with SMEs who served during the mid- and late-1990s. As mentioned in the introduction, this research was not comprehensive, although SMEs did vary in terms of gender, rank, and the aircraft they flew. These findings are grouped into four categories: initial training, entry into a squadron, professional relationships with fellow officers, and unit leadership. The findings are discussed in turn below.

### Initial training

All of the women with whom we spoke trained with men, although each was part of a small (and sometimes tiny) minority in Marine or Navy Officer Candidates School (OCS), The Basic School (TBS), pre-flight training (aviation preflight indoctrination- (API)), and primary and advanced training. Many of the women stressed the important role that pre-existing relationships with peers played in their initial training.

According to “Laura,” the first woman to receive Harrier training, “I was one of the first from my TBS class to show up here [at the squadron] and as guys from my class showed up they could vouch for me” [54]. “Angela,” one of the service’s first F/A-18 pilots, and a graduate of the Weapons and Tactics Instructor course, said that she was able to “blend in” during aviation training because of the presence of TBS classmates [55]. And “Melissa,” the first female Marine to fly an AV-8B in combat, explained that her “good physical fitness reputation” from the Naval Academy preceded her to flight school: “I wasn’t the new girl walking around” [56].

Universally, SMEs pointed to the meritocratic and egalitarian nature of initial training, which was sometimes often in stark contrast to their later experiences in the Fleet Marine Force (FMF). “Sally,” a former helicopter pilot, described the atmosphere this way:

Everyone was getting the same amount of flight time. It was very regimented, but more equitable. Everyone gets the training. In the fleet, there is much

more of a human influence. The leadership of the squadron decides who gets training [57].

## Entry into a squadron

Like some aviators, “Mark,” a former squadron commander, stressed the relatively low-key nature of the integration process:

The CO [commanding officer], the XO [executive officer], they said almost nothing,” he recalled. “They didn’t set the stage, there was no officers’ meeting ahead of time. There was a little bit of bitching. [But] there wasn’t a lot of churn and excitement [58].

In Melissa’s view, the Marine Corps “didn’t make a big deal out of women going into aviation, and that was the right way to go” [56]. Like other women, she refused many press requests for interviews on the grounds that such attention was unwarranted, as she was doing the same job as men in the squadron.

“Ann,” an early CH-53D pilot who got her wings in January 1997, recalled being slightly nervous on her first day in the training squadron. But this tension abated quickly, she said. As a female aviator, “I was used to being in a fishbowl and subject to a lot of scrutiny . . . I got the sense that a few people didn’t like me, but everyone was very welcoming” [59]

However, Ann’s experience was not universal. Experiences varied from woman to woman and assignment to assignment, but many described hostility from male Marines. In Angela’s view, “10 percent of the guys didn’t care, 80 percent don’t want you there, but hope you are good, and 10 percent hate you” [55]. “Backseaters,” had an easier time than pilots, according to 6 out of the 13 experts we spoke with, as they were seen as less of a threat to the male, pilot-dominated culture that existed in many squadrons.

Some aviation communities were viewed as more accommodating to women (and to men with families) than others. CH-46 and KC-130 squadrons were viewed as relatively friendly, whereas Hornet and Harrier squadrons were deemed less welcoming. Cobra squadrons were considered the most hostile—to Marines of both genders. Six out the seven female SMEs recalled what they described as harsh or unfair treatment. For example, “Lesley,” one of the first women to become a Cobra pilot, recalled that she was “put on duty more than my counterparts—every Friday night. I got less flying time than male counterparts, and less night flying” [60].

## Professional relationships

The SMEs varied in their opinions about their professional relationships with men in the squadron. Some described the complete professionalism of their male counterparts. Fellow officers “thought of me as a Marine, not as a woman Marine,” said Melissa [56]. Others recalled adolescent buffoonery, condescending and demeaning behavior, and sexual tension and innuendo. For example, some described the use of call signs that they considered degrading. According to Sally, the call sign first bestowed on her implied that she was a readily available sexual vagrant [57].

Some explained such treatment as a byproduct of concerns among fellow officers’ wives that the presence of women was an invitation for sexual misconduct, particularly when the squadron was deployed. Shortly after Laura joined her Harrier squadron, she married a retired Marine and, in her judgment, became “safe” in the eyes of her fellow officers and their partners [54].

