



June 2021

NAVY READINESS

Actions Needed to Evaluate and Improve Surface Warfare Officer Career Path



A Century of Non-Partisan Fact-Based Work

GAO@100 Highlights

Highlights of [GAO-21-168](#), a report to congressional committees

Why GAO Did This Study

SWOs are U.S. Navy officers whose primary duties focus on the safe operation of surface ships at sea. In 2017, the Navy had two collisions at sea that resulted in the death of 17 sailors and hundreds of millions of dollars in damage to Navy ships. Following the collisions, the Navy identified deficiencies in the SWO career path and staffing policies, and took action to improve these areas.

The John S. McCain National Defense Authorization Act for Fiscal Year 2019 contained a provision that GAO assess issues related to the U.S. Navy SWO career path. Among other things, this report (1) assesses trends in separation rates of SWOs with those of similar U.S. Navy officer communities, and trends in SWO separation rates by gender; (2) describes how the career path of U.S. Navy SWOs compares to those of selected foreign navies and other U.S. Navy and U.S. maritime communities; and (3) assesses the extent to which the U.S. Navy has used or evaluated alternative career paths. GAO analyzed U.S. Navy officer personnel data; selected foreign navies and U.S. maritime officer communities for comparison; and surveyed a generalizable sample of Navy SWOs.

What GAO Recommends

GAO is making 7 recommendations to the Navy, including developing a plan to improve SWO retention; regularly evaluating its current approaches, including alternative career paths; and using these to improve SWO career options and proficiency. The Navy concurred with GAO's recommendations.

View [GAO-21-168](#). For more information, contact Cary Russell at (202) 512-5431 or russellc@gao.gov.

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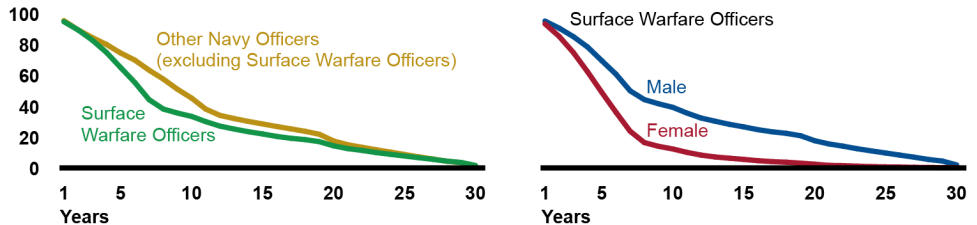
NAVY READINESS

Actions Needed to Evaluate and Improve Surface Warfare Officer Career Path

What GAO Found

U.S. Navy Surface Warfare Officers (SWOs) separate from the SWO community earlier and at higher rates compared with officers in similar U.S. Navy communities, and female SWOs separate at higher rates than male SWOs.

Retention Rates for U.S. Navy Officers and Surface Warfare Officers by Gender
Percentage remaining in U.S. Navy officer community



Source: GAO analysis of Navy data. | GAO-21-168

Note: GAO compared the U.S. Navy Surface Warfare Officer community separation rates with those of the other unrestricted line officer communities in the U.S. Navy: Naval Aviation, Submarine, and Explosive Ordnance Disposal and Special Warfare.

GAO found that after 10 years of service, around the first major career milestone:

- 33 percent of SWOs remain in their community, compared with 45 percent of officers from similar U.S. Navy officer communities, and
- 12 percent of female SWOs remain in their community, compared with 39 percent of male SWOs.

By using existing information to develop a plan to improve SWO retention, the Navy will be better positioned to retain a diverse and combat-ready community.

The career path for U.S. Navy SWOs differs from those in similar positions in selected foreign navies and other U.S. Navy and U.S. maritime communities.

Career Path for U.S. Navy Surface Warfare Officers Compared with Others

Generalist	Specialized by Department	Specialized by Ship Type
<p>Surface Warfare Officers serve on all ship departments, on all ship types</p>	<p>Surface Warfare Officers serve in one ship department for their career or a part of their career</p> <p>Operations Engineering Weapons</p>	<p>Surface Warfare Officers serve on one type of ship for their career or part of their career</p> <p>Surface Combat Amphibious Operations Mine Warfare</p>
U.S. Navy Surface Warfare Officers	France, Italy, Japan, and UK Navies; U.S. Navy Submarine Officers, U.S. Coast Guard	Republic of Korea Navy, U.S. Naval Aviation Officers

Source: GAO analysis of U.S. Navy, selected foreign navies, and Coast Guard communities (text); NWM/stock.adobe.com (ship icons). | GAO-21-168

The U.S. Navy made incremental career path changes for SWOs following the 2017 collisions, but has not regularly evaluated or fundamentally changed its SWO career path for over a century. GAO found that by a factor of four to one, SWOs believe specialized career paths would better prepare them for their duties than the current generalist career path. Without periodic evaluations of current approaches, including alternative career paths, and the use of those evaluations, the U.S. Navy may miss an opportunity to develop and retain proficient SWOs.

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Abbreviations

DOD	Department of Defense
SWO	Surface Warfare Officer
URL	Unrestricted Line
EOD	Explosive Ordnance Disposal
JMSDF	Japan Maritime Self-Defense Force
ROK	Republic of Korea
UK	United Kingdom

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June 17, 2021

Congressional Committees

In 2017, the U.S. Navy surface fleet had four significant mishaps at sea, including two collisions that resulted in the death of 17 sailors and hundreds of millions of dollars in damage to U.S. Navy ships.¹ Following the incidents, the U.S. Navy completed two internal reviews to identify and address the root causes of the mishaps.² In the reviews, the U.S. Navy identified challenges related to the Surface Warfare Officer (SWO) career path, particularly in officer development and the ability of the U.S. Navy to minimize the separation of SWOs—a term that refers to an officer either leaving the Navy or transferring to another officer community within the U.S. Navy.³ SWOs are U.S. Navy officers whose training and primary duties focus on the safe operation of U.S. Navy surface ships at sea, management of various shipboard systems, and the leadership of ships' crews. In response to the internal reviews, the U.S. Navy has undertaken a number of efforts to improve the SWO career path.

The John S. McCain National Defense Authorization Act for Fiscal Year 2019 contained a provision that we review the U.S. Navy SWO career path to include comparing it to those of foreign navies.⁴ This report (1) assesses the extent to which there are differences in separation rates for the U.S. Navy SWO community and other U.S. Navy officer communities, and gender differences in separation rates for the U.S. Navy SWO

¹A “mishap” is an unplanned event or series of events that results in damage to Department of Defense (DOD) property; occupational illness to DOD personnel; injury to on- or off-duty DOD military personnel; injury to on-duty DOD civilian personnel; or damage to public or private property, or injury or illness to non-DOD personnel, caused by DOD activities.

²U.S. Navy, *Comprehensive Review of Recent Surface Force Incidents*, Oct. 26, 2017 and U.S. Navy, *Strategic Readiness Review 2017*, Dec. 3, 2017. The two reviews resulted in 111 recommendations to improve surface fleet readiness.

³Career path refers to the requirements and milestones such as training, experiences, qualifications, assignments, and promotions officers receive as they progress throughout their careers. According to the U.S. Navy, the ultimate goal of the SWO career path is to develop the most proficient, experienced, and confident ship Commanding Officers. Naval Officers are grouped into officer communities based on the work they do in the U.S. Navy. Examples of officer communities include Naval Aviation, Engineering Duty, Submarine, Naval Special Warfare, Physicians, Chaplains, and Public Affairs Officers.

⁴Pub. L. No. 115-232, § 514 (2018).

community; (2) assesses the extent to which U.S. Navy commissioning practices affect SWO training opportunities aboard ships; (3) describes how the career path of U.S. Navy SWOs compare to those of selected foreign navies and other U.S. Navy and U.S. maritime communities; and (4) assesses the extent to which the U.S. Navy has used or evaluated alternative career paths and means of developing proficiency for SWOs.

For objective one, we obtained and analyzed personnel data from the Defense Manpower Data Center on officers across the U.S. Navy's Unrestricted Line Officer⁵ communities for fiscal year 2004 through March 2020, including service start date, grade, gender, race, marital status, and whether the officer has dependents.⁶ We analyzed these data for descriptive statistics to show trends and developed statistical models to examine the likelihood that specific events would occur for various demographic characteristics.⁷ We could not control for all factors that may affect separation, such as an officer's performance and labor market conditions. Therefore, our models provide information on possible associations in the data, and they do not establish a causal relationship. We discussed the results of our analyses with officials from Commander, Naval Surface Forces; Navy Personnel Command; the Office of the Chief of Naval Operations; and the Defense Manpower Data Center.

We assessed the reliability of U.S. Navy personnel data by reviewing the relevant data dictionary; interviewing knowledgeable officials from the Defense Manpower Data Center; and conducting both electronic and manual data testing to look for missing and erroneous data. Based on our assessments, we determined that the data used in our analyses are sufficiently reliable for the purposes of determining SWO separation rates, comparing them to those of other U.S. Navy officer communities, and assessing the extent to which there are gender differences in separation rates. We also collected nominal career path costs, as of February 2021, from officials in the Office of the Chief of Naval Operations, Surface

⁵Unrestricted Line Officers are not restricted in the performance of duty and are eligible to command Navy ships, submarines, aircraft squadrons, fleets, and shore bases. Conversely, Restricted Line Officers in the U.S. Navy are designated for specific duties—such as intelligence, public affairs, aviation maintenance, or oceanography. Unrestricted Line Officers include Surface Warfare, Aviation, Submarine, Naval Special Warfare, and Explosive Ordnance Disposal Officers. These officers are commissioned through Officer Candidate School, the Naval Reserve Officers Training Corps, or the Naval Academy.

⁶We selected July 2003 through March 2020 because this is the most recent time period for which DOD has complete data available and allows for a robust longitudinal analysis.

⁷For information about our descriptive and statistical analysis and models, see appendix I.

Warfare Division, Air Warfare Division, and Undersea Warfare Division using a standardized data request. We reviewed related documentation, checked the data for missing fields and erroneous data, and verified the data with officials from each of the three divisions at Office of the Chief of Naval Operations to ensure that their information was reliable and accurately represented. We did not assess the U.S. Navy's assumptions underlying the career path cost data provided nor did we adjust costs for inflation. We determined that the data were sufficiently reliable for the purposes of reporting the nominal career path costs for the U.S. Navy's Surface Warfare, Aviation, and Submarine officer communities.

We determined that the control environment and risk assessment components of *Standards for Internal Controls in the Federal Government* were significant to this objective, along with the underlying principles that management demonstrate a commitment to recruit, develop, and retain competent individuals and have plans with clearly defined goals, performance measures, and timelines.⁸ We reviewed publications on female retention efforts in the military to determine what others had found and recommended with regard to female retention in the military, as well as our prior work on female officer retention in the military services.⁹ We compared this information to documentation detailing U.S. Navy goals and guidance that establishes responsibilities related to strategic human capital planning and retention of a diverse workforce to identify any gaps.¹⁰

For objective two, we obtained and analyzed data on the required number of Junior Officer positions aboard ships with the actual number of Junior Officers aboard ships for fiscal years 2017 through February 2021. We also reviewed information on junior SWO recruitment and training expectations and discussed SWO commissioning practices and policies with officials from Commander, Naval Surface Forces; Navy Personnel Command; and the Office of the Chief of Naval Operations. We assessed the reliability of U.S. Navy personnel requirements data and actual counts

⁸GAO, *Standards for Internal Control in the Federal Government*, [GAO-14-704G](#) (Washington, D.C.: Sept. 10, 2014).

⁹Defense Advisory Committee on Women in the Services, 2015 Annual Report (December 2015) and GAO, *Female Active-Duty Personnel: Guidance and Plans Needed for Recruitment and Retention Efforts*, [GAO-21-61](#) (Washington, D.C.: May 19, 2020).

¹⁰Office of the Chief of Naval Operations Instruction 5450.337B, *Missions, Functions, and Tasks of Commander, United States Pacific Fleet* (Jan. 21, 2016) and Office of the Chief of Naval Operations Instruction 5420.115, *Navy Diversity Policy Coordination* (Dec. 20, 2012).

of personnel by reviewing U.S. Navy guidance, interviewing knowledgeable officials from the U.S. Navy, and conducting both electronic and manual data testing to look for missing and erroneous data. Based on our assessments, we determined that the personnel requirements data used in our analyses were sufficiently reliable for the purposes of reporting on U.S. Navy personnel requirements, commissioning practices, and personnel levels. We evaluated SWO commissioning practices and policies against U.S. Navy guidance on training requirements and proficiency development, and our prior work on *Key Principles for Effective Strategic Workforce Planning and Standards for Internal Control in the Federal Government*.¹¹ We determined that the risk assessment component of internal controls was significant to this objective, along with the underlying principle that management identify, analyze, and respond to risks related to achieving the defined objectives.

For objective three, we reviewed U.S. Navy documentation on the content, purpose, and cost of the SWO career path, and identified means of comparing it with foreign navies and other U.S. Navy and U.S. maritime communities.¹² We discussed SWO policies with officials from Commander, Naval Surface Forces; Navy Personnel Command; and the Office of the Chief of Naval Operations. Based on this work, we developed a standardized question set to support comparison of SWO career paths. We identified foreign navies with large surface fleets using *Jane's Fighting Ships* database and, after selecting foreign navies for comparison based on fleet size and other characteristics, we requested the participation of six navies. Five foreign navies—those of France, Italy, Japan, Republic of Korea, and the United Kingdom—agreed to participate in our review and provided official responses to our question set and related documentation.¹³ We also compared the U.S. Navy SWO career path to those of U.S. Navy submarine and aviation officers, and U.S.

¹¹Commander, Naval Surface Force, U.S. Pacific Fleet and Commander, Naval Surface Force Atlantic Instruction 1412.9, *Surface Warfare Mariner Skills Logbook Requirements* (Sept. 6, 2018). GAO, *Human Capital: Key Principles for Effective Strategic Workforce Planning*, [GAO-04-39](#) (Washington, D.C.: Dec. 11, 2003). [GAO-14-704G](#).

¹²See appendix II for more information about the nominal costs of the U.S. Navy SWO, U.S. Naval Aviation Officer, and U.S. Navy Submarine Officer career paths.

¹³See appendix III for community profiles for Surface Warfare Officer equivalent officers in France, Italy, Japan, Republic of Korea, and the United Kingdom navies.

Coast Guard officers using interviews and the same question set we sent the foreign navies.¹⁴

For objective four, we reviewed U.S. Navy documentation on efforts to review career path and proficiency development guidance, including changes made since the 2017 collisions and discussed U.S. Navy actions with officials from Commander, Naval Surface Forces; Navy Personnel Command; and the Office of the Chief of Naval Operations. We also conducted a web-based survey of a generalizable, stratified random sample of SWOs to assess their opinions on the current SWO career path and potential changes to the SWO career path.¹⁵ We defined the target population for this survey to include all active-duty SWOs, including trainees, grades O-1 to O-6.¹⁶ Based on general information we provided on the survey, the U.S. Navy provided a list of all officers who met the population definition, and we identified the sample frame of 8,606 SWOs.¹⁷

We used information gathered during a related review of SWO training in which we visited 12 surface ships in the Pacific and Atlantic fleets, selected according to which ships and crews were available at each of the sites we visited. Aboard the ships we held group discussions and interviews with approximately 225 SWOs to discuss their views on SWO career path and other SWO community policies. We compared the U.S. Navy's actions in assessing the SWO career path and proficiency

¹⁴See appendix III for profiles for U.S. Navy Surface Warfare, Aviation, Submarine, and Coast Guard communities.

¹⁵See appendix IV for the questions included in the survey questionnaire.

¹⁶Military officers have a personnel grade associated with their rank and pay ranging from O-1 through O-10. In the U.S. Navy, the O-1 to O-6 grades include the main body of officers, from the ranks of Ensign at O-1 to Captain at O-6. Lower grades include junior officers in the U.S. Navy, representing the ranks of Ensign at O-1, Lieutenant (junior grade) at O-2, and Lieutenant at O-3. Middle grades include Department Heads, Executive Officers, and Commanding Officers in the U.S. Navy, representing the ranks of Lieutenant Commander O-4, Commander O-5 and Captain O-6. The O-7 to O-10 grades include senior leadership, from the ranks of Rear Admiral (lower half) at O-7 to Admiral at O-10. 37 U.S.C. § 201(a).

¹⁷We received responses from 351 of the 852 SWOs selected in our sample (41 percent response rate). The weighted response rate, which controls for the disproportionate sample design, was 38 percent. Based on the weighted response rate, we generated weighted estimates to the population of 8,606 SWOs. Survey-based estimates included in this report have a margin of error of plus or minus 10 percentage points or fewer, unless otherwise noted. See appendix V for more information about our survey methodology.

development policies against key principles for effective strategic human capital planning.¹⁸ Our scope and methodology are discussed in greater detail in appendix V.

We conducted this performance audit from September 2019 to June 2021 in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

Background

2017 Mishaps at Sea

From January through August 2017, the U.S. Navy suffered four significant mishaps at sea that resulted in the death of 17 sailors and hundreds of millions of dollars in damage to U.S. Navy surface ships (see fig.1).

¹⁸GAO-04-39. Office of the Chief of Naval Operations Instruction 5450.337B, *Missions, Functions, and Tasks of Commander, United States Pacific Fleet* (Jan. 21, 2016). Commander, Naval Surface Forces Instruction 1412.4A, *Surface Warfare Officer Requirements Document* (Oct. 11, 2018).

Figure 1: Overview of Significant Mishaps at Sea for U.S. Navy Surface Ships, January–August 2017



Source: GAO analysis of Navy data; Defense Video Imagery Distribution System and U.S. Navy (images). | GAO-21-168

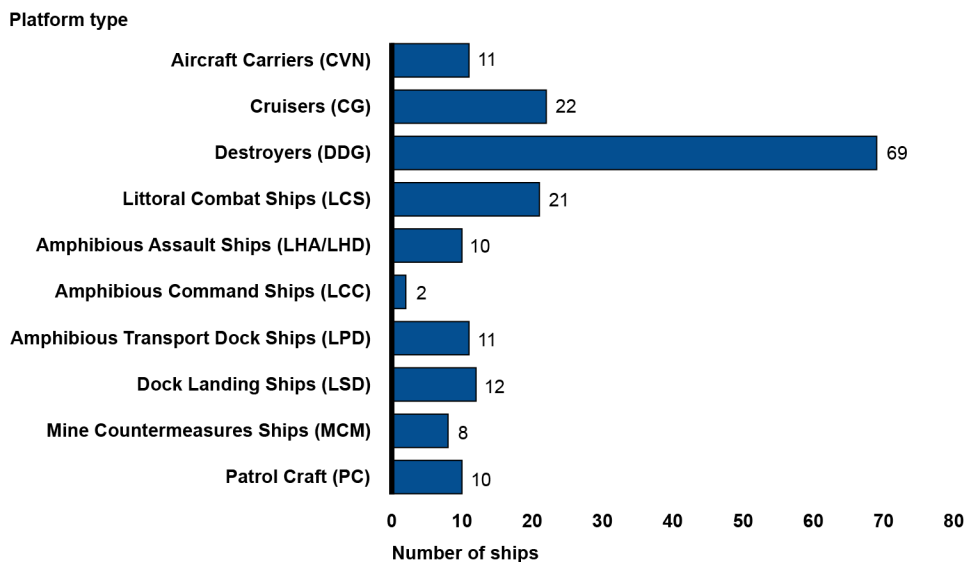
The U.S. Navy completed two internal reviews to identify and address the root causes of the mishaps—the Comprehensive Review of Recent Surface Force Incidents and the Strategic Readiness Review—finding a

range of deficiencies and other issues related to development and proficiency of SWOs.¹⁹

U.S. Navy Surface Warfare Officers (SWOs)

As of December 2020, the U.S. Navy had 8,925 SWOs—officers whose training and primary duties focus on the operation of U.S. Navy ships at sea and the management of various shipboard systems.²⁰ The U.S. Navy SWO community has a generalist career path where officers can serve in different ship departments—such as engineering and ship operations—during their career. SWOs can also serve aboard any of the U.S. Navy’s ten ship classes, including cruisers, destroyers, aircraft carriers, littoral combat ships, and mine countermeasures ships.²¹ Figure 2 provides a summary of the types and numbers of U.S. Navy surface ships that U.S. Navy SWOs can serve aboard during their careers.

Figure 2: Type and Number of U.S. Navy Surface Ships, as of April 2021



Source: GAO analysis of U.S. Navy data. | GAO-21-168

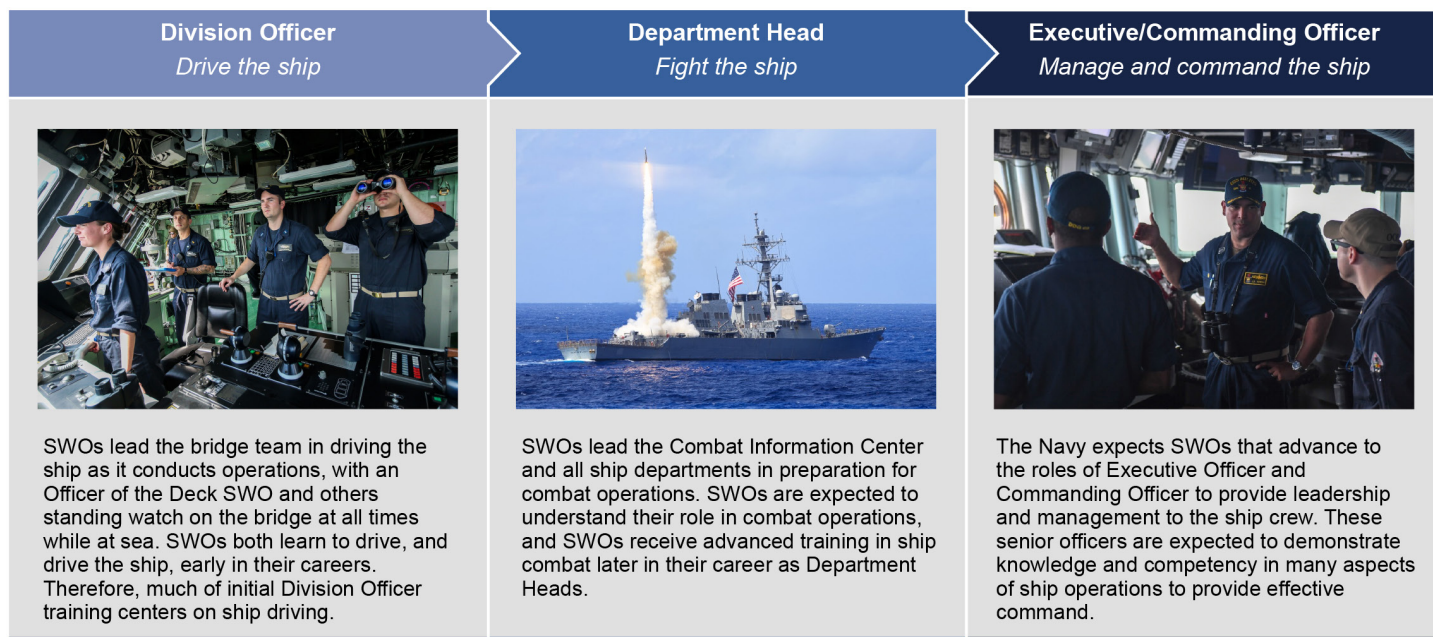
¹⁹U.S. Navy, *Comprehensive Review of Recent Surface Force Incidents*, Oct. 26, 2017, and U.S. Navy, *Strategic Readiness Review 2017*, Dec. 3, 2017.

²⁰For the purposes of this report, we defined “SWOs” as Navy officers who are working toward qualification or who have already had completed the qualifications to become a Surface Warfare Officer.

²¹The ten U.S. Navy surface ship classes are: aircraft carriers, cruisers, destroyers, littoral combat ships, mine countermeasures ships, patrol craft, amphibious assault, amphibious command, amphibious transport, and dock landing ships.

The U.S. Navy has had a generalist SWO career path in place since Congress combined engineering officers with other SWOs in 1899.²² The Commander, Naval Surface Forces is the leader of the SWO community and develops policies related to SWO career paths, assisted in administration by Navy Personnel Command. The U.S. Navy expects SWOs to perform or support key duties while aboard their ships, progressing in responsibility over the course of their careers. Figure 3 provides a summary of these duties at the key SWO career milestones.

Figure 3: Career Progression and Key Duties U.S. Navy Surface Warfare Officers (SWOs) Perform Aboard Ships



Source: GAO analysis of Navy information; Navy and Defense Visual Information Distribution Service (photos). | GAO-21-168

Note: Ship personnel and operations are organized under the leadership of the Commanding and Executive Officers into departments, which are further split into divisions.

Prior GAO Work on SWO Training

In November 2019, we issued a report on U.S. Navy SWO training that found that following the ship collisions in 2017, the U.S. Navy planned to triple ship-driving training hours by 2021.²³ However, we also found that

²²Fifty-fifth Congress, Session III, Chapter 413, *An Act to reorganize and increase the efficiency of the personnel of the Navy and Marine Corps of the United States* (Mar. 3, 1899).

²³GAO, *Navy Readiness: Actions Needed to Evaluate the Effectiveness of Changes to Surface Warfare Officer Training*, [GAO-20-154](#) (Washington, D.C.: Nov. 14, 2019).

U.S. Navy did not have a plan to comprehensively evaluate the effectiveness of the changes it had made to SWO training. We recommended, among other things, that the U.S. Navy collect and evaluate fleet-wide feedback on the quality of training; routinely conduct ship-driving competency assessments; and provide standard criteria for qualifying ship drivers. The U.S. Navy concurred with our recommendations and has begun taking steps to address them.

SWOs Separate Earlier and at Higher Rates Compared with Officers in Similar U.S. Navy Communities, and Female SWOs Separate at Higher Rates than Males

U.S. Navy SWOs separate from their community earlier and at higher rates compared with officers in similar U.S. Navy communities, and female U.S. Navy SWOs separate from their community at higher rates than their male counterparts.²⁴ SWOs had shorter average careers and higher separation rates compared with officers in similar U.S. Navy communities, despite the U.S. Navy's investments in SWO training. Female SWOs separate at higher rates than their male counterparts, and female representation in the SWO community is over three times higher than female representation in similar U.S. Navy officer communities. While Naval Surface Forces Command gathers information on separation rates for all SWOs and for SWOs by gender, it has not used this to develop a plan to improve either overall SWO retention or female SWO retention.

SWOs Separate from Their Community Earlier and at Higher Rates than Officers in Similar U.S. Navy Communities

SWOs separate from their community earlier and at higher rates than officers in similar U.S. Navy communities²⁵ according to our analysis of Department of Defense personnel data for fiscal year 2004 through March 2020 (see fig. 4).²⁶ We found these differences when conducting descriptive analyses, which calculated the actual separation rates and average career length for SWOs and officers in similar U.S. Navy communities who served on active-duty during fiscal year 2004 through March 2020. We also found these differences when conducting adjusted

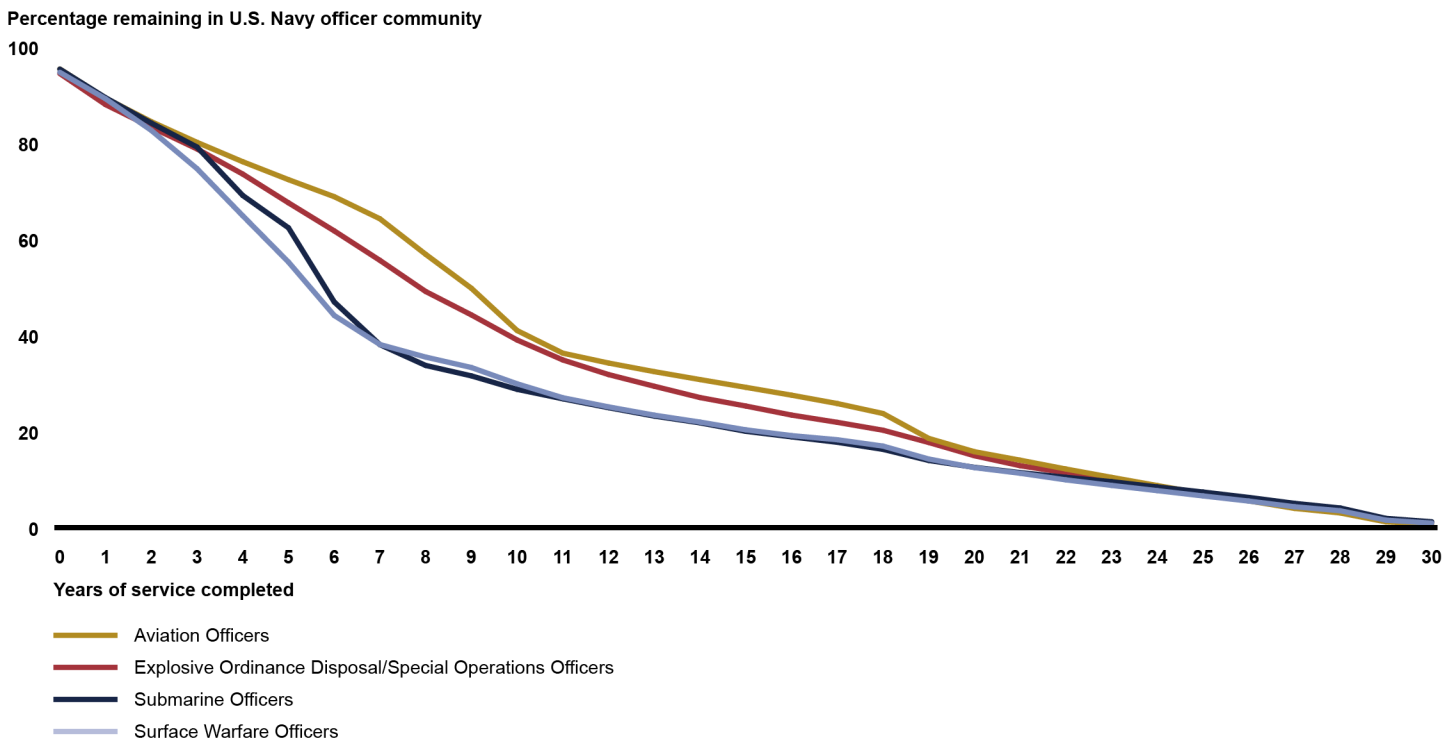
²⁴Separation refers to an officer either leaving the Navy or transferring to another officer community and directly affects officer retention, which we define as the voluntary continuation of military service.

²⁵We compared the U.S. Navy SWO community separation rates with those of the other Unrestricted Line Officer communities in the U.S. Navy: Naval Aviation, Submarine, and Explosive Ordnance Disposal and Special Warfare. Unrestricted Line Officers are not restricted in the performance of duty and are eligible to command Navy ships, submarines, aircraft squadrons, fleets and shore bases.

²⁶Any statistics presented in this report are statistically significant at a p-value less than 0.05 unless otherwise specified.

analyses, which calculated the likelihood of separation after controlling for certain individual factors that could influence separation.

Figure 4: Retention Rates for Officers in Select U.S. Navy Communities, by Years of Service, Fiscal Year 2004 through March 2020



Source: GAO analysis of Navy data. | GAO-21-168

Note: The four officer communities included in the figure above (Surface Warfare, Naval Aviation, Submarine, and Explosive Ordnance Disposal and Special Warfare) are designated as Unrestricted Line Officer communities. This means officers in these communities are unrestricted in terms of their eligibility for command opportunities. Separation refers to an officer either leaving the Navy or transferring to another officer community and directly affects officer retention, which we define as the voluntary continuation of military service.

We found that from fiscal year 2004 through March 2020, SWOs separated from their community earlier and at higher rates than officers in similar U.S. Navy communities. Specifically:

-
- 62 percent of SWOs separated from their community after completing their mandatory service requirement and before becoming Department Heads at 8 years of service.²⁷
 - 67 percent of SWOs separated from their community after 10 years of service, compared with 55 percent of officers from similar U.S. Navy communities.²⁸
 - SWOs had an average career length of 9.6 years, while Submarine Officers served 9.8 years, Aviation Officers served 11.8 years, and Explosive Ordnance Disposal/Special Warfare Officers served 11.1 years, on average.

We developed a set of bivariate and multivariate statistical models using data from fiscal years 2004 through March 2020 which accounted for active-duty officer time in service (i.e., the period of time from when they joined the military until their separation). Both types of models estimated the association of officer community with separation, while the multivariate models also accounted for specific officer characteristics, such as their accession source, gender, marital status, dependent status, and race—among others—to estimate the associations that these characteristics have with officers separating from the U.S. Navy.²⁹ We did not control for the effects of different mandatory service requirements among the four officer communities we examined, which can influence average career lengths, according to U.S. Navy officials.

Both our bivariate and multivariate statistical modeling showed that SWOs are likely to separate at a higher rate than officers from similar

²⁷Most U.S. Navy SWOs are required to complete 4 or 5 years of mandatory service after commissioning. Department Head is the second key SWO career milestone, following the first key career milestone of Division Officer, and occurs at 8 years of service.

²⁸We analyzed likelihood of separating at 10 years of service because it is the point in time at which officers in each of the four Unrestricted Line Officer communities will have completed their mandatory service requirements. Unrestricted Line Officers in the U.S. Navy are required to complete an initial period of mandatory service ranging from 4 to 8 years, and the period of service may not start until after the officer completes initial training, which could last up to 2 years, depending on the community.

²⁹Our analysis could not control for all factors that may be associated with separation—such as labor market conditions—and it does not establish a causal relationship. Additional inquiry into each of the observed separation cases would be needed to determine whether there are additional factors that drive these disparities of separation and those that are also associated with different demographic groups in each of these cases. We provide a full analysis and comparison of the separation rates associated with each of these characteristics in appendix I.

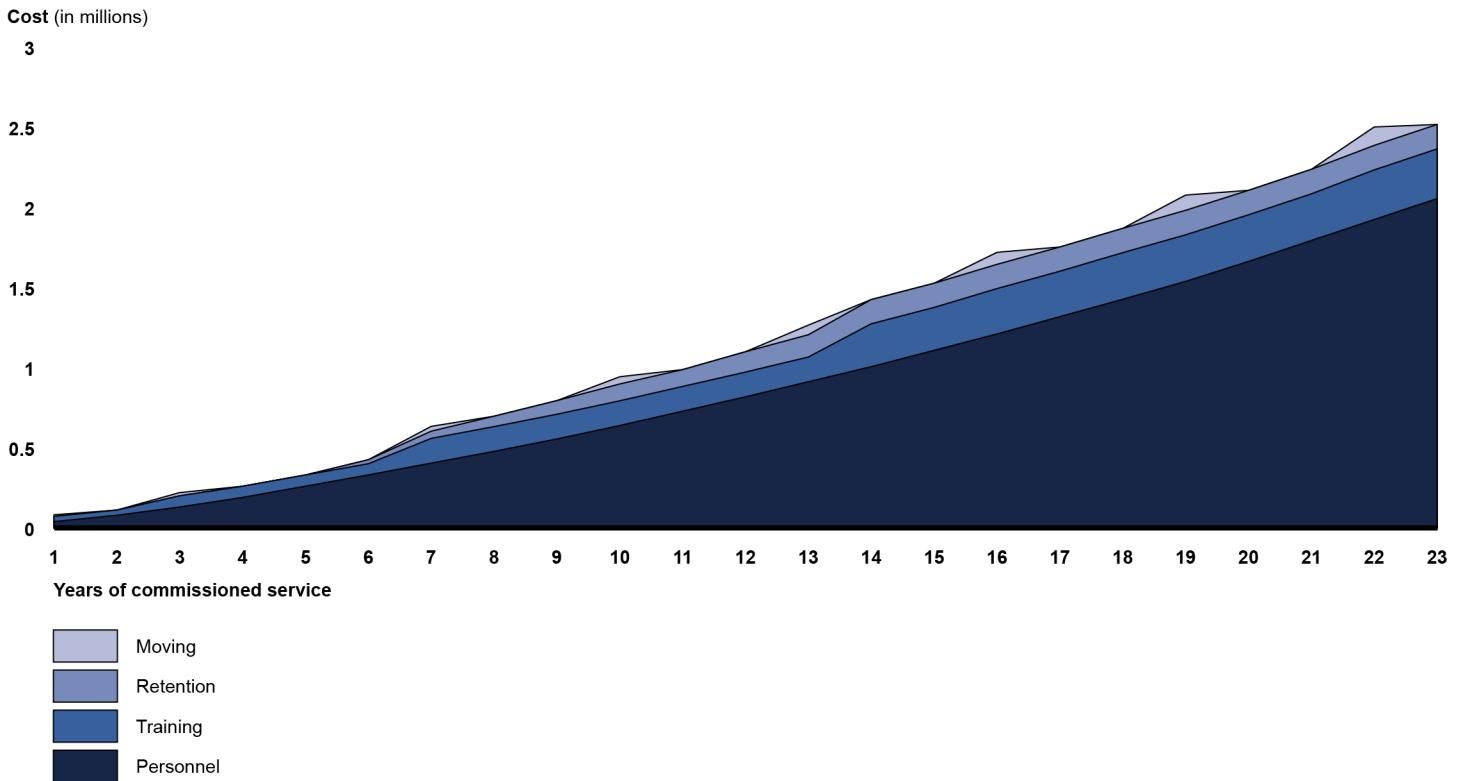
U.S. Navy communities. Specifically, according to our bivariate analysis, SWOs are 31 percent more likely to separate than officers in similar U.S. Navy communities. According to our multivariate analysis—which controlled for factors including accession source, gender, marital status, dependent status, and race—among others—the relationship is even starker. Specifically, we found that SWOs are 60 percent more likely to separate from the SWO community when compared with U.S. Navy Explosive Ordnance Disposal/Special Warfare officers.

Our analysis of the nominal costs of the SWO career path—in terms of personnel, training, retention, and other costs spent on each officer over the course of their career—shows the investment associated with the SWO separation rates we found (see fig. 5).³⁰ Specifically, we found that:

- The U.S. Navy spent roughly \$633,000 on each SWO before becoming Department Heads at 8 years of service.
- The U.S. Navy spent roughly \$942,000 on each SWO after 10 years of service.

³⁰See appendix II for a comparison of nominal costs of the U.S. Navy surface warfare, aviation, and submarine officer career paths. Per-officer costs are based on Navy assumptions and actual costs may vary.

Figure 5: Nominal Personnel, Training, Retention, and Moving Costs of the U.S. Navy Surface Warfare Officer Career Path through 23 Years of Commissioned Service



Source: GAO analysis of Navy data. | GAO-21-168

Note: We used 23 years of commissioned service because that is when a U.S. Navy Surface Warfare Officer nominally starts a Major Command Officer tour. Major Command is a screened command to which a Captain is assigned and for which commander (CDR) command is a prerequisite, such as Commanding Officer Afloat, Area Commander, or Commander of a Shore Activity. We did not include officer accession costs in this figure because these costs are similar across officer communities and are incurred by the U.S. Navy, not the officer community. Officer accession source costs are estimated to be \$280,000 for United States Naval Academy; \$175,000 for Reserve Officers' Training Corps; \$28,000 for Officer Candidate School and Seaman to Admiral 21. Personnel costs are based upon fiscal year 2020 military pay scale. Training costs reflect core training every officer receives. Training costs not included in these totals for each community are platform operational costs accrued while officers are gaining community required individual qualification upgrades throughout their career outside of formal schools. The costs associated with these qualifications are masked because they require on-the-job training and gained experience, according to U.S. Navy officials. Retention costs vary over time based upon retention incentives employed at various times. We did not adjust costs reported by U.S. Navy communities for inflation. Per-officer costs are based on U.S. Navy assumptions and actual costs may vary.

Following the 2017 collisions, the U.S. Navy established plans to make a significant investment in junior SWO training. In November 2019 we found that the U.S. Navy planned to triple ship-driving training hours for junior

SWOs and spend nearly \$500 million on upgraded simulators and curriculum through fiscal year 2025.³¹

U.S. Navy guidance states that the Commander, Naval Surface Forces, is responsible for leading development and coordination of force-wide plans, concepts, and policies to generate ready forces.³² In addition, *Standards for Internal Control in the Federal Government* note that management should demonstrate a commitment to recruit, develop, and retain competent individuals, and have plans with clearly defined goals, performance measures, and timelines.

However, we found that the Commander, Naval Surface Forces, has not yet used available information gathered about SWO separation rates to develop a plan with clearly defined goals; performance measures that identify specific retention rates or determine if initiatives to improve retention are working as planned; and timelines to improve SWO retention rates. U.S. Navy officials stated that they are aware of the high separation rates for SWOs who have completed their mandatory service requirement, and that they would like to improve SWO retention. The U.S. Navy collects and analyzes data on SWO separation rates and they have an initiative underway to change the structure of retention bonuses, but they have not targeted or determined specific retention rates, according to U.S. Navy officials. While these activities could be elements of a larger plan to improve SWO retention, by themselves they do not represent a comprehensive approach to the situation.

By using existing information the U.S. Navy has already gathered on SWO separation rates to develop a plan to improve SWO retention, Commander, Naval Surface Forces, may be able to improve SWO retention and capitalize on the significant investments it has made in SWO training. Further, this may allow Commander, Naval Surface Forces to more effectively meet its personnel needs and retain a combat-ready force.

Female SWOs Separate at Higher Rates than Male SWOs

According to our analysis of Department of Defense personnel data from fiscal year 2004 through March 2020, female SWOs separate at higher

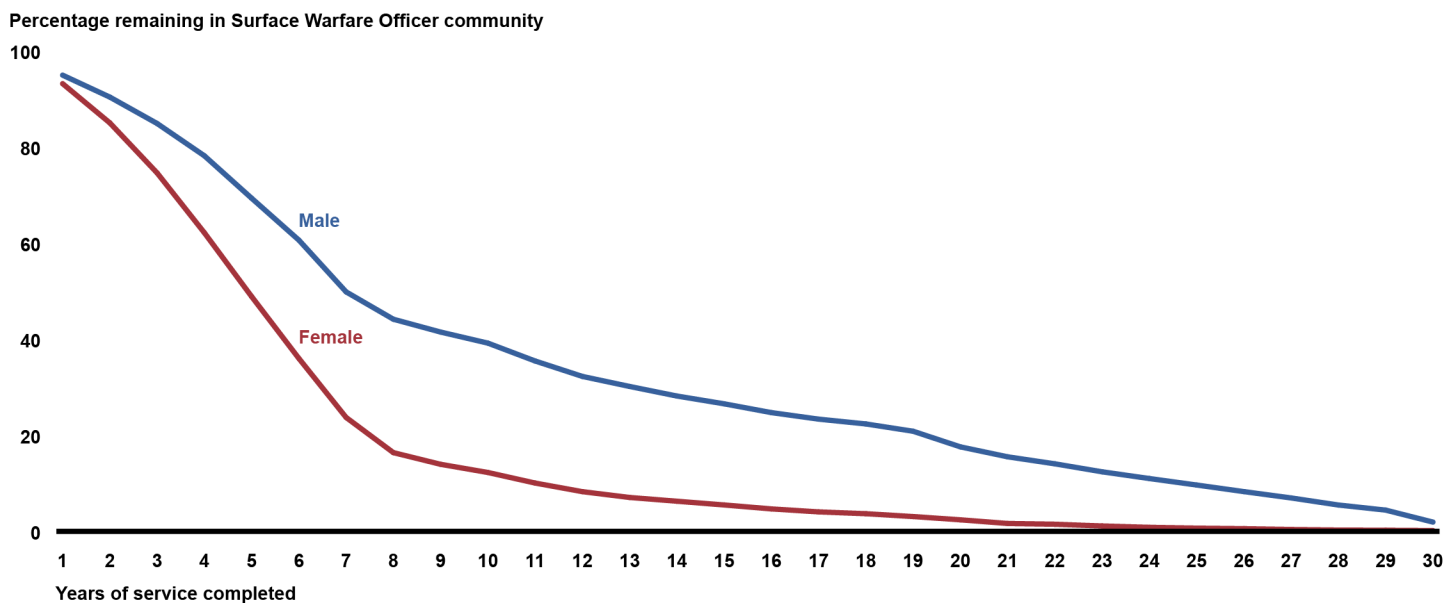
³¹GAO-20-154.

³²Office of the Chief of Naval Operations Instruction 5450.337B, *Missions, Functions, and Tasks of Commander, United States Pacific Fleet* (Jan. 21, 2016).

rates from their community than their male counterparts (see fig. 6). Specifically:

- 84 percent of female SWOs separated from their community before completing 8 years of service, compared with 56 percent of males; and
- 98 percent of female SWOs separate from their community before completing 20 years of service, compared with 82 percent of male SWOs.

Figure 6: Retention Rates for U.S. Navy Surface Warfare Officers, by Gender and Years of Service, Fiscal Years 2004 through March 2020



Source: GAO analysis of Navy data. | GAO-21-168

Note: Separation refers to an officer either leaving the U.S. Navy or transferring to another officer community and directly affects officer retention, which we define as the voluntary continuation of military service.