But nearly all the SMEs with whom we spoke expressed at least some degree of uncertainty about the motivations underlying harsh treatment and misbehavior, and wondered whether the issue was one of gender, competency, personality, or culture. As many interviewees pointed out, *all* aviators, male or female, went through a trial period in which they were required to prove their worth to others in the squadron. “Everyone’s treated like shit,” said “Tom,” a former Hornet pilot. He described the “fine line” between “testing someone’s mettle” and making someone “really miserable,” but added that put-downs, mockery, and aggressive ready-room banter were a “rite of passage for everyone” [61]. “Gail,” an early female CH-46 pilot, recounted that although she did not get along well with some of the men in her squadron, she was not sure whether it was her gender or her self-described aggressive personality that was responsible [62].

## Unit leadership

Four of the male SMEs had served as squadron commanders. All of them said that they treated women equitably and professionally. Female SMEs who served under them confirmed that their commanding officers had treated them fairly. Mark and other male SMEs stressed that aviation is a meritocracy, and that performance is the most important metric for evaluating any pilot or NFO.

Other women recalled a less favorable environment. Gail said that during her first meeting with a commanding officer he asked, “What’s your birth control plan?” [62]. Lesley recalled a “command climate, a mentality, that women shouldn’t be Cobra pilots” [60]. All SMEs emphasized the importance of leadership and the need for

commanding officers and senior squadron leaders to establish an atmosphere that promotes exceptional performance.<sup>25</sup>

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<sup>25</sup> Analysts have highlighted the importance of leadership in ensuring effective gender integration in other military settings. See, for example, [63].

## Summary

This section summarizes the themes identified in this paper.

- The Marine Corps is subject to many of the same social, cultural, economic, and political forces that shape and reshape other American institutions. The growth of opportunities for female Marines since the 1970s is in part a product of wider public acceptance of, and demand for, greater participation of women in the armed forces.
- In the past, the need to expand the pool of qualified applicants has contributed to the expansion of certain occupations for female Marines. This was certainly the case in the aftermath of the Second World War and beginning of the AVF in 1973. However, unmet manpower requirements were apparently not responsible for the opening of combat aviation, since large numbers of qualified men were available.
- The Marine Corps adopted a relatively low-key approach to the integration of women. Within the service, the commandant of the Marine Corps publicized the decision to open aviation training to women but there was no public announcement of the new policy. There was contemporaneous coverage of some aviation pioneers, but it appears that, at the unit level, little was done to promote media attention.
- Senior Marine Corps leaders initially opposed the integration of women into pilot and NFO occupations. However, once legislation and service policy changed, the Marine Corps moved quickly to open these previously closed occupations. Senior Marines testified to the potential positive effects of integration on unit morale.
- Little policy research has been conducted on the integration of women, making it difficult to reach definitive analytical judgments on the impact on unit morale, cohesion, and readiness.
- Perhaps unsurprisingly, the experience of women who served in the early days of integration varied from person to person. Many recalled mixed experiences—professionalism among some fellow officers, indifference among others, and outright hostility from a few.

- Six out of seven of the female SMEs we interviewed discussed what they considered to be unfair treatment, including the lack of flying hours when compared to equally qualified men. Most described a vigorous “macho” squadron atmosphere where women were assigned demeaning call signs.
- Some of the women who were interviewed expressed ambiguity about the nature of the treatment they received in their squadrons. All agreed that ready-room banter was part of being an aviator and a rite of passage. But harsher treatment was sometimes more difficult to explain—they wondered, in some cases, whether it was an issue of gender, personality, initiation, or some combination of all three.
- The presence of male peers who they knew from earlier training helped ease the transition of women into squadrons. Some aviation communities, such as KC-130 squadrons, were seen as relatively open to the presence of women, whereas others, such as light attack helicopter squadrons, were viewed as hostile.
- All of the SMEs emphasized the importance of senior squadron leadership in the integration of women. Some recalled commanders who insisted on uniform treatment and identical standards for men and women, whereas others described commands in which female aviators were considered unwelcome.

## Conclusion

The history of the integration of female Marine aviators does not offer tight lessons that can be applied to any formerly closed unit or occupation. However, our research offers some insights that senior service leaders should consider as they evaluate the expansion of assignments and MOSs for female Marines.