These results are similar to our previous findings examining officer attrition and separation rates at the military service level.³³ In May 2020, we reported that active-duty female commissioned officers in the U.S. Navy had higher annual attrition rates than their male counterparts, during

³³Attrition is defined as the voluntary and involuntary loss of military personnel prior to completion of the first term of enlistment or obligated duty, while separation is defined as the voluntary or involuntary loss of military personnel other than retirement or death.

fiscal years 2004 through 2018.³⁴ In this same report, we also noted that active-duty female commissioned officers were more likely to separate than their male counterparts, even after controlling for various individual and occupational characteristics such as pay grade categories, marital status, race or ethnicity, education level, occupation, and whether the officer had dependents.

Our statistical analyses on this review showed that female SWOs are more likely to separate from their community than male SWOs.³⁵ Our bivariate analysis—which examines the relationship between gender and the likelihood of separation—found that female active-duty SWOs are 2.2 times more likely to separate than male active-duty SWOs.³⁶ In addition, our multivariate analysis, which controlled for various individual and occupational characteristics—including marital status, race or ethnicity, education level, occupation, and whether the SWO has dependents, among others—found that female active-duty SWOs are 1.5 times more likely to separate from the SWO community, if other personal characteristics remain the same.³⁷

Female representation in the U.S. Navy SWO community is large in relative terms and growing. As of March 2020, female representation in the SWO community is over three times larger than female representation in similar U.S. Navy officer communities (22 percent compared with 7 percent).³⁸ In addition, the proportion of female SWOs has increased

³⁴GAO, *Female Active-Duty Personnel: Guidance and Plans Needed for Recruitment and Retention Efforts*, [GAO-20-61](#) (Washington, D.C.: May 19, 2020).

³⁵Our analysis could not control for all factors that may be associated with separation—such as labor market conditions—and it does not establish a causal relationship. Additional inquiry into each of the observed separation cases would be needed to determine whether there are additional factors that drive these disparities of separation and those that are also associated with different demographic groups in each of these cases.

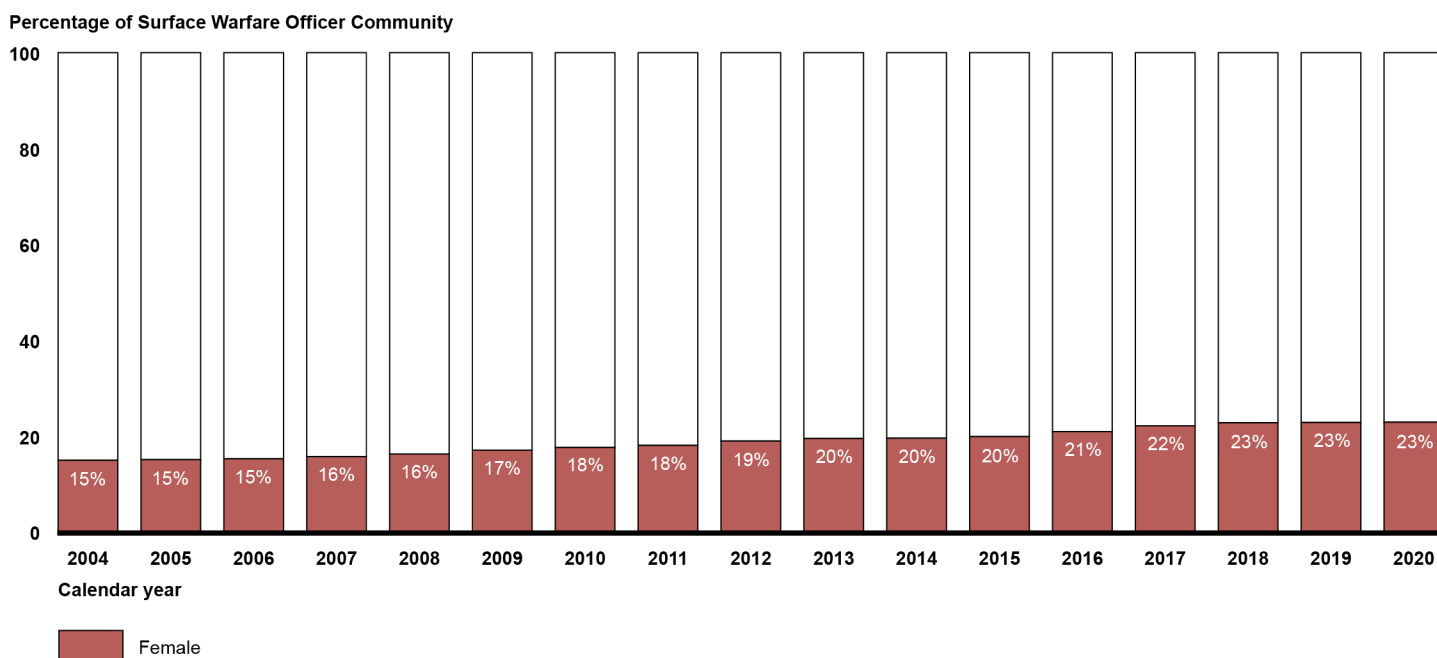
³⁶See appendix I for more information on our bivariate analysis.

³⁷See appendix I for more information on our multivariate analysis.

³⁸According to U.S. Navy officials, female representation is greatest in the SWO community because of several factors including: U.S. Navy policies that have historically prevented female officers from joining the Submarine, Explosive Ordnance Disposal, and Special Operations communities; a perception among female officers that the SWO community is the most accommodating community for family planning; and that female representation is high among the main accession sources for the SWO community.

every year since 2004 from about 15 percent in 2004 to more than 23 percent in March 2020 (see fig. 7).

Figure 7: Female Representation in U.S. Navy Surface Warfare Officer Community, Calendar Years 2004 through 2020



Source: GAO analysis of Navy data. | GAO-21-168

U.S. Navy officials stated they are aware that the proportion of female SWOs has increased each year since 2004, and they expect this trend to continue. U.S. Navy officials stated that the historical growth in the proportion of female SWOs was a result of the U.S. Navy’s continued efforts to increase opportunities for female SWOs. U.S. Navy officials stated that they expect that opportunities for female SWOs will continue to increase in the future, which will result in greater female representation in the SWO community. U.S. Navy officials also stated they are aware of the discrepancy between male and female SWO retention rates.

However, we found that Commander, Naval Surface Forces has not developed a plan to identify actions to increase female SWO retention rates that includes clearly defined goals, performance measures, and timelines. Navy officials told us that they have not identified specific actions to increase female SWO retention rates, and they do not plan to identify specific actions that may increase female SWO retention rates

because they do not consider gender as a factor when developing plans to increase retention.

U.S. Navy guidance states that the Commander, Naval Surface Forces, is responsible for leading development and coordination of force-wide plans, concepts, and policies to generate ready forces.³⁹ U.S. Navy guidance also states that the U.S. Navy should retain a diverse workforce by identifying and removing barriers to retention.⁴⁰ In addition, the 2015 Defense Advisory Committee on Women in the Services report recommended that the U.S. Navy set goals to increase the representation of women in its officer ranks.⁴¹ Further, *Standards for Internal Control in the Federal Government* note that management should demonstrate a commitment to recruit, develop, and retain competent individuals, and have plans with clearly defined goals, performance measures, and timelines.

Without developing a plan to identify actions to increase female SWO retention rates, Commander, Naval Surface Forces will not be positioned to retain a ready force that is representative of the population it serves. In addition, as the proportion of female SWOs continues to increase, a plan to identify actions to increase female SWO retention rates will better position Commander, Naval Surface Forces to retain a diverse and combat-ready community.

The U.S. Navy's Commissioning Practices Limit Surface Warfare Officer Training Opportunities aboard Ships

The U.S. Navy commissions nearly double the number of SWOs needed to meet junior officer personnel needs, which can limit training opportunities aboard ships. The U.S. Navy also commissions junior officers expected to transfer to other U.S. Navy communities; and nuclear-trained SWOs who spend half as much time at sea on surface ships than their peers. We found that the U.S. Navy has not evaluated the effect its commissioning practices for SWOs have on training opportunities aboard ships.

³⁹Office of the Chief of Naval Operations Instruction 5450.337B, *Missions, Functions, and Tasks of Commander, United States Pacific Fleet* (Jan. 21, 2016).

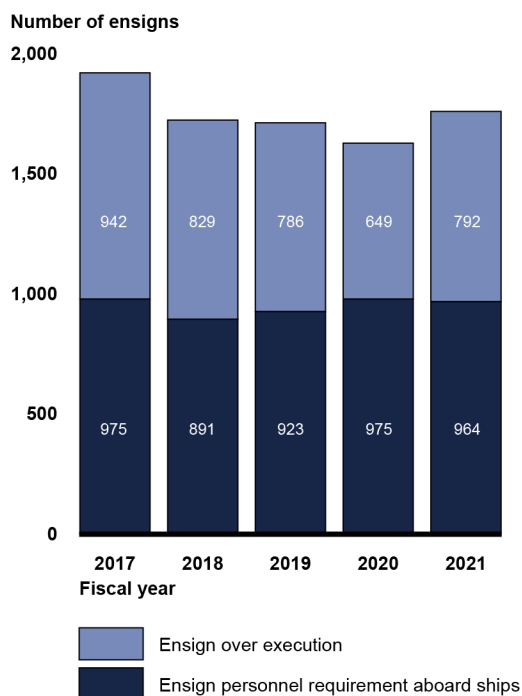
⁴⁰Office of the Chief of Naval Operations Instruction 5420.115, *Navy Diversity Policy Coordination* (Dec. 20, 2012).

⁴¹Defense Advisory Committee on Women in the Services (DACOWITS), 2015 Annual Report (December 2015).

The U.S. Navy Commissions Nearly Double the Number of SWOs Needed to Meet Personnel Needs, Limiting Training Opportunities aboard Ships

We found that the U.S. Navy commissions nearly twice as many SWOs needed to fill junior SWO billets, which can limit training opportunities aboard ships. For example, from fiscal years 2017 through 2021, our analysis shows that the personnel requirement for SWO Ensign—the rank which represents entry-level SWOs—aboard ships averaged 946.⁴² During the same time period, our analysis found that the U.S. Navy exceeded its Ensign requirement—referred to as over execution—by an average of 800 Ensigns, or about 85 percent (see fig. 8).⁴³ According to the U.S. Navy’s Strategic Readiness Review, for over 20 years, the U.S. Navy has consistently commissioned more SWOs than needed to meet annual personnel needs.⁴⁴

Figure 8: U.S. Navy Surface Warfare Officer (SWO) Requirements for Ensigns aboard Ships and Ensign Over Execution, Fiscal Years 2017 through 2021



Source: GAO analysis of Navy data. | GAO-21-168

⁴²The U.S. Navy generally commissions new SWOs at the rank of Ensign.

⁴³Officer over execution means that the U.S. Navy commissions more officers than required and planned for aboard ships.

⁴⁴U.S. Navy, *Strategic Readiness Review 2017* (Dec. 3, 2017).

Notes: The U.S. Navy generally commissions new SWOs as Ensigns, who are then used to fill junior SWO billets on surface ships. The number of Ensigns required aboard ships comes from the U.S. Navy Manpower Analysis Center's Ship Manpower Documents for surface ships. Officer over execution means that the U.S. Navy commissions more officers than required or planned for aboard ships. For the purposes of this analysis we combined all officer over execution positions. Not included in this analysis are positions for students and transients, prisoners, patients, and holders, which adds, on average, about 330 more positions per year.

U.S. Navy officials explained that every year the U.S. Navy commissions more SWOs than required to compensate for low SWO retention to the Department Head milestone (approximately 8 years of commissioned service), as discussed in the previous section. U.S. Navy officials explained that, in broad terms, the number of SWOs commissioned each year is calculated by comparing the number of Department Heads needed after 8 years to average historical SWO retention to the Department Head milestone. U.S. Navy officials stated that SWO retention to the Department Head milestone is low and requires them to commission nearly double the number of SWOs every year than needed, to ensure they have enough Department Heads 8 years later.

After commissioning, all SWOs attend initial training and then are assigned to surface ships as Division Officers, and are considered SWO trainees until they complete specific education requirements including, among others, training in ship operations while at sea. Each surface ship has a specific requirement for the number of junior SWOs it needs and also has a limited number of at-sea training opportunities. As the U.S. Navy has over-commissioned SWOs to account for periods of low SWO retention to Department Head, it has had to assign SWOs to surface ships above the number requirement for junior SWOs. For example, U.S. Navy officials stated that almost all ships have more SWO trainees than the ship's personnel requirement, particularly if the ship is operational. For example, from January through March 2020:

- The USS *Mustin* (DDG-89) averaged 18 SWO trainees aboard the ship against a requirement for six.
- The USS *Monterey* (CG-61) averaged 21 SWO trainees aboard the ship against a requirement for eight.

The U.S. Navy's practice of over-commissioning SWOs limits early career ship-driving training opportunities while at sea. The U.S. Navy's two internal reviews completed after the 2017 mishaps both noted that using historical SWO retention to Department Head as a factor to determine how many SWOs to commission each year results in the over-

commissioning of SWOs, increasing competition for limited training opportunities to qualify as ship drivers aboard ships.⁴⁵

In group discussions we held as part of our review of SWO training in 2019, SWOs identified challenges that Division Officers face in obtaining opportunities to build experience in ship-driving skills.⁴⁶ According to SWOs in seven of 24 group discussions with Department Heads and Division Officers, too many Division Officers were on board ships for each to get sufficient time to qualify as a SWO in a timely manner, or fully develop and maintain ship-driving proficiency. In one particular ship group discussion, 20 Division Officers participated, and according to these SWOs, too many SWOs were competing for the bridge time needed to become proficient at ship-driving. Four Department Heads from the same ship reported similar sentiments. The U.S. Navy's two internal reviews reported similar findings; specifically, the U.S. Navy's Strategic Readiness Review noted that the long-term practice of over-commissioning junior SWOs has directly contributed to declining SWO readiness, while the U.S. Navy's Comprehensive Review noted that the U.S. Navy's practices of over-commissioning SWOs makes it challenging to build proficiency and experience in ship-driving.

Reflections from U.S. Navy Surface Warfare Officer (SWO) survey respondents who believe there are excessive numbers of SWOs aboard ships, which has increased competition for limited opportunities to build proficiency:

"To improve the current SWO career path, I suggest reducing the number of SWOs aboard ships. There are only so many opportunities to stand watch and build proficiency while at sea, and these opportunities are diluted when there are too many SWOs competing for them. Reducing the number of SWOs aboard ships will allow for more experience at the individual SWO level."

"Reduce overmanning at the O-1 to O-2 level. This is taking limited underway training opportunities and spreading them thinner than can be sustained. This is a huge problem that no one wants to address because SWO retention is so difficult."

Source: GAO survey of SWOs. | GAO-21-168

As part of this review, we also surveyed the SWO community on their experiences across their career. Several respondents noted similar experiences as those SWOs we spoke with in 2019, stating that the number of junior officers aboard ships made it challenging for them to build experience in ship-driving skills (see sidebar).

According to U.S. Navy officials, they are aware that over-commissioning SWOs increases competition for training opportunities for junior SWOs while ships are at sea. U.S. Navy officials noted that over-commissioning SWOs can be beneficial, as it provides additional personnel to conduct ship-board duties while at sea. Further, U.S. Navy officials stated that they have taken action to reduce the impact of over-commissioning SWOs on limited at-sea training opportunities. For example:

- The U.S. Navy has expanded the amount of classroom training junior SWOs take, and has begun constructing two new simulator-based training facilities.

⁴⁵U.S. Navy, *Strategic Readiness Review 2017* (Dec. 3, 2017) and U.S. Navy, *Comprehensive Review of Recent Surface Force Incidents* (Oct. 26, 2017).

⁴⁶[GAO-20-154](#).

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- The U.S. Navy has changed its policies on how junior SWOs are assigned to ships and how they complete their at-sea tours in an effort to provide junior SWOs more time at sea to develop proficiency. For example, the U.S. Navy no longer assigns junior SWOs to ships with planned extended maintenance. In addition, a SWO's first at sea assignment has been lengthened from 24 months to 30 months. However, these changes may have exacerbated the issue of hindering training opportunities at sea, since they ultimately reduce the number of ships new officers can serve aboard, further increasing the number of new SWOs aboard ships at sea.
 - The U.S. Navy has restricted access to at-sea ship-driving training opportunities to SWOs only.⁴⁷

The U.S. Navy has implemented a potential means to capture the effects of its commissioning practices on SWO training opportunities. In September 2018, the Commander, Naval Surface Force, U.S. Pacific Fleet and Commander, Naval Surface Force Atlantic, began requiring SWOs to document their ship-driving and related experience in a handwritten logbook.⁴⁸ This logbook—referred to as the Surface Warfare Mariner Skills Logbook—is intended to capture a SWO's experiences during each watch aboard a ship, as well as supply replenishment, sea duty, and training. In November 2019, we reported that, while U.S. Navy officials stated that they intended to analyze data from the logbooks for links between ship-driving proficiency and SWO experience, at that time they did not have any specific, measurable plans to conduct this analysis. We recommended in 2019 that the Navy develop a plan to analyze and use the Mariner Skills Logbook information to inform decision-making. The U.S. Navy concurred with our recommendation. U.S. Navy officials stated that they have taken steps to use the Mariner Skills Logbook data to customize SWO training and are working on more robust data collection and analysis efforts to address our recommendation.

However, we found that the U.S. Navy has not yet analyzed relevant logbook data for trends between the number of SWOs aboard ships and competition for limited training opportunities, and evaluated the extent to which its commissioning practices are affecting training opportunities for

⁴⁷Limited Duty Officers and Warrant Officers are no longer eligible to earn the SWO qualification and use limited at-sea ship-driving training opportunities.

⁴⁸Commander, Naval Surface Force, U.S. Pacific Fleet and Commander, Naval Surface Force Atlantic Instruction 1412.9, *Surface Warfare Mariner Skills Logbook Requirements* (Sept. 6, 2018).

junior SWOs, particularly in ship-driving skills required to address deficiencies that contributed to the 2017 ship collisions. *Standards for Internal Control in the Federal Government* note that management should identify, analyze, and respond to risks related to achieving the defined objectives.⁴⁹

Without analyzing relevant logbook data for links between excess junior SWOs aboard ships and competition for limited training opportunities, and evaluating the effect of over-commissioning SWOs, the U.S. Navy may be missing an opportunity to ensure that SWOs have sufficient and appropriate opportunities to become qualified and proficient officers, particularly in ship driving, and better understand the effect of over-commissioning on SWO retention.

The U.S. Navy Commissions and Trains Junior Officers as SWOs Who Are Guaranteed the Option to Transfer to Other U.S. Navy Career Fields

Every year, the U.S. Navy commissions and trains a select group of junior officers as SWOs who are guaranteed the option to transfer out of the SWO community into other U.S. Navy communities. While these officers can transfer to other U.S. Navy communities in an entirely different career field, commissioning them in the SWO community increases competition for the limited amount of training opportunities aboard ships. We found that from fiscal years 2015 through 2021, the U.S. Navy commissioned on average 60 officers into the SWO community each year, who according to Navy officials, were guaranteed the option to transfer to other U.S. Navy communities within their first 3 years of service. According to U.S. Navy officials, approximately 90 percent of these officers exercise the option to transfer. These officers are used to meet personnel needs for those U.S. Navy communities that do not accept newly commissioned junior officers, such as the U.S. Navy's intelligence, cryptologic warfare, and oceanography communities. They are considered SWOs until they exercise their transfer option, receiving the same qualifications and training.

The U.S. Navy's Strategic Readiness Review noted that excess junior officers in the SWO community serve as the primary source of new officers for other U.S. Navy communities, such as intelligence and information professionals. The review found that these junior officers are given equal access to limited SWO training opportunities aboard ships despite not being required to use these skills if they transfer to another

⁴⁹[GAO-14-704G](#).

U.S. Navy community. It also found that this practice limits the opportunities for career SWOs to develop these formative skills.⁵⁰

During our review, U.S. Navy officials confirmed the findings of the U.S. Navy's Strategic Readiness Review, stating that the SWO community continues to use limited opportunities at sea to train officers who have the option to transfer to other U.S. Navy communities. While the number of officers designated at commissioning who are eligible to convert to another U.S. Navy community is relatively small—approximately 7 percent of the total number of officers commissioned into the SWO community each year—U.S. Navy officials acknowledged those officers are given equal access to limited training opportunities aboard ships which hinders the opportunities for career SWOs to develop these formative skills.

However, the U.S. Navy has not evaluated the extent to which the requirement to train junior officers who will not remain in the SWO community limits training opportunities for those who will remain in the SWO community, or made any related adjustments to the respective career paths. Our prior work on effective human capital planning stresses the importance of agencies maintaining an ongoing strategic workforce planning process that identifies critical skills and competencies and strategies to address gaps and monitors progress toward goals.⁵¹ Without evaluating the effect of training junior officers who will not remain in the SWO community and making any necessary adjustments to their career path, the U.S. Navy may be unable to ensure that career SWOs will have sufficient and appropriate training opportunities to become qualified and proficient officers.

The U.S. Navy Commissions Nuclear-Trained SWOs That Spend Half as Much Time on Ships than Their Peers

We found that from fiscal year 2017 through 2021, the U.S. Navy commissioned, on average, 134 nuclear-trained SWOs each year—approximately 14 percent of the total number of SWOs commissioned—to

⁵⁰U.S. Navy, *Strategic Readiness Review 2017* (Dec. 3, 2017).

⁵¹[GAO-04-39](#).

support aircraft carrier nuclear power requirements.⁵² The primary purpose of the nuclear-trained SWO specialty is to maintain a cadre of SWOs with a sub-specialty in nuclear power. This was particularly useful when the U.S. Navy operated both nuclear-powered cruisers and nuclear-powered aircraft carriers.⁵³ Today, the U.S. Navy's 11 aircraft carriers—of its 176 total surface ships—are the only nuclear-powered ships in the surface fleet.

Our analysis shows that nuclear-trained SWOs spend approximately 50 percent less sea time on performing traditional SWO duties aboard surface ships than their non-nuclear trained peers. Nuclear-trained SWOs instead spend this time performing duties related to their nuclear engineering skillset aboard aircraft carriers rather than executing ship-driving and other core SWO skills. We found that when nuclear-trained SWOs arrive at their prospective commanding officer tour they have, on average, less than half the surface ship experience of their peers (see fig. 9).

Figure 9: Average Years of Experience on Surface Ships for Nuclear-Trained and Non-Nuclear Trained Surface Warfare Officers



Source: GAO analysis of U.S. Navy data. | GAO-21-168

Nuclear-trained SWOs are expected to be proficient in all the same skills and competencies as their non-nuclear trained peers, while also maintaining proficiency in their nuclear specialty. They complete the same classroom training as their non-nuclear trained peers, but they also complete additional training to qualify in the nuclear specialty. This

⁵²The U.S. Navy's 11 aircraft carriers are the largest warships in the world, and are used to support and operate aircraft in support of a variety of operations. Each aircraft carrier is powered by an onboard nuclear-propulsion plant. Nuclear-trained SWOs are responsible for operating and maintaining these plants, and for leading those sailors and officers who support these responsibilities.

⁵³By 1999, the U.S. Navy had decommissioned all nine of its nuclear-powered cruisers from the surface fleet.

additional nuclear training takes them off of surface ships, resulting in less at-sea time.⁵⁴

While serving at sea, nuclear-trained SWOs alternate tours between conventional surface ships (as Division Officers, Department Heads, Executive Officers, and Commanding Officers) and nuclear-powered aircraft carriers where they lead sailors in operating and maintaining the nuclear propulsion plants.⁵⁵ Nuclear-trained SWOs are eligible for the same opportunities to command as their non-nuclear trained peers. However, nuclear-trained SWOs are not eligible to command nuclear-powered ships since the command position aboard aircraft carriers—the only nuclear-powered ships currently in the surface fleet—is reserved for officers from the U.S. Naval Aviation community, and is not open to SWOs.

Reflections from U.S. Navy nuclear-trained Surface Warfare Officer (SWO) survey respondents who believe the nuclear-trained SWO career path does not effectively prepare officers to be proficient nuclear operators or SWOs:

“As a nuclear-trained SWO, I feel it is difficult to both be an expert nuclear operator and an expert SWO. The nuclear-trained SWO career path flip-flops back and forth between the nuclear specialty, and SWO specialty. Consequently, you do not retain the skills and proficiency you develop, which forces you to relearn information from each specialty area every couple years and catch up on what you missed while you were out of that area.”

“As a nuclear-trained SWO, I am a specialist in nuclear power, and I have no issues with the SWO (Nuclear) community, however, I have only had 36 months of time in the past 25 years driving ships as an Officer of the Deck or Tactical Actions Officer. I am a strong proponent of specialty paths.”

Source: GAO survey of SWOs. | GAO-21-168

As part of our survey of the SWO community, we received responses from nuclear-trained SWOs on their experiences across their career. Several respondents noted that they had challenges building and maintaining proficiency in the nuclear specialty and the skills and competencies required of all SWOs (see sidebar).

Our prior work on effective human capital planning stresses the importance of agencies maintaining an ongoing strategic workforce planning process that identifies critical skills and competencies and strategies to address gaps and monitors progress toward goals.⁵⁶ Yet, the U.S. Navy has not:

- reevaluated the need for nuclear-trained SWOs;
- assessed the effect of splitting time between surface ships and aircraft carriers on the officer’s training, expertise, and proficiency; or
- made any adjustments to their career path.

⁵⁴Nuclear-trained SWOs attend 13 months of nuclear-power training—7 months in Charleston, South Carolina, and an additional 6 months either in Charleston, South Carolina or Ballston Spa, New York.

⁵⁵Over a 30-year career in the U.S. Navy, a nuclear-trained SWO can receive more than \$1,000,000 in bonuses, while a non-nuclear trained SWO can receive approximately \$151,000. While all SWOs in the U.S. Navy (including nuclear-trained SWOs) are eligible to receive a standardized set of bonuses based on service commitments and job performance, nuclear-trained SWOs receive an additional set of bonuses because of their specialized qualifications in the nuclear specialty.

⁵⁶[GAO-04-39](#).

This is particularly important as the number of nuclear-powered surface ships has decreased. U.S. Navy officials acknowledged that nuclear-trained SWOs spend less time aboard surface ships and noted that providing nuclear-trained SWOs less time aboard surface ships runs counter to recent U.S. Navy efforts to provide more time aboard ships to develop more proficient SWOs. Without reevaluating the need for nuclear-trained SWOs, assessing the effects of the current training approach, and making any necessary adjustments to their career path, these officers will continue to spend half as much time at sea time on surface ships as their non-nuclear trained peers. As a result, the U.S. Navy may not understand if nuclear-trained SWOs have the appropriate training, expertise, and proficiency as their peers to command surface ships.

The Career Path for U.S. Navy SWOs Differs from Officers in Selected Foreign Navies and Other U.S. Navy and U.S. Maritime Communities

The U.S. Navy has a single generalist career path for its SWOs, while foreign navies and other communities we reviewed specialize their officers in a specific ship department discipline or to serve on a certain ship type. In addition, the policies of the U.S. Navy SWO community differ from selected foreign navies and other communities in several other key areas, including training and proficiency development, and retention measures. For more information on the selected foreign navies and U.S. maritime communities, see appendix III.

U.S. Navy SWOs Have a Generalist Career Path, but Others Specialize Duties

The U.S. Navy SWO community trains its officers in a generalist career path across multiple disciplines, such as ship-driving, engineering, and combat systems, and across multiple categories of ships, such as surface combatants, amphibious, and mine warfare ships. However, the selected foreign navies and other U.S. Navy and U.S. maritime communities specialize their officers in a specific ship department discipline or to serve on a certain ship type. Of these, the navies of Japan and the Republic of Korea, and U.S. Navy Submarine Officers have a generalist career path for junior officers similar to that of U.S. Navy SWOs before specializing these officers in more advanced ranks. See table 1 for a summary comparison of career path models of selected foreign navies and other U.S. Navy and U.S. maritime communities.

Table 1: Summary of the Career Path Models for the U.S. Navy, Selected Foreign Navies, and the U.S. Coast Guard

Organization	Generalist	Specialist by ship department	Specialist by ship type
U.S. Navy Surface Warfare Officers (SWO)	✓	-	-
French Navy SWOs	-	✓	-
Italian Navy SWOs	-	✓	-
Japan Maritime Self-Defense Force SWOs	Early ranks	Advanced ranks	-
Republic of Korea Navy SWOs	Early ranks	-	Advanced ranks
United Kingdom Royal Navy SWOs	-	✓	-
U.S. Navy Submarine Officers	Early ranks	Advanced ranks	-
U.S. Navy Aviation Officers	-	-	✓
U.S. Coast Guard Deck and Engineer Officers	-	✓	-

Source: GAO analysis of U.S. Navy communities, selected foreign navies, and the U.S. Coast Guard. | GAO-21-168

Generalist Career Path

According to the U.S. Navy, it created its SWO career path and training continuum to develop capable ship Commanding Officers with expertise in four areas:

1. seamanship, navigation, and ship handling;
2. combat systems and maritime warfighting;
3. engineering, material readiness, and program management and administration; and
4. command and leadership.⁵⁷

This approach requires U.S. Navy SWOs to train and gain experience across all four of these specialty areas. According to the Commander, Naval Surface Forces, a generalist approach is the best career path for SWOs because Commanding Officers must know how to drive, fight, and lead on their ship, and SWOs with specialist career paths are less prepared for this responsibility than are SWOs with a generalist career path. The Commander, Naval Surface Forces, also stated that while engineering knowledge is not completely transferrable between different ship types, a foundation of systems engineering knowledge is beneficial to ship Commanding Officers. While none of the other nine organizations we selected uses a generalist career path for their officers' entire careers, some of the organizations use a generalist career path for early ranks in

































⁵⁷Commander, Naval Surface Forces Instruction 1412.4A, *Surface Warfare Officer Requirements Document* (Oct. 11, 2018). Throughout this report we refer to a career path where officers are trained across multiple specialties as a generalist career path.

Specialized Career Path by
Ship Department

their officers' career paths, and then transition to specialist career paths at higher ranks.

Six of the nine organizations we reviewed specialized career paths for their officers by ship department duties for at least part of their career. These organizations cited the benefits of increased expertise in officers' assigned departments, contributing to their ability to lead their respective areas of their ships and support navy-wide efforts in shore positions due to their expertise (see fig. 10).

Figure 10: Selected Foreign Navies and U.S. Maritime Communities That Specialize Officer Career Paths by Ship Department Duties

Organization	Career Paths	Career Path Duties	Benefits Cited by Organization
French Navy 	Operations 	Deck operations and weapons departments 	This career path system allows Surface Warfare Officers (SWO) to advance in their assigned areas on numerous ship types, build broad knowledge, and prepare for advanced roles on larger ships, such as the French Navy nuclear aircraft carrier.
	Engineering 	Engineering department 	
Italian Navy 	General Staff 	Deck operations 	This career path system helps General Staff officers to build knowledge of naval operations and ship handling, and prepare them to serve as Commanding Officers and other military leaders. Further, this helps Navy Engineering officers to develop knowledge of ship designs and functions, both to help them in their ship roles and serve in ashore positions as experts in ship design, systems integration, procurement, and maintenance.
	Navy Engineering Sub-specialize into two paths  	Naval and Mechanical Engineering: Ship propulsion and facilities Weapons Engineering: Maintenance of weapons and other systems	
Japan Maritime Self-Defense Force 	Generalist path at early ranks, specialized Department Head positions   	SWOs rotate through all ship departments in early tours, then place into one of six Department Head specializations. All paths are eligible to command ships but not all are required to hold command. 	This career path system helps SWOs develop a broad knowledge of ship operations during their early generalist tours. Further, specialization during Department Head tours allows them to apply their skills more effectively in their assigned department.
United Kingdom Royal Navy 	Warfare 	Deck operations 	This career path system helps develop capable officers in all areas of ship operations. The UK Royal Navy expects Warfare Officers to become Commanding Officers capable of handling complex shipping situations and combat operations. Further, it expects Engineer Officers to conduct preventive and corrective maintenance with expertise and lead ship departments.
	Engineer Sub-specialize into two paths  	Marine Engineering: Ship propulsion and facilities Weapon Engineering: Maintenance of weapons and other systems	
U.S. Navy Submarine Officers  	Generalist path at early ranks, specialized Department Head positions   	Submarine Officers hold Division Officer positions in all submarine departments, then specialize in either operations, engineering, or weapons for Department Head positions. 	This career path system helps Submarine Officers to develop expertise in nuclear propulsion, ship-driving, tactics, and weapons to prioritize submarine safety, stealth, and mission accomplishment. Further, it provides at-sea tactical experience so that submarine Commanding Officers are prepared for independent peacetime and combat operations.
U.S. Coast Guard  	Deck Watch Officers and Operations Afloat 	Deck operations 	This career path system with department specialization produces highly competent ship handlers and engineers, which is appropriate since it is difficult for an officer to be sufficiently skilled in both areas for Coast Guard needs at junior and mid-level grades.
	Student Engineer and Naval Engineer 	Engineering department 	






 Operations
  Engineering
  Weapons
  Expected to command ships
  Can volunteer to command ships

Source: GAO analysis of data from U.S. Navy, U.S. Coast Guard, and selected foreign navies. | GAO-21-168

Specialized Career Paths by Ship Type

Two of the nine organizations we reviewed specialized their officers' careers by ship type for at least part of their career. These organizations cited better proficiency in missions specific to officers' ship type as a benefit of this specialization (see fig. 11).

Figure 11: Selected Foreign Navy and U.S. Maritime Community That Specialize Officer Career Paths by Ship Type

Organization	Career Paths	Career Path Duties	Benefits Cited by Organization
 <p>Republic of Korea Navy</p>	<p>Surface Warfare Officers (SWO) have a generalist career path in early ranks then pick one of four platform specializations for advanced ranks.</p> <p>  </p>	<p>SWOs rotate among departments early in their careers then hold command on a small ship to better understand ship operations. At advanced ranks SWOs specialize in either surface combatant, amphibious, mine warfare, or auxiliary ships.</p> <p style="text-align: right;">★</p>	<p>The Republic of Korea Navy has SWOs begin as generalists to help provide a broad understanding of naval operations. Further, ship type specialization at higher ranks is appropriate due to the significant differences in missions, operations, and ship management concerns among the four ship groups. This specialization allows senior SWOs to better accumulate experience and apply knowledge related to their assigned ship type and missions.</p>
 <p>U.S. Naval Aviation Officers</p>	<p>Naval Aviation Officers are eligible to hold Executive Officer and Commanding Officer positions on ships with major aviation elements.</p>	<p>Naval Aviation Officers can hold Executive Officer and Commanding Officer positions aboard aircraft carriers and amphibious ships, and provide leadership to SWOs on their ships.</p> <p style="text-align: right;">★</p>	<p>The U.S. Navy selects Naval Aviation Officers to lead ships with a sizeable aviation capability to improve ship effectiveness, as the aviation element on these ships supports a significant portion of their missions.</p>

 Operations
  Engineering
  Weapons
  Expected to command ships

Source: GAO analysis of data from Republic of Korea Navy and U.S. Navy. | GAO-21-168

Other Key Differences Exist in Training and Proficiency Development and Retention Practices

Officer Training and Proficiency Development

Other differences exist between U.S. Navy SWO career management practices and those for equivalent officers in foreign navies and other U.S. Navy and U.S. maritime communities, such as in officer training and proficiency development and officer retention measures.

The selected navies and maritime communities we reviewed differ in approaches to key aspects of training SWOs and otherwise developing or assessing their proficiency. For example:

- Commissioning programs for officers with no prior enlisted experience.** The U.S. Navy and Republic of Korea Navy both use variable commissioning programs for SWO candidates with no prior enlisted experience, with both using a Naval Academy, Reserve Officer Training Corps, and Officer Candidate School as major commissioning programs. We found that using a variety of commissioning programs may give more flexibility in recruiting officer candidates from various locations and at different times during the year. The other selected organizations each primarily use a single commissioning program for officer candidates with no prior enlisted experience, such as a Naval Academy or an Officer Candidate School. We found that this approach allows for a standardized training curriculum for officer candidates, leading to a common level of expected proficiency upon joining the surface fleet as an officer.

-
-
- **At-sea ship-driving training method.** Some selected organizations provide ship-driving training at sea for those officers that must learn to drive ships through cruises on a training ship prior to duty on an active warship. We found that this gives a scheduled ship-driving training period, though this may come at higher training cost or occur on a ship type unlike that of officers' assigned ships. The United Kingdom Royal Navy instead require officers to train on an active warship through a dedicated ship-driving training tour for new officers. Finally, some navies require junior officers to participate in ship-driving training during normal sea duty. We found that this approach may allow for more application of training to an officer's assigned ship and flexibility in scheduling, but junior officers may have fewer bridge training opportunities. For example, U.S. Navy SWO survey respondents cited other substantial duties, division of bridge duty among numerous officers, and the maintenance status of their ship as factors that affected their bridge training as junior officers.
 - **Timing of ship-driving evaluation for certification.** Those officers that lead ship-driving teams on the ship bridge, a position called Officer of the Deck in the U.S. Navy, must earn a ship-driving certification. The French Navy evaluates officers for their ship-driving certifications before their first ship-driving tour, and the United Kingdom Royal Navy places junior officers in a ship-driving training tour on an active warship before their first regular sea tour, providing at-sea experience and relevant examinations in early training periods. According to United Kingdom Royal Navy officials, it is appropriate to provide this training and certification in advance so that officers can quickly support watches and other duties on their ship with less need for the ship crew to provide on-the-job training for ship-driving duties aside from a brief requalification period on their new ship. The Republic of Korea Navy, U.S. Navy, and U.S. Coast Guard grant this certification only after officers have completed a series of on-the-job training requirements on an active warship. According to U.S. Navy officials, it is more cost efficient for SWOs to earn their ship-driving qualification during their first tour, and this practice also allows SWOs to train on their assigned warship systems rather than a training platform. Finally, the Italian Navy and Japan Maritime Self-Defense Force take a hybrid approach, evaluating officers for an initial qualification for basic ship-driving duties before a first sea tour so new officers can stand simple watches early in their first tour, and then evaluating officers for full qualification after further on-the-job training.
 - **International or navy-specific ship-driving certification standard.** The navies of France and the United Kingdom hold their officers to an international standard in assessing them for ship-driving

certification.⁵⁸ This approach includes providing the same commercial shipping training to naval officers that is given to commercial shipping operators and using a standardized certification assessment program, and results in an internationally-recognized certification for individual officers. According to United Kingdom Royal Navy officials, this certification is valuable as it provides a common means of proficiency assessment, helps officers interact with other maritime organizations, and helps to maintain a reserve of mariners with military experience, as those officers that leave the Royal Navy can use their certification to find civilian employment and maintain their mariner skills. According to officials from the Japan Maritime Self-Defense Force, their ship-driving certification process is compatible with international standards but officers receive only a national certification to drive warships from Japan's Ministry of Land, Infrastructure, Transportation, and Tourism. The Italian Navy, Republic of Korea Navy, U.S. Navy, and U.S. Coast Guard use a certification standard specific to their own navy, since warship officers are not required to receive international commercial shipping certification. According to U.S. Navy officials, they use a navy-specific approach due to lower training costs and less time spent training on commerce-specific proficiencies that may not fully apply to naval activities, such as cargo container load distribution principles.

Table 2 summarizes these practices among U.S. SWOs, selected foreign navies' SWOs, and other U.S. maritime communities.⁵⁹

⁵⁸The United Nations International Maritime Organization maintains international standards for commercial shipping safety. These standards are set in the International Convention on Standards of Training, Certification and Watchkeeping for Seafarers. Participating nations identify a national authority to grant ship-driving certifications against these standards. The U.S. Coast Guard is this authority for the United States. International Convention on Standards of Training, Certification and Watchkeeping for Seafarers, July 7, 1978, 1361 U.N.T.S. 2 (entered into force Apr. 20, 1984) (incorporating subsequent amendments).

⁵⁹See appendix III for more information on these groups' training and certification programs.

Table 2: Characteristics of Commissioning Programs and Ship-Driving Training for Surface Warfare Officer Equivalents among the U.S. Navy, Selected Foreign Navies, and Other U.S. Navy and U.S. Maritime Communities

Organization	Commissioning programs ^a	At-sea ship-driving training method	Timing of ship-driving evaluation for certification	International or Organization-specific certification ^b
U.S. Navy Surface Warfare Officers	Variable	Training during normal sea duty	During first Division Officer sea tour	U.S. Navy-specific
French Navy	Standardized	Training cruises during commissioning program and ship-driving training cruise after commissioning	During commissioning program	International
Italian Navy	Standardized	Training cruises during commissioning program and training during normal sea duty	Basic during commissioning program, full during first sea tour	Italian Navy-specific
Japan Maritime Self-Defense Force	Standardized	Training cruises during commissioning program, training cruises after commissioning, and training during normal sea duty.	Basic during commissioning program, full during early sea tour	Japanese Navy-specific ^c
Republic of Korea Navy	Variable	Training during normal sea duty	During first Division Officer sea tour	Republic of Korea Navy-specific
United Kingdom Royal Navy	Standardized	Ship-driving training tour ^d	After dedicated ship-driving training tour	International
U.S. Navy Submarine Officers	Variable	Training during normal sea duty	During first Division Officer sea tour	U.S. Navy-specific
U.S. Naval Aviation Officers	Variable	Training during normal sea duty	Prior to Executive Officer tour	U.S. Navy-specific
U.S. Coast Guard	Standardized	Training cruises during commissioning program and training during normal sea duty	During first sea tour	U.S. Coast Guard-specific

Source: GAO analysis of data from U.S. Navy, U.S. Coast Guard, and selected foreign navies. | GAO-21-168

^aThe U.S. Navy and Republic of Korea Navy both use variable commissioning programs for SWO candidates with no prior enlisted experience, with both using a Naval Academy, Reserve Officer Training Corps, and Officer Candidate School as major commissioning programs. The other selected organizations each primarily use a single commissioning program for officer candidates with no prior enlisted experience, such as a Naval Academy or an Officer Candidate School.

^bThe United Nations International Maritime Organization maintains international standards for commercial shipping safety. These standards are set in the International Convention on Standards of Training, Certification and Watchkeeping for Seafarers. International Convention on Standards of Training, Certification and Watchkeeping for Seafarers, July 7, 1978, 1361 U.N.T.S. 2 (entered into force Apr. 20, 1984) (incorporating subsequent amendments).

^cJapan Maritime Self-Defense Force ship-driving certification standards are compatible with commercial shipping standards in the International Convention on Standards of Training, Certification and Watchkeeping for Seafarers, but officers receive only a national certification from the Ministry of Land, Infrastructure, Transportation, and Tourism to drive warships.

^dThe United Kingdom Royal Navy places junior Warfare officers into a ship-driving training tour on an active warship before their regular sea tours to provide ship-driving experience before they are evaluated for ship-driving certification.

Officer Retention Measures

The selected navies and maritime communities we reviewed have a goal of retaining substantial numbers of officers to senior ranks to make use of

their accumulated experience and develop capable senior leaders. These organizations use two common means of supporting retention:

- **Mandatory service requirements.** A navy may implement a mandatory service requirement identifying a minimum service term before an officer is eligible to end their active service. Mandatory service requirements help to maintain officers in service for a predictable minimum amount of time to support ship staffing and other needs.
- **Retention incentives.** A navy may present incentives to officers that increase their likelihood of renewing their terms of service. Common incentives include monetary bonuses, increased shore duty, or additional choice in career planning.

Table 3 summarizes characteristics of retention practices among U.S. SWOs, selected foreign navies' SWOs, and other U.S. maritime communities.

Table 3: Characteristics of Retention Practices for Surface Warfare Officer Equivalents among U.S. Navy, Selected Foreign Navies, and Other U.S. Navy and U.S. Maritime Communities

Officer community	Mandatory service requirement	Retention incentives identified
U.S. Navy Surface Warfare Officers (SWO)	5 years for Naval Academy and Reserve Officer Training Corps graduates and 4 years for Officer Candidate School graduates	Monetary retention bonuses
French Navy SWOs	8 years	Additional shore tours for engineers
Italian Navy SWOs	10 years	Not identified
Japan Maritime Self-Defense Force SWOs	None	Not identified
Republic of Korea Navy SWOs	10 years for Naval Academy graduates, 3 years for Officer Candidate School, and 2 years for Reserve Officer Training Corps	Not identified
United Kingdom Royal Navy SWOs	8 years	Monetary retention bonus, reserved senior positions, and additional shore tours for engineers
U.S. Navy Submarine Officers	5 years	Monetary retention bonuses
U.S. Navy Aviation Officers	8 years for Navy Pilots and 6 years for Naval Flight Officers	Monetary retention bonuses; alternative non-command career path available for mid-level officers
U.S. Coast Guard Officers	5 years for Coast Guard Academy graduates and 3 years for Officer Candidate School graduates ^a	Choice of career path after initial sea tour, including paths without substantial sea duty; monetary retention bonuses; and additional shore tours for engineers

Source: GAO analysis of data from U.S. Navy, U.S. Coast Guard, and selected foreign navies. GAO did not review any foreign laws or regulations; we relied on information from written responses to the questionnaires we sent to foreign navies. | GAO-21-168

^aU.S. Coast Guard officers with prior enlisted experience may have differing mandatory service requirements upon earning their officer commission. For example, a Direct Commission Engineer has

a 3-year extension in service requirement, where a Direct Commission Aviator has a 5-year extension service requirement.