Two of these insights merit particular attention. First, it is important to consider what rollout strategy should accompany significant changes in occupation and assignment policies, and to weigh the costs and benefits of a low-key versus high-visibility approach. Second, the presence of men who already know and respect a new female unit member can help to ease the transition of women into formally all-male environments. If the Marine Corps were to open combat arms occupations to women, it should consider changes to assignment policies that would promote effective integration. For example, female Marines, after completing a combat arms MOS school, could be assigned to units along with male peers who graduated with them.

# Appendix Literature Review

## Introduction

As part of our study tasking, we were asked to review any past studies on the performance of female Marines in aviation and logistics military occupational specialties (MOSs) and units.

As noted in the main text, the Marine Corps opened aviation MOSs to female Marine officers in aviation occupations (pilots and naval flight officers (NFOs)) following the National Defense Authorization Act of 1992. Other aviation and at least some logistics occupations had been open to women much earlier—some as early as 1951.

Yet there has been little formal research on how female Marines in aviation and logistics perform relative to their male counterparts. In fact, few studies evaluate performance differences by gender, and even fewer disaggregate performance by gender and MOS. This research gap likely exists for two reasons. First, it is difficult to measure performance in the Corps. That said, researchers often use attrition, promotion, or continuation rates as proxies for performance. Second, and probably most important, there have been few women in the Marine Corps over time and—of those who accessed—only a small portion went into aviation and logistics MOSs.

## Occupational restrictions<sup>26</sup>

### Female enlisted Marines

A 1951 study by the Procedures Analysis Office evaluated MOSs based on their past use of women, legal restrictions, physical requirements, job environment, availability of training facilities, and the existence of promotion opportunities. It found that 95 percent of enlisted female Marines were concentrated in seven occupational fields

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<sup>26</sup> Information in this section comes from [5].



(occfields)—almost half in personnel administration alone, followed by supply, communications, disbursing, data processing, post exchange, and public information. This was despite the fact that 25 occfields were open to them (although as late as 1955, only 5 percent of female enlisted Marines received formal training of any kind after an abbreviated bootcamp). In addition, the study determined that 27 (of then 43) existing occfields were appropriate for female enlisted Marines and that a maximum of 6,500 could be employed, given its structure at that time. Appropriate occfields included the 04 (logistics) occfield<sup>27</sup> and certain aviation occfields, including 66 (aviation electronics), 67 (air control), 68 (aerology), 69 (aviation synthetic training devices), 70 (aviation operations and intelligence), and 71 (flight equipment). These occfields were codified in a memorandum, which also identified those occfields that were unsuitable for women (and included several aviation-related occfields: 64 (aviation maintenance and repair), 65 (aviation ordnance), and 75 (pilot)).

Between 1954 and 1964, there was little expansion in these occfields, and most female enlisted Marines remained concentrated in a handful of them. The Pepper Board's recommendations in 1964 added a few additional occfields and extended the availability of specialized training. By 1966, 75 percent of female enlisted recruits went to advanced schools in 17 occfields. By 1972, female enlisted Marines could serve in 21 occfields, although over a third were in administration, 12 percent were in supply, and 5 percent were in operational communications. In July 1975, the CMC dropped all occupational restrictions except for those considered combat related: infantry (03), artillery (08), armor (18), and flight crews (75).

## Female Marine officers

After passage of the Women's Armed Services Integration Act of 1948, the Marine Corps specified nine MOSs in four occfields that were suitable for active component female officers, none of which were in the aviation or logistics occfields. Even then, a 1952 analysis found that 60 percent of female officers either held the 0105 (administrative officer) MOS or were unassigned second lieutenants. This led to the expansion of several occfields to female officers, but the aviation and logistics occfields remained mostly closed.<sup>28</sup> Because of their small numbers, female officers were needed to fill the strictly woman-designated billets in the Corps' recruiting and

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27 A discrepancy in the literature seems to suggest that the logistics occfield could have remained closed to female Marines as late as 1975.

28 According to [5], the Division of Aviation recommended that seven aviation occfields (aerology, aviation synthetic training devices, flight equipment, aircraft maintenance, aviation electronics, air control, and aviation operations and intelligence) be opened to female officers, but only the first three were approved; even so, female officers were not assigned to these occfields until at least 1960.

training establishment. As with female enlisted Marines, female Marine officers also rarely received training beyond the six-week Woman Officer Indoctrination Course following the Officer Candidate Course at that time.