The U.S. Navy Has Recently Made Incremental Career Path Changes for SWOs, but Has Not Regularly Evaluated Alternative Career Path and Proficiency Models

The U.S. Navy made incremental changes to its SWO career path and training following the 2017 collisions at sea; however, the U.S. Navy has not fundamentally changed its SWO career path for more than a century. Based on our survey results, we estimate that 65 percent of U.S. SWOs believe specialized career paths would better prepare SWOs for their duties, compared with 16 percent who believe a generalist path is best. Further, although the goal of the SWO career path is to develop proficient Commanding Officers, according to our survey a substantial number of SWOs do not want to become ship Commanding Officers, and a majority of SWOs believe that the U.S. Navy could improve SWO proficiency development practices. We found a range of perceived advantages and disadvantages to specialized and generalist career paths identified by the foreign navies and U.S. maritime communities we selected. However, the U.S. Navy has not regularly evaluated its current approaches or alternative career path and proficiency models for SWOs.⁶⁰

U.S. Navy Has Made Incremental Changes to SWO Career Path and Proficiency Models

In 1899, following the Spanish-American War, Congress required U.S. Navy engineering officers to join with the general body of U.S. Navy line officers, creating a single career path for officers that covered both of these ship departments.⁶¹ According to U.S. Navy officials, the U.S. Navy further defined the SWO career path in 1970, and in 1975, the U.S. Navy standardized SWO qualification requirements and established Surface Warfare Officers School Command to manage SWO training. Subsequent changes included modifications to training, such as the establishment of engineering and damage control courses and the use of training simulators. In addition, the U.S. Navy made incremental changes to SWO career paths, such as adjusting sea tours to allow SWOs to serve as both Executive Officer and Commanding Officer on the same ship.

Following the 2017 collisions at sea and deaths of 17 sailors, the U.S. Navy's Comprehensive Review of Recent Surface Force Incidents and Strategic Readiness Review identified issues with SWO career paths and

⁶⁰For more information on our survey and results, see appendix IV.

⁶¹Fifty-fifth Congress, Session III, Chapter 413, *An Act to reorganize and increase the efficiency of the personnel of the Navy and Marine Corps of the United States* (Mar. 3, 1899).

training that contributed to the collisions.⁶² The U.S. Navy again made incremental changes to the SWO career path to address recommendations from these reviews. For example, the U.S. Navy lengthened training, extended the first sea tour to give more time to earn qualifications, and required SWOs to be ship officers in their second tour rather than serve in administrative staff positions. While the U.S. Navy continues to make incremental changes like these to the SWO career path, the generalist career path established in 1899 remains the primary model.

A Majority of SWOs Believe That Specialized Career Paths Would Be Best for the U.S. Navy

Based on our survey results, we estimate that 65 percent of SWOs believe that specialized SWO career paths would best prepare them for their duties, compared with 16 percent who believe that a generalist model like the current career path is best (see fig. 12).⁶³

⁶²U.S. Navy, Chief of Naval Operations, *Comprehensive Review of Recent Surface Force Incidents*, Oct. 26, 2017 and U.S. Navy, Secretary of the Navy, *Strategic Readiness Review 2017*, Dec. 3, 2017.

⁶³We conducted a survey with a sample size of 858 active SWOs. Our survey had a response rate of 41 percent, with 351 of the 858 SWOs responding to the survey. Survey results are presented as estimates to the full population of U.S. Navy Surface Warfare Officers and have margins of error, at the 95 percent confidence level, of plus or minus 10 percentage points or fewer, unless otherwise noted.

Reflections from U.S. Navy Surface Warfare Officer (SWO) survey respondents who believe specialized career paths would best prepare SWOs:

“The generalist SWO career path may have worked well 50 years ago, but waterways are becoming incredibly congested (especially where the U.S. Navy operates), combat systems and tactics are becoming more technical and pressurized with our now-peer super powers like China, and we generally have too few resources (people and ships) to meet the Combatant Command operational demands. We need our personnel to be highly trained and able to execute their duties professionally when they step onboard. Expecting SWOs to be jacks of all trades and masters of none is no longer adequate in this day and age. We should have specialized SWOs in ship navigation, tactics and combat systems employment, and in engineering.”

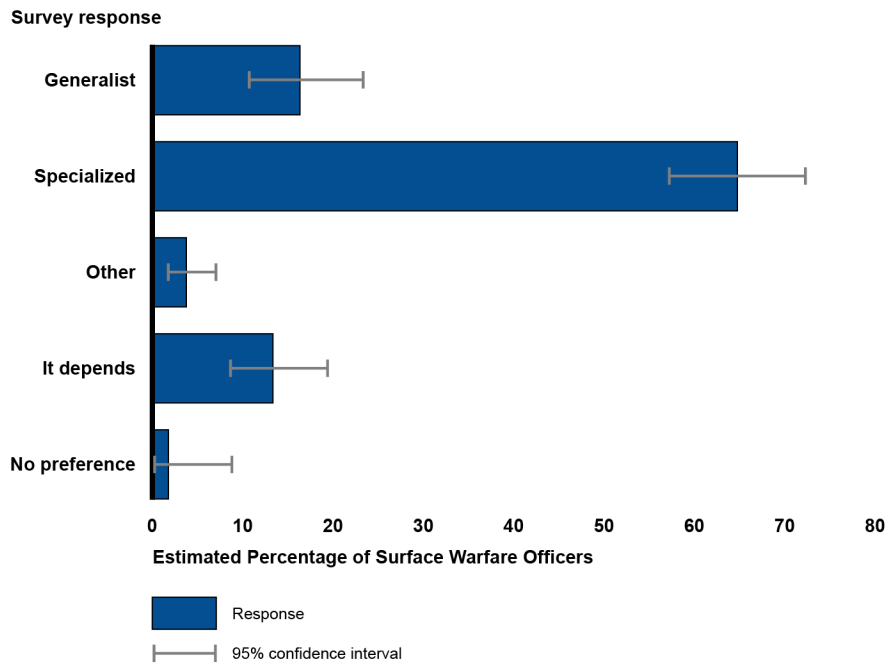
“I feel the current model causes imbalance across the four proficiency areas depending on your Division Officer and Department Head assignments. You can qualify to drive the ship as an Ensign, and never do so again in your career. Engineers tend to be great at engineering and managing material condition of the ship, but are hurt in seamanship and/or tactical ability. Operations and Combat Systems types tend to fair better at tactical operations, but become limited in engineering knowledge, which is a hindrance later in command, especially if your Executive Officer and/or Engineer are not strong in engineering. Very few officers become fully proficient across all four areas. I know I did not to the level I would have liked to.”

“Being a Commanding Officer is not the desire of many SWOs. Most enjoy being a SWO, but would rather have a chance to specialize in areas they enjoy and are good at. This would increase morale and job satisfaction which would increase retention. It would also provide the community a pool of officers suited to the multitude of jobs we have available and need filled but are often seen as “career killers” because they take you off the path towards becoming a Commanding Officer.”

“The generalist path may be familiar, but that does not necessarily mean it is better. The areas that I need to be strongest in all involve navigation, seamanship, and tactical operations. The generalist path does not guarantee experience in these areas.”

Source: GAO survey of SWOs. | GAO-21-168

Figure 12: Survey-Based Estimates on What Career Path Would Best Prepare U.S. Navy Surface Warfare Officers for Duty



Source: GAO survey of U.S. Navy Surface Warfare Officers. | GAO-21-168

Note: Estimates included in this figure are from a generalizable survey of Surface Warfare Officers and have a margin of error, at the 95 percent confidence level of plus or minus 8 percentage points or fewer.

Survey respondents who stated specialized career paths would best prepare SWOs for their duties gave the following reasons as the most common responses (see sidebar):

- SWOs are more effective if they have mastery of a particular ship department rather than attempting to learn the full range of ship operations.
- Not all SWOs have the aptitude or interest to become ship Commanding Officers, so there should be career options that do not involve ship command to recruit and retain SWOs with valuable skills.
- The low level of SWO experience in certain ship departments or long gaps between certain SWO experiences [for example, time driving ships at sea or time spent in the engineering department] is detrimental to the quality of SWOs and ship operations.
- Opinion based on observation of other navies.

Reflections from a U.S. Navy Surface Warfare Officer (SWO) survey respondent who believes the generalist career path best prepares SWOs:

“I think the generalist career path focuses on risk management, judgment, and leadership as well as the requisite skills to be effective as a SWO and Commanding Officer. The pace of technology and near-peer competitors requires Commanding Officers who are leaders and decision-makers, not subject matter experts.”

Source: GAO survey of SWOs. | GAO-21-168

-
- Commanding Officers are more effective if they specialize in deck activities such as navigation, ship-handling, and tactics, as these are the primary skills exercised by a Commanding Officer.
 - Having a choice of area of interest would help morale and crew quality.

Survey respondents who stated that a generalist career path would best prepare SWOs for their duties gave the following reasons as the most common responses (see sidebar):

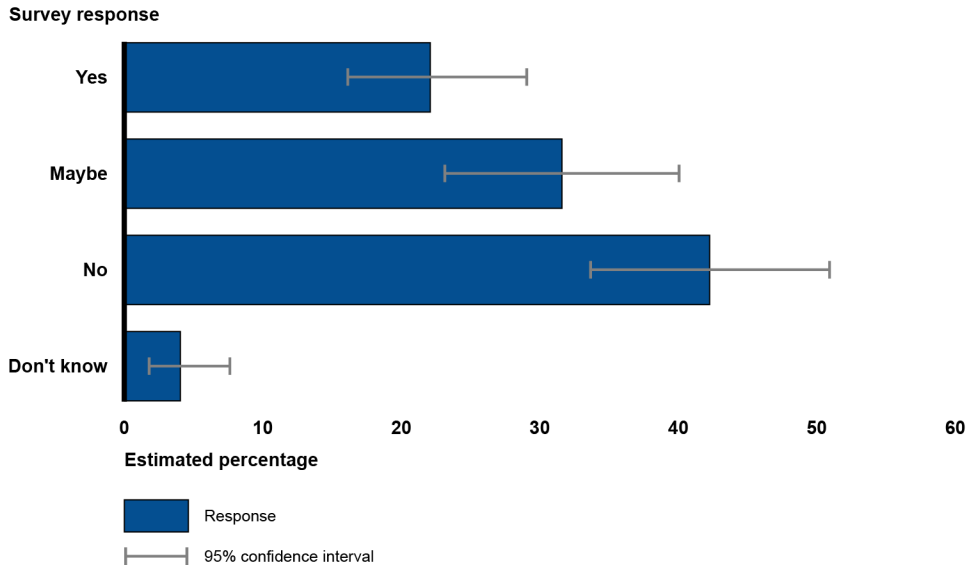
- Commanding Officers need to understand the operations of all ship departments to be effective.
- SWOs are more effective if they are exposed to different ship departments and understand the full range of ship operations.
- Opinion based on observation of other navies.
- The primary purpose of SWOs is to provide general ship leadership; enlisted sailors and other officers should handle specialized duties.

Those U.S. Navy SWOs who did not have a clear preference for generalist or specialized career paths cited advantages and disadvantages to both approaches, and in some cases recommended alternative models, such as generalist Division Officer tours and specialized Department Head tours, or specialization by ship type.

A Substantial Number of SWOs Do Not Want to Become Ship Commanding Officers

Although the U.S. Navy SWO career path has a goal of developing proficient, experienced, and confident Commanding Officers, we estimate that about 42 percent of U.S. Navy SWOs in the O-1 to O-6 grades who have not served as Commanding Officers do not want to become a Commanding Officer—an option not currently available to senior U.S. Navy SWOs—and an additional 36 percent are unsure. Only 22 percent wish to become Commanding Officers (see fig. 13).

Figure 13: Survey-Based Estimates of U.S. Navy Surface Warfare Officers Who Have Not Held Command on Whether They Would Like to Become Commanding Officers



Source: GAO survey of U.S. Navy Surface Warfare Officers. | GAO-21-168

Note: Estimates included in this figure are from a generalizable survey of U.S. Navy Surface Warfare Officers and have a margin of error, at the 95 percent confidence level of plus or minus 9 percentage points or fewer.

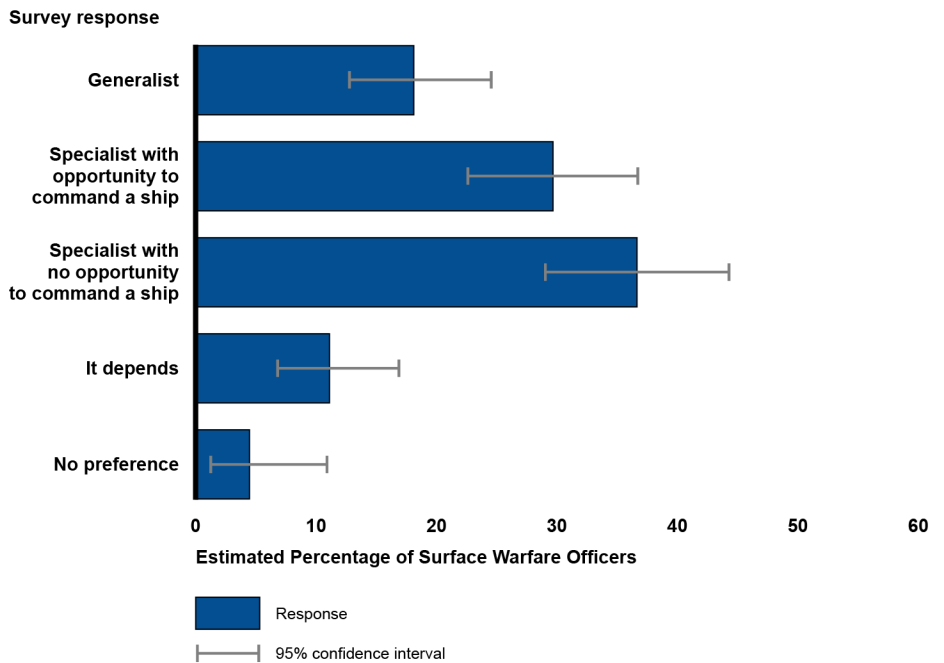
Of U.S. Navy SWOs at the O-4 grade and higher who have not already been ship Commanding Officers, 49 percent wish to become Commanding Officers, but 29 percent do not want to become Commanding Officers and 22 percent are uncertain.⁶⁴ These responses illustrate that even a significant number of SWOs who have already completed their initial mandatory service requirement are not certain they want to pursue ship command—the goal of the SWO career path and the only career path option available to senior SWOs.

When asked for their personal preference of career path option, 18 percent of U.S. Navy SWOs prefer the current generalist career path for themselves, 30 percent prefer a specialized career path that leads to ship

⁶⁴Estimates included have a margin of error, at the 95 percent confidence level of plus or minus 11 percentage points or fewer. Military officers have a personnel grade associated with their rank and pay. In the U.S. Navy, the O-1 to O-6 grades include the main body of officers, from the ranks of Ensign at O-1 to Captain at O-6. The O-7 to O-10 grades include senior leadership, from the ranks of Rear Admiral (lower half) at O-7 to Admiral at O-10. 37 U.S.C. § 201(a).

command while 37 percent prefer a specialized career path that does not lead to ship command, and 16 percent responded it depends or no preference (see fig. 14).

Figure 14: Survey-Based Estimates of U.S. Navy Surface Warfare Officer Personal Preference of Career Path

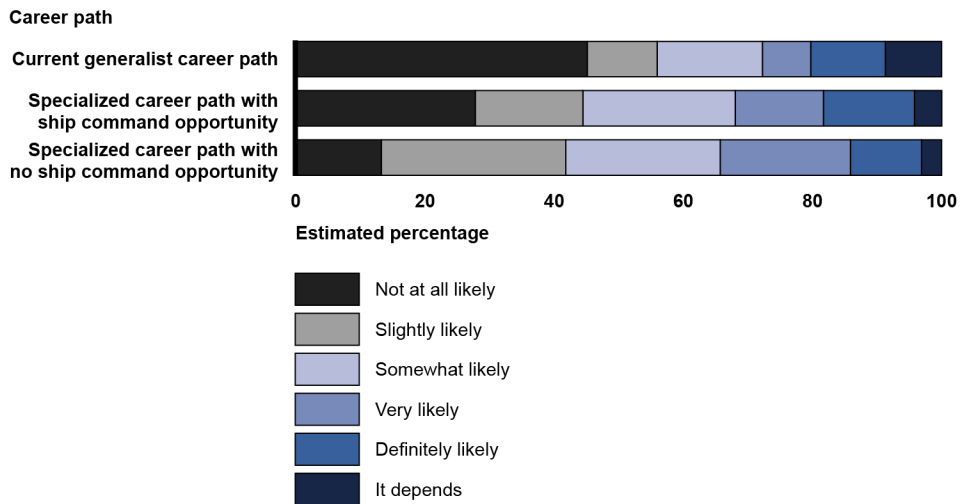


Source: GAO survey of U.S. Navy Surface Warfare Officers. | GAO-21-168

Note: Estimates included in this figure are from a generalizable survey of U.S. Navy Surface Warfare Officers and have a margin of error, at the 95 percent confidence level of plus or minus 8 percentage points or fewer.

In our survey, we asked junior U.S. Navy SWOs at the O-1 to O-3 grades how likely they would be to remain in the U.S. Navy if placed in the generalist career path, a specialized career path that leads to ship command, or a specialized career path that does not lead to command. Junior SWOs reported higher overall likelihood of retention with specialized career paths, including in a path that does not provide the opportunity to command a ship (see fig. 15).

Figure 15: O-1 to O-3 Grade U.S. Navy Surface Warfare Officers' Survey-Based Estimates of Likelihood of Retention if Placed in Various Career Paths



Source: GAO survey of U.S. Navy Surface Warfare Officers. | GAO-21-168

Notes: Estimates included in this figure are from a generalizable survey and have a margin of error, at the 95 percent confidence level of plus or minus 12 percentage points or fewer. Military officers have a personnel grade associated with their rank and pay ranging from O-1 to O-10. Lower grades include junior officers, in the U.S. Navy representing the ranks of Ensign at O-1, Lieutenant (junior grade) at O-2, and Lieutenant at O-3. 37 U.S.C. § 201(a).

The difference shown between current policies and those preferred by U.S. Navy SWOs illustrate that changes to the SWO career path may have benefits other than the stated goal of Commanding Officer proficiency, such as higher retention and job satisfaction through a preferred career path.

A Majority of SWOs Believe the U.S. Navy Could Improve Proficiency Requirements for Commanding Officers and Other SWOs

According to our survey results, a majority of U.S. Navy SWOs also believe the U.S. Navy could improve Commanding Officer proficiency, the main goal of the current SWO career path. For example, an estimated 42 percent of SWOs believe that the current U.S. Navy SWO career path was only slightly effective or not effective at all in developing experienced Commanding Officers (see fig. 16).

Reflections from U.S. Navy Surface Warfare Officer (SWO) survey respondents recommending changes to SWO training to provide additional opportunities to develop the skills needed to perform as a SWO:

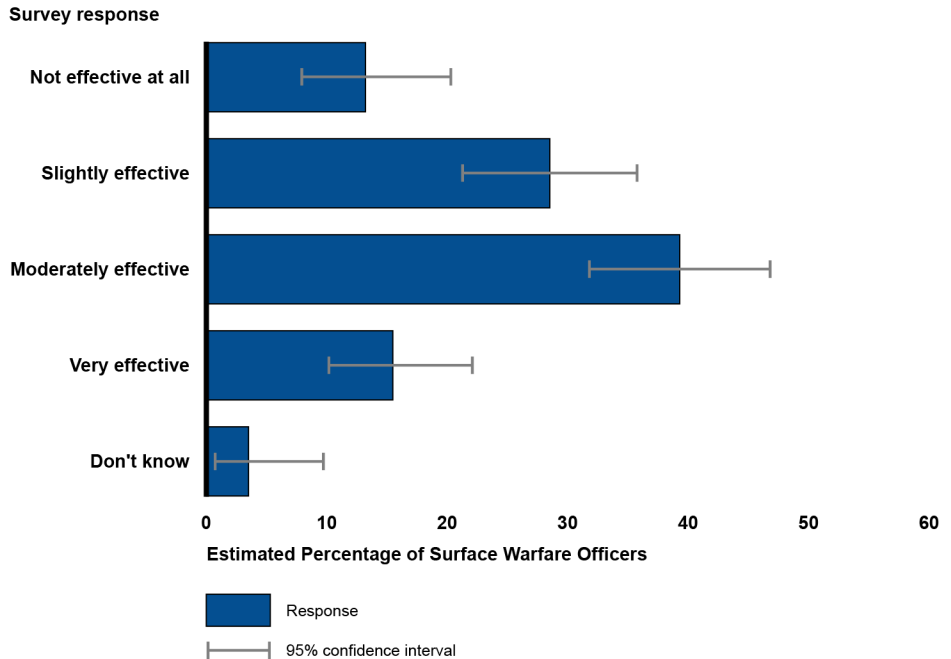
“More formal training. The schoolhouses along the SWO pipeline are good, but with only 8 weeks of training to be a Division Officer, 6 months of training to be a Department Head, and 4-6 months to be a Commanding Officer and Executive Officer, there is way too much information to effectively learn. The burden falls to the officer at sea to pick up as he goes along.”

“Providing SWOs with the opportunity to and incentivizing them to stay in touch with the ship-handling skills that are critical to successful Executive Officer and Commanding Officer tours. I have no idea if this is practical, but perhaps adding ship-handling simulators at common shore duty locations such as the Pentagon? This would allow these SWOs to dedicate some hours a week to what I believe is our core skill.”

“For Division Officers, and even junior sailors, designated training ships would be very beneficial. Simulators and school houses can only accomplish so much. Though a training squadron of ships may be logistically and fiscally difficult, the potential benefits are great. These training ships could provide sufficient time to learn while training, as opposed to learn while operating. They could even be training opportunities for command and major command. Have the Commanding Officers of these training ships be officers selected for early command, and the commodores be post O-5 command officers selected for major command.”

Source: GAO survey of SWOs. | GAO-21-168

Figure 16: Survey-Based Estimates of Observed Effectiveness of Current U.S. Navy Surface Warfare Officer Career Path in Developing Experienced Commanding Officers



Source: GAO survey of U.S. Navy Surface Warfare Officers. | GAO-21-168

Note: Estimates included in this figure are from a generalizable survey and have a margin of error, at the 95 percent confidence level of plus or minus 8 percentage points or fewer.

When asked if changes other than career path modifications would benefit the U.S. Navy SWO community, respondents most frequently suggested changes to training (see sidebar). Such responses recommended additional entry-level training; training throughout their careers; training in various topics such as ship-driving, engineering, tactics, and leadership; increased access to ship-driving simulators for U.S. Navy SWOs in shore duty and other times; and the implementation of ship-driving training at sea for junior officers before their first regular sea tour.⁶⁵

⁶⁵See appendix IV for more information on survey responses.

Other Career Path and Proficiency Policies Present Advantages and Disadvantages

Other career path and proficiency policies we examined for selected foreign navies and U.S. maritime communities have potential advantages that may be of value to the U.S. Navy in considering potential changes to its own policies, along with potential disadvantages to consider.

Department Specialization with No Ship Command for Engineers

Both the Italian Navy and United Kingdom Royal Navy split their SWO career paths between operations and engineering responsibilities for their full career, with no option for engineers to command ships. These navies cited the benefits of having officers highly trained and well-experienced in their assigned areas of expertise, and the value of specialized engineering officers in supporting shore-based engineering activities such as ship design, acquisition, and maintenance. According to Italian Navy and UK Royal Navy officials, since their Commanding Officers do not hold tours in the engineering department, these navies provide training in engineering concepts to prepare Commanding Officers to understand ship systems and damage control, and work to develop clear communication between the Commanding Officer and Chief Engineer onboard ships.

Both navies reported difficulty in retaining engineering officers due to fewer career opportunities within their navy and more career opportunities for engineers in the private sector. According to United Kingdom Royal Navy officials, the United Kingdom Royal Navy has reserved additional senior officer positions for engineers and provides a monetary retention bonus for engineers, which have helped improve engineering officer retention in recent years.

Department Specialization with Ship Command Option for Engineers

The French Navy and U.S. Coast Guard split their SWO career paths between operations and engineering responsibilities for their full career, and provide an option for engineering officers to voluntarily pursue ship command. Like the Italian and United Kingdom navies, these organizations cited benefits of highly trained and experienced officers, and the value of senior engineers in shore positions. Likewise, according to French Navy and U.S. Coast Guard officials, both organizations provide some engineering and damage control training to prospective Commanding Officers and work to keep clear communication between the bridge and Chief Engineer. The French Navy and U.S. Coast Guard officials identified benefits of a ship command option for engineers—a command option provides more advancement opportunities for engineers, helps to address senior ship officer staffing shortfalls, and provides a retention incentive for those engineers that enjoy sea duty or desire to hold ship command.

While they do not attribute all of their retention success to their career path models, the French Navy reported a retention rate beyond the initial mandatory service requirement of 90 percent, and the U.S. Coast Guard reported a retention rate of 81 percent—the highest reported retention rates of organizations we reviewed.⁶⁶

Generalist Junior Officer Tours with Mid-Career Specialization

The Japan Maritime Self-Defense Force, Republic of Korea Navy, and U.S. Navy Submarine officer community each place their officers into generalist roles in early tours before allowing them to select a specialization mid-career. Japan Maritime Self-Defense Force and U.S. Submarine officers specialize by department after early tours, and Republic of Korea Navy officers specialize by ship type. These organizations cite the benefit of this approach allowing officers to gain a broad knowledge of ship and naval operations by rotating through different positions in early tours, then leading ship crews more effectively in a particular area of expertise as they advance in their career. Both the Republic of Korea Navy and U.S. Submarine community expect all sufficiently advanced officers to hold ship command. The Japan Maritime Self-Defense Force selects SWOs of all specializations to pursue ship command, but does not select SWOs at the same rate from each specialization—for example, according to Japan Maritime Self-Defense Force officials, few engineers are selected for ship command.

U.S. Navy Has Not Taken Key Strategic Workforce Planning Actions for SWOs That Evaluates the Navy's Current Approaches or Alternative Career Path and Proficiency Models

U.S. Navy guidance identifies expected SWO competencies and the SWO career path goal of developing experienced and capable ship Commanding Officers.⁶⁷ However, the U.S. Navy has been hindered in implementing a strategic workforce planning process—a process focused on ensuring human capital policies effectively support agency requirements—for its SWOs because the Navy has not:

- regularly evaluated the effectiveness of the current SWO career path, training, and policies in successfully developing and retaining proficient SWOs—including evaluating the Navy's approach against other career path and proficiency models and soliciting and incorporating the views of all levels of the SWO community; or

⁶⁶While the U.S. Coast Guard reported an overall retention rate of 81 percent for operations and engineering officers, this reflects the retention of these officers into any U.S. Coast Guard career path, including those with primarily only shore duty. U.S. Coast Guard officers can select alternative career paths that do not involve future positions as ship officers.

⁶⁷Commander, Naval Surface Forces Instruction 1412.4A, *Surface Warfare Officer Requirements Document* (Oct. 11, 2018).

-
- implemented workforce strategies—changes to SWO career path, training, and policies as well as the implementation of pilot programs to evaluate potential changes—based on any evaluations that are aimed at making improvements to the Navy’s ability to effectively develop SWOs.

Officials from the office of the Commander, Naval Surface Forces expressed concern that other career paths for SWOs would not sufficiently develop Commanding Officer proficiency or may hamper effective communication between ship departments. However, the Navy has not conducted analysis to support this position; thus, it could not provide evidence that this would be the case. These officials report that they engage in informal dialogue with other organizations on career path structures, but they have not considered other career paths for U.S. Navy SWOs. Furthermore, the Commander, Naval Surface Forces was not aware of any current or prior efforts to evaluate the SWO generalist career path against other models.

U.S. Navy guidance states that Commander, Naval Surface Forces is responsible for leading development and coordination of force-wide plans, concepts, and policies to generate ready forces.⁶⁸ Federal agencies can benefit by maintaining an ongoing workforce planning process to help ensure that their human capital policies best support agency requirements, according to our prior work on effective human capital planning. This work stresses the importance of agencies maintaining an ongoing strategic workforce planning process that includes input from all workforce levels, identifies critical skills and competencies and strategies to address gaps, monitors progress toward goals, and other characteristics.⁶⁹ Further, these principles emphasize that agencies should develop strategies tailored to address gaps and human capital conditions in critical skills and competencies that need attention. Strategies include the programs, policies, and practices that will enable an agency to recruit, develop, and retain the critical staff needed to achieve program goals and create a road map for an agency to achieve program goals. Such strategies could include policy changes to address identified gaps, pilot programs to test potential policy changes in addressing gaps, or other measures.

⁶⁸Office of the Chief of Naval Operations Instruction 5450.337B, *Missions, Functions, and Tasks of Commander, United States Pacific Fleet* (Jan. 21, 2016).

⁶⁹[GAO-04-39](#).

Taking key strategic workforce planning actions on a regular basis—regularly evaluating the effectiveness of the Navy’s current approaches, including alternative career path and proficiency models and implementing any strategies to address key findings of such evaluations—would position the Navy to improve the health and competence of the SWO community. Without these key strategic workforce planning actions, the U.S. Navy may miss opportunities to develop and to retain more competent and proficient SWOs—a persistent issue for the U.S. Navy.

Conclusions

SWOs play a critical role in U.S. Navy surface fleet readiness, as they are responsible for safely operating ships at sea and successfully leading ships in U.S. Navy operations across the world. After the deadly collisions of 2017, the U.S. Navy acknowledged a range of challenges associated with the SWO career path and expanded training and junior officer development opportunities to begin to address them. However, the U.S. Navy has not made fundamental changes to its SWO career path for more than a century. Nearly every other community we reviewed—five foreign navies, the U.S. Navy’s own submarine and aviation community, and the U.S. Coast Guard—train their officers in a specific discipline, citing the benefits associated with specialization, including greater experience and expertise.

The challenges facing the U.S. Navy SWO community are wide-ranging. SWOs leave the SWO community earlier in their careers and at a higher rate compared with similar U.S. Navy officer communities. Also, female SWOs are more likely to leave the SWO community than their male counterparts, at a time when female representation is growing. U.S. Navy officials are aware of the SWO communities’ high separation rates, but have not used existing information to develop a plan with clearly defined goals, performance measures that identify specific retention rates or determine if initiatives to improve retention are working as planned, and timelines to improve SWO retention rates. Doing so would better position the U.S. Navy to more effectively meet its personnel needs, capitalize on the significant investments made in training SWOs, and retain a more diverse and combat-ready force.

Since the U.S. Navy struggles to retain SWOs, it has to commission nearly twice as many SWOs on average every year than it needs to fill junior SWO positions aboard ships. This practice of over-commissioning can limit training opportunities aboard ships in key skills like ship driving. But, the U.S. Navy has not analyzed relevant data for trends between the number of SWOs aboard ships and competition for limited training

opportunities, or evaluated the extent to which its commissioning practices are affecting training opportunities for junior SWOs. In addition, more than 20 percent of new SWOs commissioned are expected to either leave the SWO community for another U.S. Navy community or split their time between surface ships and nuclear training requirements aboard aircraft carriers. The U.S. Navy has not evaluated the extent to which the requirement to train these officers who will not remain in the SWO community limits training opportunities for other SWOs or reevaluated the need for nuclear-trained SWOs more broadly as the number of nuclear-powered surface ships has decreased. Without conducting these evaluations, the U.S. Navy may be unable to ensure that SWOs will have sufficient and appropriate training opportunities to become qualified and proficient officers.

U.S. Navy SWOs are open to change. By a margin of four to one, U.S. Navy SWOs believe specialized career paths would better prepare them for their duties. Although the U.S. SWO career path has a goal of developing proficient Commanding Officers, a significant number of SWOs do not want to become ship Commanding Officers—an option not currently available to senior U.S. Navy SWOs—and junior SWOs reported higher overall likelihood of retention with specialized career paths, including in a path that does not provide the opportunity to command a ship. However, the U.S. Navy has not established an ongoing strategic workforce planning process that evaluates current approaches and other SWO career and proficiency models for potential benefit. It has also not enacted policy changes, pilot programs, or similar measures that may be appropriate based on the findings of ongoing evaluation of alternative models and input from U.S. Navy SWOs at all levels. Without evaluating other career and proficiency models for potential benefit, the U.S. Navy may miss opportunities to develop and to retain competent and proficient SWOs.

Recommendations for Executive Action

We are making a total of seven recommendations to the U.S. Department of the Navy.

The Secretary of the Navy should ensure the Commander, Naval Surface Forces, uses information gathered on Surface Warfare Officer separation rates to develop a plan with clearly defined goals; performance measures that identify specific retention rates or determine if initiatives to improve retention are working as planned; and timelines to improve Surface Warfare Officer retention rates. (Recommendation 1)

The Secretary of the Navy should ensure the Commander, Naval Surface Forces, develops a plan to identify actions to increase female Surface Warfare Officer retention rates that includes clearly defined goals, performance measures, and timelines. (Recommendation 2)

The Secretary of the Navy should ensure the Commander, Naval Surface Forces, analyzes relevant logbook data for trends between the number of Surface Warfare Officers aboard ships and competition for limited training opportunities, and evaluates the extent to which its commissioning practices are affecting training opportunities for Surface Warfare Officers. (Recommendation 3)

The Secretary of the Navy should ensure the Commander, Naval Surface Forces, in coordination with other U.S. Navy communities, evaluates the extent to which the requirement to train junior officers who will not remain in the Surface Warfare Officer community limits training opportunities for those who will remain in the Surface Warfare Officer community and make any related adjustments to their respective career path. (Recommendation 4)

The Secretary of the Navy should ensure the Commander, Naval Surface Forces, reevaluates the need for nuclear-trained Surface Warfare Officers, assesses the effects of the current training approach, and makes any related adjustments to their respective career path. (Recommendation 5)

The Secretary of the Navy should ensure the Commander, Naval Surface Forces, establishes and implements regular evaluations of the effectiveness of the current SWO career path, training, and policies in successfully developing and retaining proficient SWOs. The initial evaluation should include at a minimum: (a) an evaluation of the Navy's approach against other career path and proficiency models of other navies and maritime communities, such as specialized career tracks and ship command requirements, identified in our review and (b) input from SWOs at all levels. (Recommendation 6)

The Secretary of the Navy should ensure the Commander, Naval Surface Forces, implements workforce strategies—changes to SWO career path, training, and policies as well as the implementation of pilot programs to evaluate potential changes—that address the results of the Navy's initial evaluation. (Recommendation 7)

Agency Comments and Our Evaluation

We provided a draft of this report to DOD for review and comment. In written comments provided by the U.S. Navy through DOD (reprinted in their entirety in appendix VI), the U.S. Navy concurred with all seven of our recommendations and identified actions it plans to take to evaluate SWO separation trends, gather SWO feedback, and examine possible benefits of more specialized career path models, among other actions. The U.S. Navy also provided additional information and context in its comments and provided technical comments, which we incorporated as appropriate.

In concurring with recommendation two—the Secretary of the Navy should ensure the Commander, Naval Surface Forces, develops a plan to identify actions to increase female Surface Warfare Officer retention rates—the U.S. Navy stated that we used data from fiscal year 2004 through March 2020 to measure female retention which they believe does not reflect current SWO conditions and more recent retention rates for select female year groups. However, the most recent data is reflected in our analysis and our focus was on providing a robust longitudinal analysis of what occurred over an extended time frame for the entire SWO community including female SWOs. As described in this report, female representation in the U.S. Navy SWO community is large in relative terms and growing. We continue to believe, as the proportion of female SWOs continues to increase, that developing a plan to identify actions to increase female SWO retention rates will better position the U.S. Navy to retain a ready force that is representative of the population it serves.

In concurring with recommendation six—the Secretary of the Navy should ensure the Commander, Naval Surface Forces, establishes and implements regular evaluations of the effectiveness of the current SWO career path, training, and policies in successfully developing and retaining proficient SWOs—the U.S. Navy stated that Commander, Naval Surface Forces had initiated a series of alternative career path investigations. However, the Navy was unable to provide any documentation on these investigations, despite multiple requests during the course of our review for information on any investigations or evaluations of alternative career paths. As described in this report, the U.S. Navy has not made fundamental changes to its SWO career path for more than a century. Without regularly evaluating the effectiveness of the Navy's current approaches, including alternative career path and proficiency models, the U.S. Navy may miss opportunities to develop and to retain more competent and proficient SWOs—a persistent issue for the U.S. Navy.

We are sending copies of this report to the appropriate congressional committees, the Secretary of Defense, the Acting Secretary of the Navy, and other interested parties. In addition, the report is available at no charge on the GAO website at <http://www.gao.gov>.

If you or your staff have any questions about this report, please contact me at (202) 512-5431 or russellc@gao.gov. Contact points for our Offices of Congressional Relations and Public Affairs may be found on the last page of this report. GAO staff who made key contributions to this report are listed in appendix VII.

A handwritten signature in black ink that reads "Cary Russell". The signature is written in a cursive style with a large initial "C" and a long, sweeping tail.

Cary Russell
Director, Defense Capabilities and Management

List of Committees

The Honorable Jack Reed
Chairman
The Honorable James M. Inhofe
Ranking Member
Committee on Armed Services
United States Senate

The Honorable Jon Tester
Chairman
The Honorable Richard Shelby
Ranking Member
Subcommittee on Defense
Committee on Appropriations
United States Senate

The Honorable Adam Smith
Chairman
The Honorable Mike Rogers
Ranking Member
Committee on Armed Services
House of Representatives

The Honorable Betty McCollum
Chair
The Honorable Ken Calvert
Ranking Member
Subcommittee on Defense
Committee on Appropriations
House of Representatives

Appendix I: Data Sources and Methods Used for Retention Analyses

In this appendix, we describe our methods for analyzing the difference in retention rate and hazard rate for separation among different officer communities in the U.S. Navy's Unrestricted Line (URL), source of accession, gender, marital status, dependent status, race, and other demographic variables and present the results specific to Surface Warfare Officer (SWO) community and the rest of URL communities combined.¹

Data Sources and Analytic Variables

We merged 2003 through 2018 quarterly active duty member snapshots, 2003 through 2018 active duty member separation transactions, and 2003 through 2018 active duty member dependents tables sent by Defense Manpower Data Center into a single data set which includes 3,549,348 observations of any active duty officer during our study time frame of July 1, 2003, through March 31, 2020. The dependents' table listed a member identification, dependent identification and date range where the member had that person as a dependent. Warrant officers were excluded from the analysis, as were approximately 0.1 percent of the snapshot records, because they did not contain a valid 'date of entry into uniformed service' and/or 'commission date'.

For every member in the data set, we selected the latest record from the snapshot file and the transactions file. If there was no separation transaction for the member then they were not marked as separated. If the member had a separation transaction (by exact match on personal identification number) then the last snapshot was marked as being the date of separation for that member and the binary separation variable was set to 'yes'.

For every quarterly record for a member in the active duty snapshot, we searched the dependents table for a matching personal identification. If a match was found, then we compared the date of the snapshot to the 'begin' and 'end' dates for the dependent. If the snapshot date fell between the 'begin' and 'end' dates for the member having a dependent, then we marked the snapshot record as having at least one dependent.

The first digit of the three-digit separation code corresponds to approximately 10 separation categories such as 'resigned', 'dismissed', 'killed in action', etc. According to the data dictionary provided by DOD, each of these codes is designated as 'voluntary' or 'involuntary', so if a

¹The hazard rate allows us to examine how specified factors influence the rate of a particular event happening (e.g., separation, infection, death) at a particular point in time.

member had a separation transaction, then the designation of 'voluntary/involuntary' was made using the first digit of their separation code.

Based on the file with multiple quarterly snapshot records per officer, we selected the latest record of each officer for our analysis purpose, recognizing some factors such as rank and education are variant during the study time frame. Our final analytic file contains one record per officer who ever served on active duty from July 1, 2003, through March 31, 2020.

Demographic Composition and Average Years of Service of the SWO Community Compared with Other U.S. Navy URL Communities

We compared the percent of population of each demographic factor among the SWO community with the rest of URL communities. The purpose of this comparison was to see the extent of deviation in demographic characteristics among officers in the SWO community from officers in other URL communities. Table 4 below summarizes the population counts of the U.S. Navy's URL Officer communities included in our analysis.

Table 4: Population Count of the U.S. Navy Unrestricted Line Officer Communities from July 2003 through March 2020

Officer community	Population count	Percent of population
Surface Warfare	19,383	34
Submarine	8,480	15
Aviation	26,004	46
Explosive Ordinance Disposal and Special Warfare	2,261	4
Total	56,530	

Source: GAO analysis of Department of Defense data. | GAO-21-168

Note: Percent of population rates may sum to less than 100 percent because of rounding. Unrestricted Line Officers include U.S. Navy Surface Warfare Officers, Pilots, Navy Flight Officers, Aviation Support Officers, Submarine Officers, and Officers in Naval Special Warfare and Explosive Ordinance Disposal. They are commissioned through the U.S. Naval Academy, Naval Reserve Officers Training Corps, Officer Candidate School, or other sources such as the Aviation Cadet Program or Direct appointment authority.

We calculated years from accession to separation for those who separated within our study time frame and years from the accession to the last snapshot for those who did not separate. Along with an indicator

variable of separation which include voluntary and involuntary, the final analytic file formed a right censored time to event structure.²

Based on the duration from accession to separation as described above, we compared the average years of service by occupation (and by accession source), which is a simple arithmetic mean of the years of service within each category.

While creating explanatory variables, we noticed two demographic variables with portions missing: education and prior enlistment. We developed an imputation model for the education variable using logistic regression and replaced all missing values with the imputed value from the model.³ The models demonstrated about 75 percent accuracy of proper categorization based on individuals who were not missing. For prior enlistment variable, the Defense Manpower Data Center sent us a file with an indication of whether an officer had any prior enlistment.

We compared the raw percent of each demographic factor for the SWO community with other communities in the U.S. Navy's Unrestricted Line. Our analysis found that in comparison to the rest of the U.S. Navy's Unrestricted Line, SWOs had a:

- substantially higher percentage of female officers;
- substantially lower percentage of officers married and with dependents;
- lower percentage of whites and higher percent of African Americans;
- higher percentage with prior enlistment and oversea experience; and
- higher percentage separated within 5 years after accession and lower percent separated between 11 and 20 years of service.

Table 5 shows the demographic composition of the U.S. Navy SWO community compared with other U.S. Navy Unrestricted Line Officer Communities.

²There are five separation reasons according to the Defense Manpower Data Center data dictionary; 1-Resignation, 2-Discharge, 3-Transfer, 4-Retirement, and 5-Death. We included all reasons 1-4 into our separation category (voluntary and involuntary) excluding 5-Death.

³Imputation models replace missing data with an estimated value based on other available information.

**Appendix I: Data Sources and Methods Used
for Retention Analyses**

Table 5: Demographic Composition of the U.S. Navy Surface Warfare Officer (SWO) Community Compared with Other U.S. Navy Unrestricted Line (URL) Officer Communities

	Percentage of population (URL minus SWO)	Percentage of population (SWO)	Percentage Difference in population (SWO minus URL)
Accession source			
Academy	32	30	-2
Reserve Officer Training Corps	28	36	8
Officer Candidate School	26	27	1
Other ^a	13	7	-6
Demographic information			
Female	7	22	15
Married	66	55	-11
With dependent	67	56	-11
White	84	71	-13
African American	2	9	7
Hispanic	6	9	3
Asian	3	5	2
Other race	5	7	2
Experience and education			
Prior enlistment	24	30	6
Advanced degree	27	29	2
Oversea experience	17	28	11
Current command status – yes ^b	3	3	0
Years after accession			
Years after accession 1-5	26	35	9
Years after accession 6-10	29	31	2
Years after accession 11-20	28	19	-9
Years after accession 21-30	16	13	-3
Years after accession 30+	1	1	0

Source: GAO analysis of DOD Data. | GAO-21-168

Note: Percentage of population rates may sum to less than 100 percent because of rounding. Unrestricted Line Officers include U.S. Navy Surface Warfare Officers, Pilots, Navy Flight Officers, Aviation Support Officers, Submarine Officers, and Officers in Naval Special Warfare and Explosive Ordnance Disposal. They are commissioned through the U.S. Naval Academy, Naval Reserve Officers Training Corps, Officer Candidate School, or other sources such as the Aviation Cadet Program or Direct appointment authority.

^aOther source of accession includes: Aviation Cadet Program; Direct appointment authority, Commissioned Officer, professional; Direct appointment authority, Commissioned Officer, all other; and Unknown/Not Applicable.