By 1964, female Marine officers were serving in only eight occfields (and 70 percent were in administrative billets), and less than a third of those commissioned between 1962 and 1964 had received any formal specialist training. After the Pepper Board, female officers graduating in 1966 were assigned to 14 occfields (including avionics, aerology, and aviation operations), and 72 percent received formal training.

Following the advent of the AVF and the Snell Committee's recommendations, female Marine officers were allowed into the logistics occfield in 1973. As noted earlier, in July 1975, the CMC dropped all occupational restrictions except for those considered combat related: infantry (03), artillery (08), armor (18), and flight crews (75).

## Number of female Marines and officers in aviation and logistics occfields

Although the 1975 action opened most occfields and MOSs to female Marines and officers, only a small percentage of the aviation and logistics occfields were represented. And, as Table 1 shows, as of December 1976, very few female Marines were in these occfields [5].

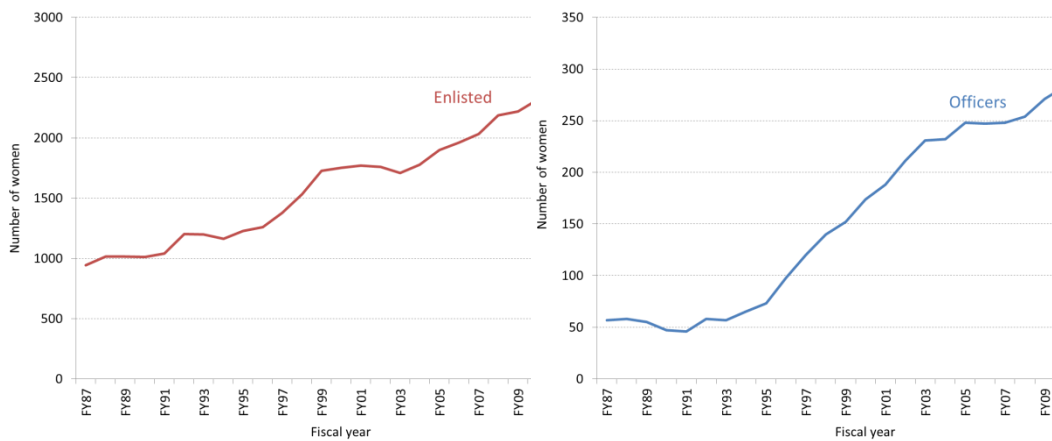
Table 1. Representation of female Marine officers and enlisted Marines in aviation and logistics occfields, December 1976

Occfield	Female Marine officers		Female enlisted Marines	
	No.	Percentage of all Marine officers	No.	Percentage of all enlisted Marines
04 (Logistics)	0	0	22	1.8
60/61 (Aircraft Maintenance)	4	2	13	0.1
65 (Aviation Ordnance)	0	0	0	0
66 (Avionics)	0	0	57	0.8
68 (Weather Service)	3	21.4	22	7.2
70 (Aviation Operations)	1	4.2	25	1.3
72 (Air Control/Support/Anti-Air WF)	9	1.6	0	0
73 (Air Traffic Control)	13	13.4	15	1.9

Source: [5].

Figure 1 shows the growth in the number of female Marines in aviation MOSs (enlisted and officer) over time. The left-hand panel shows that in FY87 (when our data series begins), there were less than 1,000 enlisted female Marines in aviation MOSs; in FY13, there were about 2,500. The panel on the right shows the number of commissioned officers in aviation MOSs. Here the numbers are considerably smaller, starting with just over 50 women in FY87 and growing to over 300 by FY13. The influence of the 1992 opening of the pilot and NFO occfields also is evident.