**Appendix I: Data Sources and Methods Used
for Retention Analyses**

^bThere are 4 command status in the Defense Manpower Data Center's data dictionary: 1-Currently in command of a unit, 2- Previously commanded a unit, 3-Never commanded a unit, 9-Unknown/Not Applicable.

Table 6 compares the average years of service from commissioning to separation by officer community within the U.S. Navy's Unrestricted Line. As demonstrated in table 6, officers in the SWO community exhibit shorter length of service compared with the other U.S. Navy URL communities, regardless of the source of accession.

Table 6: Average Years of Service from Commissioning to Separation by U.S Navy Officer Community and Accession Source

Officer community	Service academy	Reserve Officer Training Corps	Officer candidate school	Other	Average years of service
Surface Warfare	9.7	9.4	9.2	11.4	9.6
Submarine	10.5	9.0	9.8	9.7	9.8
Aviation	12.2	12.0	10.3	12.8	11.8
Explosive Ordinance Disposal and Special Warfare	10.4	11.5	11.5	12.7	11.1

Source: GAO analysis of Department of Defense data. | GAO-21-168

As of March 2020, female representation in the SWO community is more than three times larger than female representation in similar U.S. Navy officer communities (22 percent compared with 7 percent). The proportion of female SWOs has increased every year since 2003 from about 14 percent of all SWOs in 2004 to more than 23 percent in 2020. Table 7 below shows the number and percent of male and female SWOs in fiscal years 2003 through 2020.

Table 7: Number and Percent of Male and Female U.S. Navy Surface Warfare Officers (SWOs) during Calendar Years 2003 through 2020

Calendar year	Total SWOs	Gender			
		Female		Male	
		Count	Percentage	Count	Percentage
2003	8,137	1,153	14.17	6,984	85.83
2004	8,469	1,284	15.16	7,185	84.84
2005	8,245	1,261	15.29	6,984	84.71
2006	8,039	1,242	15.45	6,797	84.55
2007	7,962	1,268	15.93	6,694	84.07
2008	8,067	1,327	16.45	6,740	83.55
2009	8,208	1,415	17.24	6,793	82.76
2010	8,465	1,509	17.83	6,956	82.17

**Appendix I: Data Sources and Methods Used
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Calendar year	Gender				
	Total SWOs Count	Female		Male	
		Count	Percentage	Count	Percentage
2011	8,681	1,584	18.25	7,097	81.75
2012	8,733	1,672	19.15	7,061	80.85
2013	8,734	1,718	19.67	7,016	80.33
2014	8,805	1,739	19.75	7,066	80.25
2015	8,815	1,772	20.10	7,043	79.90
2016	8,854	1,869	21.11	6,985	78.89
2017	8,849	1,975	22.32	6,874	77.68
2018	8,892	2,040	22.94	6,852	77.06
2019	9,118	2,098	23.01	7,020	76.99
2020	8,558	1,977	23.10	6,581	76.90

Source: GAO analysis of Department of Defense data. | GAO-21-168

**Life Table Method—
Surface Warfare Officer
Community Compared
with Other Unrestricted
Line Communities**

We used the Life Table method to calculate retention rate at any point in time to compare the SWO community with other Unrestricted Line officer communities.⁴ For time-to-event data, in our case it is duration-to-separate, the Life Table method provides the probability of retaining during any one year by taking the probability of separation during the year and subtracting that from 1. In the Life Table method, the time axis is divided into many discrete time intervals, usually years. The number beginning in the year, the number separating in the year, and the number censored or lost to follow-up in the year are all tabulated.

We calculated the 10-year retention rate for officers who were still in active duty 10 years after commission using the Life Table Method.⁵ Our analysis found that the retention rate for the Surface Warfare Officer (SWO) community is significantly lower than the Aviation and the Explosive Ordnance Disposal (EOD) communities 10 years after commission at p-value < 0.05.⁶ Furthermore, officers in the SWO community demonstrate a significantly lower 10-year retention rate compared with all other communities in the U.S. Navy’s Unrestricted Line (URL) across all subgroups including source of accession, gender, marital

⁴We could use either the Kaplan-Meier method or the life-table method to calculate the retention rates. See J. D. Kalbfleisch and R. L. Prentice, *Statistical Analysis of Failure Time Data*, John Wiley & Sons, 1980, pp. 10–19.

⁵The Life Table method retention rates represent the percentage of officers that are still in active duty after each year of commissioned service.

⁶P-value less than 0.05 is a standard criteria for a GAO report and universally adapted.

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status, dependent status, race, and other attributes. 10-year retention rates for each of subgroups are shown in table 8.

Table 8: U.S. Navy Surface Warfare Officer (SWO) Community 10-year Retention Rate Compared with other U.S. Navy Unrestricted Line (URL) Officer Communities

	10-year retention rate (URL minus SWO) percentage	10-year retention rate (SWO) percentage	Difference in 10-year retention rate (SWO minus URL) percentage	Difference statistically significant at p-value < 0.05 (*)
Summary				
Overall	45	33		*
Submarine	32		1	*
Aviation	50		-17	*
Explosive Ordnance Disposal and Special Warfare	44		-11	*
Accession source				
Service Academy	45	29	-16	*
Reserve Officer Training Corps	45	31	-14	*
Officer Candidate School	40	36	-4	*
Other ^a	56	53	-3	
Demographic information				
Female	21	12	-9	*
Male	47	39	-8	*
Married	60	52	-8	*
Unmarried	15	10	-5	*
With dependent	61	54	-7	*
Without dependent	12	7	-5	*
White	47	35	-12	*
African American	47	38	-9	*
Hispanic	36	27	-9	*
Asian	31	21	-10	*
Other race	35	27	-8	*
Experience and education				
Prior enlistment	49	43	-6	*
Advanced degree	89	84	-5	*
Oversea experience	52	33	-19	*
Current command status - yes ^b	100	97	-3	*

Legend: “*” indicates that this variable is statistically significant at p-value < 0.05.

Source: GAO analysis of Department of Defense data. | GAO-21-168

Notes: The 10-year retention rate represents what percentage of officers are still on active duty 10 years after commission. Ten-year retention rates may sum to less than 100 percent because of

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rounding. Unrestricted Line Officers include Surface Warfare Officers, Pilots, Navy Flight Officers, Aviation Support Officers, Submarine Officers, and Officers in Naval Special Warfare and Explosive Ordnance Disposal.

^aOther source of accession includes: Aviation Cadet Program; Direct appointment authority, Commissioned Officer, professional; Direct appointment authority, Commissioned Officer, all other; and Unknown/Not Applicable.

^bThere are 4 command statuses in the Defense Manpower Data Center data dictionary: 1-Currently in command of a unit, 2- Previously commanded a unit, 3-Never commanded a unit, 9-Unknown/Not Applicable.

We calculated year over year retention rates through 40 years of service for each of the Unrestricted Line Officer communities using the Life Table Method. Tables 9 through 12 show the unadjusted retention rate for each year with 95 percent confidence intervals by four communities in URL.

Table 9: U.S. Navy Surface Warfare Officer Retention Rates Using the Life Table Method

Years of commissioned service	Retention rate percentage	95 percent confidence intervals		Years of commissioned service	Retention rate percentage	95 percent confidence intervals	
		Low	High			Low	High
1	95	94	95	21	12	12	13
2	89	89	90	22	11	11	12
3	83	82	83	23	10	10	10
4	75	74	75	24	9	8	9
5	65	64	66	25	8	7	8
6	55	55	56	26	7	6	7
7	44	43	45	27	6	5	6
8	38	37	39	28	4	4	5
9	35	35	36	29	4	3	4
10	33	33	34	30	2	1	2
11	30	29	31	31	1	1	1
12	27	26	28	32	1	1	1
13	25	25	26	33	1	0	1
14	23	23	24	34	0	0	1
15	22	21	23	35	0	0	0
16	20	20	21	36	0	0	0
17	19	19	20	37	0	0	0
18	18	18	19	38	0	0	0
19	17	16	18	39	0	0	0
20	14	14	15	40	0	0	0

Source: GAO analysis of Department of Defense data. | GAO-21-168

**Appendix I: Data Sources and Methods Used
for Retention Analyses**

Note: Life Table method retention rates represent the percentage of officers that are still in active duty after each year of commissioned service.

Table 10: U.S. Navy Submarine Officer Retention Rates Using the Life Table Method

Years of commissioned service	Retention rate percentage	95 percent confidence intervals		Years of commissioned service	Retention rate percentage	95 percent confidence intervals	
		Low	High			Low	High
1	95	95	96	21	13	12	13
2	89	89	90	22	11	11	12
3	84	83	85	23	10	10	11
4	79	78	80	24	10	9	10
5	69	68	70	25	8	8	9
6	62	61	63	26	7	7	8
7	47	46	48	27	6	6	7
8	38	37	39	28	5	5	6
9	34	33	35	29	4	4	5
10	32	31	33	30	2	2	2
11	29	28	30	31	1	1	1
12	27	26	28	32	1	1	1
13	25	24	26	33	1	1	1
14	23	22	24	34	1	0	1
15	22	21	23	35	0	0	1
16	20	19	21	36	0	0	0
17	19	18	20	37	0	0	0
18	18	17	19	38	0	0	0
19	16	16	17	39	0	0	0
20	14	13	15	40	0	0	0

Source: GAO analysis of Department of Defense data. | GAO-21-168

Note: Life Table method retention rates represent the percentage of officers that are still in active duty after each year of commissioned service.

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for Retention Analyses**

Table 11: U.S. Navy Aviation Officer Retention Rates Using the Life Table Method

Years of commissioned service	Retention rate percentage	95 percent confidence intervals		Years of commissioned service	Retention rate percentage	95 percent confidence intervals	
		Low	High			Low	High
1	95	95	96	21	16	15	16
2	89	89	90	22	14	14	14
3	84	84	85	23	12	12	13
4	80	80	81	24	10	10	11
5	76	76	77	25	9	8	9
6	72	72	73	26	7	7	7
7	69	68	69	27	6	5	6
8	64	64	65	28	4	4	4
9	57	56	57	29	3	3	3
10	50	49	50	30	1	1	1
11	41	40	42	31	1	1	1
12	36	36	37	32	1	1	1
13	34	34	35	33	1	0	1
14	32	32	33	34	0	0	0
15	31	30	31	35	0	0	0
16	29	29	30	36	0	0	0
17	28	27	28	37	0	0	0
18	26	25	26	38	0	0	0
19	24	23	24	39	0	0	0
20	19	18	19	40	0	0	0

Source: GAO analysis of DOD Data. | GAO-21-168

Note: Life Table method retention rates represent the percentage of officers that are still in active duty after each year of commissioned service.

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for Retention Analyses**

Table 12: U.S. Navy Explosive Ordnance Disposal and Special Warfare Retention Rates Using the Life Table Method

Years of commissioned service	Retention rate percentage	95 percent confidence intervals		Years of commissioned service	Retention rate percentage	95 percent confidence intervals	
		Low	High			Low	High
1	94	93	95	21	15	14	16
2	88	87	89	22	13	12	14
3	83	82	85	23	11	10	13
4	79	77	80	24	10	9	12
5	74	72	75	25	9	8	10
6	68	66	69	26	7	6	8
7	62	60	64	27	6	5	7
8	56	54	58	28	5	4	6
9	49	47	51	29	4	3	4
10	44	42	46	30	2	1	2
11	39	37	41	31	1	1	2
12	35	33	37	32	1	1	2
13	32	30	34	33	1	1	1
14	29	28	31	34	1	0	1
15	27	25	29	35	0	0	1
16	25	24	27	36	0	0	0
17	23	22	25	37	0	0	0
18	22	20	24	38	0	0	0
19	20	19	22	39	0	0	0
20	18	16	19	40	0	0	0

Source: GAO analysis of Department of Defense data. | GAO-21-168

Note: Life Table method retention rates represent the percentage of officers that are still in active duty after each year of commissioned service.

Based on the results of the Life Table method, we calculated year over year retention rates through 40 years of service for male and female SWOs (see tables 13 and 14).

**Appendix I: Data Sources and Methods Used
for Retention Analyses**

Table 13: Male U.S. Navy Surface Warfare Officer Retention Rates Using the Life Table Method

Years of commissioned service	Retention rate percentage	95 percent confidence intervals		Years of commissioned service	Retention rate percentage	95 percent confidence intervals	
		Low	High			Low	High
1	95	95	95	21	16	15	16
2	90	90	91	22	14	14	15
3	85	84	85	23	12	12	13
4	78	77	79	24	11	11	12
5	69	69	70	25	10	9	10
6	61	60	61	26	8	8	9
7	50	49	51	27	7	7	7
8	44	43	45	28	5	5	6
9	41	41	42	29	4	4	5
10	39	38	40	30	2	2	2
11	35	35	36	31	1	1	1
12	32	32	33	32	1	1	1
13	30	29	31	33	1	1	1
14	28	27	29	34	1	0	1
15	27	26	27	35	0	0	0
16	25	24	25	36	0	0	0
17	23	23	24	37	0	0	0
18	22	22	23	38	0	0	0
19	21	20	21	39	0	0	0
20	18	17	18	40	0	0	0

Source: GAO analysis of Department of Defense data. | GAO-21-168

Note: Life Table method retention rates represent the percentage of officers that are still in active duty after each year of commissioned service.

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for Retention Analyses**

Table 14: Female U.S. Navy Surface Warfare Officer Retention Rates Using the Life Table Method

Years of commissioned service	Retention rate percentage	95 percent confidence intervals		Years of commissioned service	Retention rate percentage	95 percent confidence intervals	
		Low	High			Low	High
1	93	92	94	21	2	1	2
2	85	84	86	22	1	1	2
3	75	73	76	23	1	1	1
4	62	61	64	24	1	1	1
5	49	47	50	25	1	0	1
6	36	35	37	26	1	0	1
7	24	22	25	27	0	0	1
8	16	15	18	28	0	0	0
9	14	13	15	29	0	0	0
10	12	11	13	30	0	0	0
11	10	9	11	31	0	0	0
12	8	7	9	32	0	0	0
13	7	6	8	33	0	0	0
14	6	6	7	34	0	0	0
15	6	5	6	35	0	0	0
16	5	4	5	36	0	0	0
17	4	4	5	37	-	-	-
18	4	3	4	38	-	-	-
19	3	3	4	39	-	-	-
20	2	2	3	40	-	-	-

Source: GAO analysis of DOD Data. | GAO-21-168

Note: Life Table method retention rates represent the percentage of officers that are still in active duty after each year of commissioned service.

Bivariate Regression
Results from Cox
Proportional Hazard
Model—Surface Warfare
Officer Community
Compared with Other
Unrestricted Line
Communities

We used the Cox Proportional Hazard model to calculate each individual's risk of separation for each demographic variable pertaining to the individual by calculating the hazard ratio.⁷ A hazard ratio greater than 1 indicates a higher risk of separation for one level of a demographic variable (e.g., females) than the comparison group (e.g., males) while a hazard ratio less than 1 indicates a lower risk. For example, a hazard ratio for females SWOs of 2.16 means that females are 2.16 times more likely to separate than males, without considering other factors. Similarly, a hazard ratio of 0.34 for married SWOs means that they are 66 percent (1 - 0.34) less likely to separate than unmarried SWOs. The bivariate model analyzes one factor at a time to assess the association of each factor to the outcome variable; it does not control for any other factors as the multivariate model below does. The Hazard Ratio calculated from the bivariate model is an aggregated measure of likelihood of retention across time span for retention rate specific at any point in time calculated from the Life Table method.

We applied a series of bivariate Cox Proportional Hazard models to estimate the association between selected attribute factors (or independent variables) and the outcome variable (or dependent variable).⁸ All independent variables that are shown in table 15 are in a binary format (1=yes, 0=no) and the estimated association with the dependent variable (or outcome variable) is presented as the Hazard Ratio. A hazard ratio greater than 1 indicates a higher (or increased) risk of separation when the variable is "Yes" (e.g., when the individual is a SWO versus not a SWO, or married versus not married), while a hazard ratio less than 1 indicates a lower (or decreased) risk. Whereas the Life Table method provides the actual (unadjusted estimate) retention rate for each year (e.g., the 10-year retention rate reported above), the hazard ratio from the bivariate model is an estimated summary measure across all years. The values in these models do not control for other variables; see the multivariate model results below for estimates that control for other variables.

⁷See J. D. Kalbfleisch and R.L. Prentice, *The Statistical Analysis of Failure Time Data*, John Wiley & Sons, 1980, pp.70-118. For the computational method, see STATA Statistical Software, Release 5, Estimate Cox proportional hazards model, pp. 252–271, Reference P-Z.

⁸Bivariate Cox Proportional Hazard models estimate the association between selected attribute factors (or independent variables) and the outcome variable (or dependent variable).

**Appendix I: Data Sources and Methods Used
for Retention Analyses**

Officers in the SWO community are 31 percent more likely to separate from their community compared with officers in other URL communities (the reference category or comparison group) and the difference is statistically significant. Likewise, officers in the Aviation community are 25 percent (1 – 0.75) less likely to separate from the Aviation community compared with officers in other URL communities and the difference is statistically significant. The source of accession is not a significant factor among officers in the SWO community. Married officers are 66 percent less likely to separate than are unmarried officers; female officers are 2.16 times more likely to separate from the SWO community than are male officers; and officers with dependents are 72 percent less likely to separate from the SWO community than officers without dependents in the SWO community. White officers are 7 percent less likely to separate from the SWO community than are non-white officers, Hispanic officers are 14 percent more likely to separate from the SWO community than are non-Hispanic officers, and likelihoods of separation from the SWO community for African American and Asian officers are not statistically different from their counterparts in the SWO community. Officers with advanced degrees, with overseas experience, and current commander status are all significantly less likely to separate than their respective counterparts in the SWO community.

Table 15: Bivariate Regression Results from Cox Proportional Hazard Model

Independent variable	Hazard Ratio Cox Regression	
	Unrestricted Line Officers	Surface Warfare Officers
Surface Warfare Officers	1.31***	
Submarine Officers	1.19***	
Aviation Officers	0.75***	
Explosive Ordnance Disposal and Special Warfare Officers	0.78***	
Service Academy	0.92***	1.00
Reserve Officer Training Corps	1.07***	1.10
Officer Candidate School	1.14***	1.00
Married	0.34***	0.34***
Female	2.30***	2.16***
With dependent	0.27***	0.28***
White	0.81***	0.93***
Hispanic	1.23***	1.14***
African American	1.19***	1.00

Appendix I: Data Sources and Methods Used for Retention Analyses

Independent variable	Hazard Ratio Cox Regression	
	Unrestricted Line Officers	Surface Warfare Officers
Asian	1.30***	1.09
Prior enlistment	1.29***	1.00
Advanced degree	0.31***	0.21***
Oversea experience	0.43***	0.37***
Current command status - yes	0.32***	0.28***

Legend: “***” indicates that this variable is statistically significant at p-value < 0.01; “**” indicates that this variable is statistically significant at p-value < 0.05; “*” indicates that this variable is statistically significant at p-value < 0.1.

Source: GAO analysis of Department of Defense data. | GAO-21-168

Note: Bivariate Cox Proportional Hazard models estimate the association between selected attribute factors (or independent variables) and the outcome variable (or dependent variable). All variables listed are binary and coded such that the listed variable = 1 and the opposite is coded 0.

Multivariate Regression Results—Surface Warfare Officer Community Compared with Other Unrestricted Line Communities

Based on our bivariate analyses, we determined which variables were significantly associated with the outcome variable and to what extent. We also examined correlation matrices of the independent variables to determine where there were high correlations between two variables to ensure the independence among control variables. Where two variables were highly correlated, we chose one variable over the other or created a hybrid variable combining those two variables. Based on the results from bivariate regression and correlation, we conducted a series of multivariate Cox Proportional Hazard regression models. The purpose of the model is to evaluate simultaneously the effect of several factors on retention. For this purpose a time-to-event with right-censored data structure, a Cox Proportional Hazard regression model is most applicable. In other words, it allows us to examine how specified factors influence the rate of a particular event happening (e.g., separation, infection, death) at a particular point in time. This rate is commonly referred to as the hazard rate. Predictor variables (or independent factors) are usually termed covariates in the survival-analysis literature. The Cox model is expressed by the hazard function denoted by $h(t)$. Briefly, the hazard function can be interpreted as the risk of dying (or in this case separation) at time t . It can be estimated as follow:

$$h(t)=h_0(t)\times\exp(b_1x_1+b_2x_2+\dots+b_px_p)$$

where,

- t represents the survival time

- $h(t)$ is the hazard function determined by a set of p covariates (x_1, x_2, \dots, x_p)
- the coefficients (b_1, b_2, \dots, b_p) measure the statistical impact (i.e., the effect size) of covariates.
- the term h_0 is called the baseline hazard. It corresponds to the value of the hazard if all the x_i are equal to zero (the quantity $\exp(0)$ equals 1). The 't' in $h(t)$ reminds us that the hazard may vary over time.

The quantities $\exp(b_i)$ are called hazard ratios. A value of b_i greater than zero, or equivalently a hazard ratio greater than one, indicates that as the value of the i th covariate increases, the event hazard increases and thus the length of survival (or years of service) decreases.

Multivariate regression modeling is a statistical method that examines multiple variables simultaneously to estimate whether each of these variables are more likely or less likely to be associated with a certain outcome, controlling for the other variables. A multivariate regression analyzes the statistical influence of each individual factor with the outcome. This type of modeling allowed us to test the association between officer's attribute, such as race or gender, and the odds (hazard ratio) of separation, while holding other officers' attributes constant (such as gender, marital status, and dependent status as independent variables). A Cox Proportional Hazard model provides an estimated hazard ratio for each independent variable, where a value greater than one indicates a higher likelihood of separation (the dependent, or outcome, variable) for one level of that variable (e.g., females) than the comparison level of that variable (e.g., males), controlling for all the other independent variables. An estimated hazard ratio less than one indicates lower odds or likelihood of separation for that level of a variable. The statistical significance of the result for each variable is determined by a p-value of less than 0.05. As a result, in our report we state that hazard ratios that are statistically significant and greater than 1.00 or lower than 1.00 indicate that individuals with that characteristic (e.g., females) are more likely or less likely, respectively, to separate from the SWO community. In cases where the p-value was greater than 0.05, we report that we could not identify any statistically significant differences, which means that we could not conclude that there was an association between that attribute and the likelihood of separation.