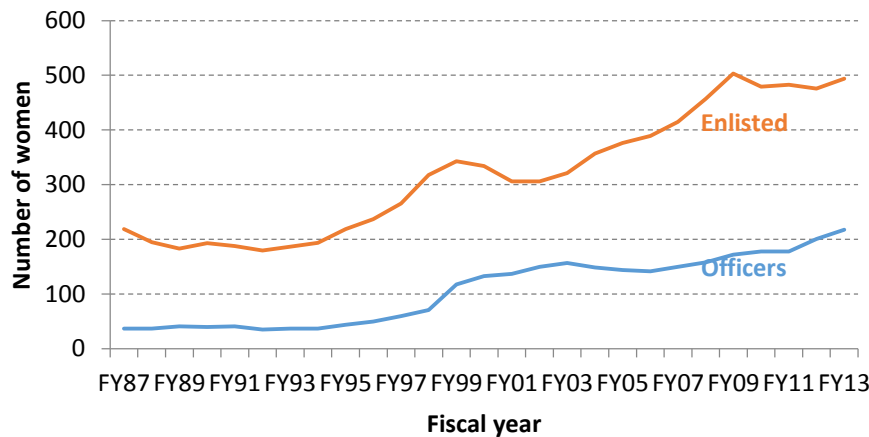
Figure 1. Figure 1. Number of female enlisted Marines and female Marine officers in aviation occfields, FY87 to FY13



Note: We include women in all aviation occfields, including those for basic training. The data is taken as of September of each fiscal year. Source: CNA's in-house Marine Corps personnel files.

Figure 2 shows the number of female officers and enlisted personnel in logistics occfields over time.

Figure 2. Number of female enlisted Marines and female Marine officers in logistics occfields, FY87 to FY13



Source: CNA's in-house Marine Corps personnel files.

These small populations likely explain why we found few studies on the performance of female Marines in the aviation and logistics occfields. Small sample sizes can make it difficult to obtain a critical mass of female Marines to provide within-occupation performance comparisons, even if one is using less direct measures of performance, such as advancement or continuation. Because we were unable to find literature on the performance of female Marines in the aviation and logistics occfields, the remainder of this appendix briefly summarizes past studies of aggregate performance differences between male and female enlisted Marines and male and female Marine commissioned officers.<sup>29</sup> Then, we summarize past studies of performance differences among Marine Corps aviators. Finally, we examine analyses of the Navy's aviation community, where there are more female aviators, allowing for more robust gender comparisons. This previous research can inform expectations about the male and female performance differences that we may find as we examine male and female performance in the Marine Corps' aviation and logistics communities as part of a future deliverable for this research effort.

<sup>29</sup> A more detailed literature review will be provided in December as part of a separate study deliverable.

## Enlisted personnel

Since at least the late 1980s, female Marines' entry-level attrition rates have been almost double the rates for men (for the early years, see [64-66] and for more recent years see [67, 68]). Some work suggests, however, that male and female bootcamp attrition rates are more similar when those of similar physical fitness levels are compared [69]. Despite having higher attrition rates early in their careers, female Marines are more likely to be retained than male Marines after about five years of service [65, 66]. Minority female enlisted Marines (black and Hispanic) have especially high retention rates [68].

Most attrition studies have looked at the impact of background characteristics on retention. Although there have been considerably more analyses of retention for male enlisted Marines than for female enlisted Marines, the general finding has been that higher retention is associated with an educational background that includes a regular high school diploma, high test scores on the Armed Forces Qualification Test (AFQT), and at least three months in the delayed entry program before entry into the Corps. In general, statistical retention results for male Marines are more robust and have more explanatory power than results for female Marines (see [65-68]).<sup>30</sup>

Since studies of enlisted attrition or retention usually start with accessions and estimate the effect of background characteristics on attrition or retention, the eventual military occupation is not known with any certainty. That probably explains why we found very little literature on the retention behavior of enlisted personnel in either aviation or logistics. One early study, however, found that enlisted women who entered the Corps with an aviation program MOS guarantee had first-term attrition rates that were 4 percentage points below those for women who entered in other programs [66].

## Commissioned officers

Two studies in 2007-2008, motivated by the high operational tempo during that period, looked at Marine Corps separation patterns since 2000 [70, 71]. In general, female commissioned officer separation rates are higher than male rates, and the differences widened in FY06 and FY07. In fact, in FY07 when a little over 5 percent of male commissioned officers separated from the Marine Corps, 11 percent of female

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<sup>30</sup> A separate study deliverable will address entry-level female attrition and its relationship to recruit characteristics.

officers separated from the Corps [71]. Ongoing work at CNA shows that female commissioned officers are considerably less likely to retire from the Corps than are male commissioned officers.

Data from the early 1990s suggest that the Marine Corps aviation community has the highest nondeployability rate (mostly due to still being in training), whereas the logistics community has the lowest nondeployability rate [72]. On one hand, recent work shows that Marine aviators not only perform less well on their fitness reports (FitReps), compared with those in other occupations, but also receive the lowest reviewing officer reviews [73]. On the other hand, Marines in the logistics community tend to outperform their peers on FitReps [73]. There is no known research, however, that disaggregates male and female performance at the MOS level across these measures for specific occupations in the Marine Corps, including aviation and logistics. There is, however, an attempt to use Marine Corps FitRep data to compare the performance of men and women in MOS groups (Ground Combat Element, Aviator, Combat Service Support, and Aviation support) [74].

## Marine Corps aviation officers

Only one known recent study examines differences in male and female officer promotion rates of Marine Corps aviators, and the study's results are preliminary [75]. It uses historical Marine aviator data to look at O-3, O-4, and O-5 promotions. Results indicate that male and female aviators are promoted from O-2 to O-3 and O-3 to O-4 at roughly the same rate. However, male promotion rates from O-4 to O-5 are considerably higher than female promotion rates [75].

An earlier study examined factors that affected promotion rates for Marine Corps officers from 1980 to 1999 [76]. The author found that female officers were almost 7 percentage points more likely than male officers to be promoted to O-4 [76]. Note, however, that a smaller percentage of female than male aviators were retained to the O-4 promotion point.

## Naval aviation officers

We did not find any literature examining performance by gender for Marine Corps commissioned officers in aviation or logistics MOSs. There is, however, some literature for naval aviation officers. One study looked at the 13,755 men and 421 women who entered naval aviation training to become either aviators or naval flight officers between 1984 and 1991. The study examined selection data (the Academic Qualifications Test (AQT) and the Flight Aptitude Rating (FAR)), as well as training data that included grades, peer ratings, instructor evaluations, final grades during preflight training, and attrition statistics. The study found statistically significant gender differences in selection, with women having higher AQT scores and men

having higher FAR scores. There were no statistically significant gender differences in attrition. Men, however, had significantly higher final preflight training grades. The paper concluded that these findings “warrant further study” [77].

Two papers find that female aviators’ retention rates in the Navy more closely mirror the retention rates of men than of female officers in other occupational groups [78, 79]. For the Navy, in particular, high-quality female officers<sup>31</sup> are the least likely to be retained, except in the aviation community [80].

Another study finds that Navy female pilots are 75 percent more likely than male pilots to attrite from Whiting Primary Flight School [81]. In this case, attrition differentials remained after controlling for demographic and schooling characteristics, but they were fully explained by selection quality differences on the AQT and FAR tests [81].

One study that looks at promotions to O-3 from the accession point finds that both male and female Navy aviators are more likely to be promoted in the more junior officer paygrades than those in other occupations [82]. The authors hypothesize that the higher aviation promotion rates can be explained by the fact that aviators are still on their military service obligations (MSOs): longer aviator training pipelines mean that aviators have longer initial obligations than officers in other MOSs. These results disappear by the O-4 promotion point when aviators have finished their MSOs [82].

A 2003 study for Navy female aviators found that, for those who were retained to the promotion point, female aviators were 8 percentage points more likely to promote to lieutenant commander (O-4) and just as likely to promote to commander (O-5) [83].

Navy female aviators are 8 percentage points more likely to promote to O-4 given survival to 11 years of service (YOS) [83]. Given survival to 17 YOS, women are as likely as men to promote to O-5, but they are 17 percentage points less likely than men to be screened for command at sea [83]. Similarly, Navy female pilots are more likely to earn Navy standard scores (NSSs) in the bottom third in all training phases compared with their male counterparts [81]. The differential still exists after accounting for demographic characteristics; however, the performance differential is fully explained by disparities in selection quality<sup>32</sup> between male and female pilots [81]. Contrary to what is observed for female pilots, female NFO performance, measured by NSSs, does not differ significantly from that of male performance [81].

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31 High-quality female officers are considered to be those who are USNA graduates, science or engineering majors, or those who graduated from top universities and colleges.

32 Selection quality refers to scores on the AQT and FAR tests.

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