We developed multivariate Cox Proportional Hazard models to test the extent of association with outcome and statistical significance of all independent factors presented in table 16. The Hazard Ratio from the

bivariate model represents a 1-to-1 relationship of each independent factor with the outcome, while hazard ratios from the multivariate model represent simultaneous relationships of all independent factors specified in the model with the outcome. Therefore, unlike a bivariate model, there are multiple reference categories depending on how many factors are specified in the multivariate model. As an example, officers in the SWO community are 60 percent more likely to separate compared with officers in the Explosive Ordinance Disposal community (the reference category for the community variable) after controlling other independent factors including source of accession, gender, marital status, dependent status, race, and other key demographics. For example, among officers in the SWO community, SWOs with:

- U.S. Naval Academy, Reserve Officer Training Corps, and Officer Candidate School accession sources are significantly more likely to separate (i.e., hazard ratios above 1) than are SWOs from the “other” accession source.
- Married officers are significantly less likely to separate
- Female officers are significantly more likely to separate.
- Officers with dependents are significantly less likely to separate.
- Officers with prior enlistment are significantly more likely to separate relative than officers without prior enlistment.
- African American officers, officers with overseas experience, officers with an advanced degree, and officers with current commander status are all significantly less likely to separate than officers in their respective reference category.

Table 16: Multivariate Regression Results from Cox Proportional Hazard Model

Independent factors	Hazard Ratio Cox Regression	
	Unrestricted Line Officers	Surface Warfare Officers
Reference Category: Explosive Ordinance Disposal		
SWO	1.600***	
Submarine	1.612***	
Aviation	1.047	
Reference: Other		
Academy	1.009	1.084*
Reserve Officer Training Corps	1.096***	1.202***

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Independent factors	Hazard Ratio Cox Regression	
	Unrestricted Line Officers	Surface Warfare Officers
Officer Candidate School	1.079***	1.104**
Reference: Other than married		
Married	0.821***	0.827***
Reference: Male		
Female	1.539***	1.518***
Reference: Without dependent		
With dependent	0.429***	0.480***
Reference: White		
Hispanic	1.221***	1.127***
African American	1.040	0.943*
Asian	1.244***	1.091
Other race	1.097***	1.021
Reference: Without prior enlistment		
Prior Enlistment	1.237***	1.232***
Reference: Without advanced degree		
Advanced degree	0.322***	0.272***
Reference: Without overseas experience		
Overseas experience	0.453***	0.404***
Reference: Current command status - no		
Current command status - yes	0.392***	0.394***

Legend: “***” indicates that this variable is statistically significant at p-value < 0.01; “**” indicates that this variable is statistically significant at p-value < 0.05; “*” indicates that this variable is statistically significant at p-value < 0.1.

Source: GAO analysis of Department of Defense data. | GAO-21-168

Note: Multivariate Cox Proportional Hazard models are used to test the extent of association with outcome and statistical significance of all independent factors. All variables listed are binary and coded such that the listed variable = 1 and the opposite is coded 0.

Appendix II: Nominal Cost of the U.S. Navy Surface Warfare, Aviation, and Submarine Officer Career Paths

We analyzed nominal personnel, training, retention, and moving cost data¹ for three U.S. Navy officer communities and found that the nominal career path costs for a Surface Warfare Officer is \$2.63 million per officer through 23 years of commissioned service compared with \$5.30 million for a Submarine Officer and \$8.54 million for an Aviation Officer (see table 17).²

Table 17: Nominal Per-Officer Costs of the U.S. Navy Surface Warfare, Aviation, and Submarine Officer Career Paths through 23 Years of Commissioned Service

Dollars in millions

Officer type	Personnel costs	Training costs	Retention costs	Moving costs	Total cost
Surface Warfare	2,053,954	309,505	152,800	115,000	2,631,259
Aviation	2,053,954	5,863,416	483,770	140,000	8,541,140
Submarine	2,053,954	2,097,889	1,010,220	140,000	5,302,063

Source: GAO analysis of U.S. Navy data. | GAO-21-168

Note: We did not include officer accession costs in this table because these costs are similar across officer communities. Officer accession source costs are estimated to be \$280,000 for United States Naval Academy; \$175,000 for Reserve Officers' Training Corps; \$28,000 for Officer Candidate School and Seaman to Admiral 21. Personnel costs are based upon fiscal year 2020 military pay scale. Training costs reflect core training every officer receives. Training costs not included in these totals for each community are platform operational costs accrued while officers are gaining community required individual qualification upgrades throughout their career outside of formal schools. The costs associated with these qualifications are masked because they require on-the-job training and gained experience, according to Navy officials. Retention costs vary over time based upon retention incentives employed at various times. We did not adjust costs reported by Navy communities for inflation. Per-officer costs are based on Navy assumptions and actual costs may vary.

We found that personnel costs and moving costs used in this analysis were similar across the three U.S. Navy officer communities—Surface Warfare, Aviation, and Submarine. As a result, our analysis shows that differences in nominal career path costs across these U.S. Navy officer

¹Using a standardized information request, we collected nominal career path costs—personnel, training, retention, and moving costs—from the Office of the Chief of Naval Operations for U.S. Navy Surface Warfare, Aviation, and Submarine officers. We also met with officials from the Office of the Chief of Naval Operations to discuss the data provided. We determined that the nominal career path cost data to be sufficiently reliable for the purposes of reporting officer career path costs.

²Officers are commissioned into the U.S. Navy after completing a four-year college degree or greater. Years of commissioned service refers to how long an individual has served as an officer in the U.S. Navy. We used 23 years of commissioned service because that is when a Surface Warfare Officer nominally starts his/her Major Command Officer tour. Major Command is a screened command to which a Captain is assigned and for which commander (CDR) command is a prerequisite, such as Commanding Officer Afloat, Area Commander, or Commander of a Shore Activity.

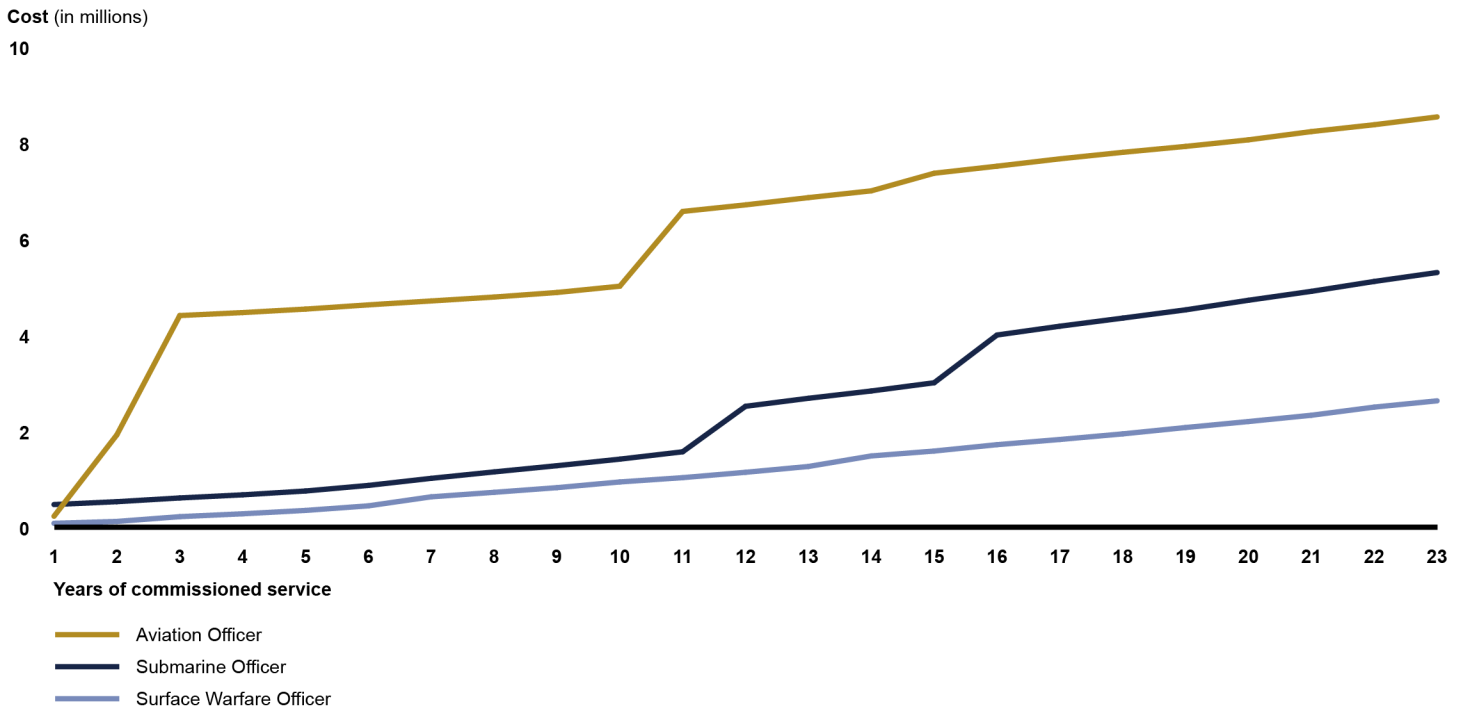
Appendix II: Nominal Cost of the U.S. Navy Surface Warfare, Aviation, and Submarine Officer Career Paths

communities are almost entirely driven by differences in training and retention costs. For example:

- Training costs include instruction and classes throughout an officer’s career to establish the skills and abilities required of the officer to be successful in his or her role.
- Retention costs include bonuses during an officer’s career; incentive pay for qualified nuclear-trained officers; and special pay for flying, operating at sea, or for being a Submarine Officer.

Figure 17 provides a summary of nominal per-officer costs associated with the U.S. Navy Surface Warfare, Aviation, and Submarine Officer career paths through 23 years of commissioned service.

Figure 17: Nominal Officer Costs for U.S. Navy Surface Warfare, Aviation, and Submarine Officer Community through 23 Years of Commissioned Service



Source: GAO analysis of Navy data. | GAO-21-168

Note: Not included in this analysis are the accession source costs which are estimated to be \$280,000 for United States Naval Academy; \$175,000 for Reserve Officers’ Training Corps; \$28,000 for Officer Candidate School and Seaman to Admiral 21. Personnel costs are based upon fiscal year 2020 military pay scale. Training costs reflect core training every officer receives. Training costs not included in these totals for each community are platform operational costs accrued while officers are gaining community required individual qualification upgrades throughout their career outside of formal schools. The costs associated with these qualifications are masked because they require on-the-job

**Appendix II: Nominal Cost of the U.S. Navy
Surface Warfare, Aviation, and Submarine
Officer Career Paths**

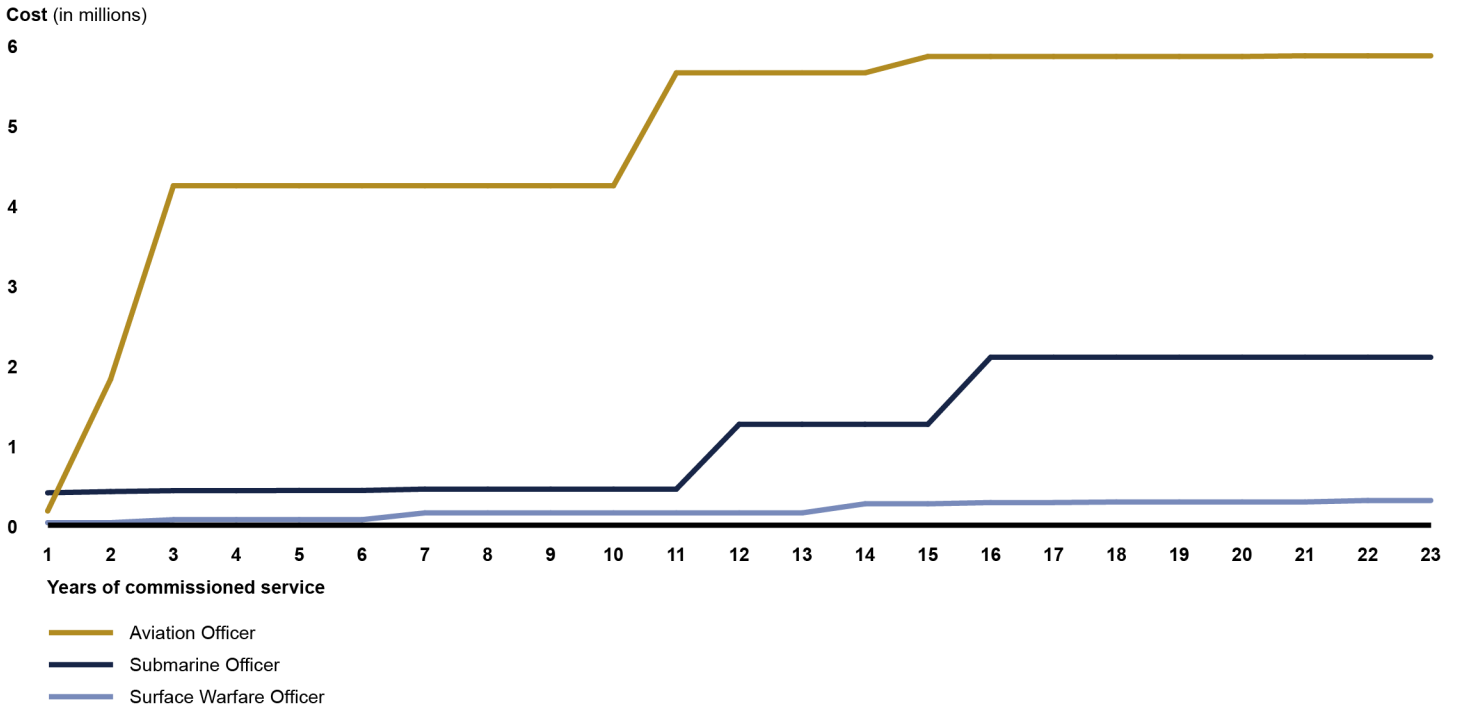
training and gained experience, according to Navy officials. Retention costs vary over time based upon retention incentives employed at various times. We did not adjust costs reported by Navy communities for inflation. Per-officer costs are based on Navy assumptions and actual costs may vary.

We found that the nominal training cost for a Surface Warfare Officer is \$309,505 per officer through 23 years of commissioned service compared with \$2,097,889 for a Submarine Officer and \$5,863,416 for an Aviation Officer (see fig. 18). Based on our analysis, training costs per officer vary among the U.S. Navy communities based on each community's training standards and proficiency requirements across an officer's career. For example, Aviation and Submarine officers have extensive flight and nuclear training requirements early in their careers to prepare them for flying aircraft and operating nuclear powered submarines. In November 2019, we reported that the U.S. Navy had enhanced ship-driving training for SWOs at the early stages of their careers following the 2017 collisions at sea, and had plans to triple the number of ship-driving training hours when compared with the amount of training SWOs were required to receive prior to the collisions.³ The costs in the figure below include the increased costs associated with the three-fold increase in ship-driving training (see fig. 18).

³GAO, *Navy Readiness: Actions Needed to Evaluate the Effectiveness of Changes to Surface Warfare Officer Training*, [GAO-20-154](#) (Washington, D.C.: Nov 14, 2019).

Appendix II: Nominal Cost of the U.S. Navy
Surface Warfare, Aviation, and Submarine
Officer Career Paths

Figure 18: Nominal Training Costs for U.S. Navy Surface Warfare, Aviation, and Submarine Officer Community through 23 Years of Commissioned Service



Source: GAO analysis of Navy data. | GAO-21-168

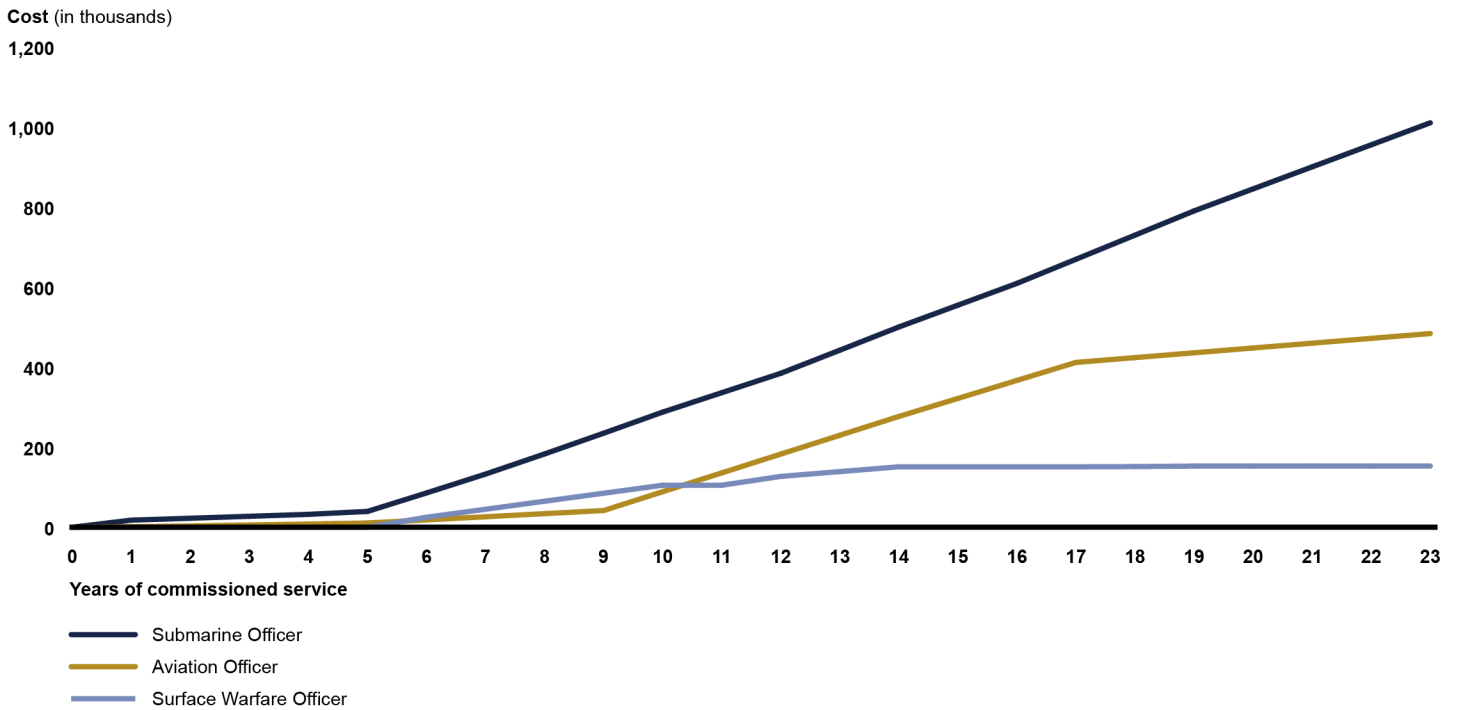
Note: Costs not included in this analysis are the accession source costs which are estimated to be \$280,000 for United States Naval Academy; \$175,000 for Reserve Officers' Training Corps; \$28,000 for Officer Candidate School and Seaman to Admiral 21. Training costs reflect core training every officer receives. Training costs not included in these totals for each community are platform operational costs accrued while officers are gaining community required individual qualification upgrades throughout their career outside of formal schools. The costs associated with these qualifications are masked because they require on-the-job training and gained experience, according to Navy officials. We did not adjust costs reported by Navy communities for inflation.

We found that the nominal retention cost for a Surface Warfare Officer is \$152,800 per officer through 23 years of commissioned service compared with \$483,770 for an Aviation Officer and \$1,010,220 for an Submarine Officer (see fig. 19). Our analysis found that differences in nominal retention costs are driven primarily driven by three factors:

1. varying retention bonuses during an officer's career,
2. incentive pay for qualified Nuclear trained officers, and
3. special pay for flying, operating at sea, or for being a submariner.

Appendix II: Nominal Cost of the U.S. Navy
Surface Warfare, Aviation, and Submarine
Officer Career Paths

Figure 19: Nominal Retention Costs for U.S. Navy Surface Warfare, Aviation, and Submarine Officer Community through 23 Years of Commissioned Service



Source: GAO analysis of Navy data. | GAO-21-168

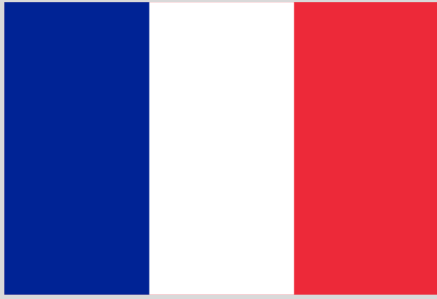
Note: Costs not included in this analysis are the accession source costs which are estimated to be \$280,000 for United States Naval Academy; \$175,000 for Reserve Officers' Training Corps; \$28,000 for Officer Candidate School and Seaman to Admiral 21. Retention costs vary over time based upon retention incentives employed at various times. We did not adjust costs reported by Navy communities for inflation. Per-officer costs are based on Navy assumptions and actual costs may vary.

Appendix III: Foreign Navy and U.S. Maritime Organization Profiles

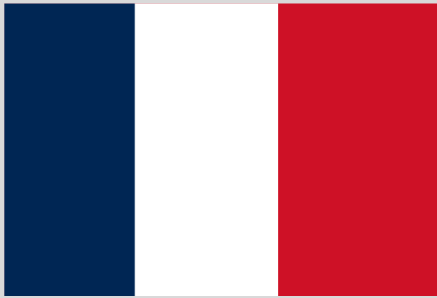
In this appendix we present information about five foreign navies—France, Italy, Japanese Maritime Self Defense Force, Republic of Korea, and the United Kingdom—and four U.S. maritime officer communities—U.S. Navy Surface Warfare, Submarine, and Aviation officer communities and the United States Coast Guard—we selected to make comparisons about their respective career paths. To create these profiles, we developed a standardized question set that we used to collect similar information across all of the organizations. This collection effort was specific to Surface Warfare Officers (SWOs) or SWO equivalents in each organization that perform the duties associated with U.S. Navy SWOs. We also interviewed officials with each foreign navy and domestic organization to clarify information and discuss, in detail, the information they provided. Whenever possible, we corroborated testimonial evidence from interviews with U.S. Navy, Coast Guard, and foreign navy officials with data or other documentary evidence collected. After we developed the profiles, we shared them with the organizations to ensure that they provided accurate and appropriate information.

In each profile we provide information about the nominal career path and structure (whether generalist or specialist), number of SWOs or SWO equivalents, number of ships, training requirements, and personnel management—such as recruitment and retention. To the extent practicable, we provided standardized information across the nine organizations. In limited cases, we were unable to provide information for some organizations because it was either unavailable or could not be shared. Terminology among the organizations varies for SWOs or SWO equivalents and the role(s) they fulfill aboard ships. We attempted to explain those differences within the profiles. We collected information over the course of our review and timeframes for information are listed, which may not be the same across all profiles.

National Flag



Naval Flag



Key Community Facts

Officer Title(s): Surface Warfare Officer

Career Path Type: Specialist by department

Founded: 1626

Headquarters: Paris

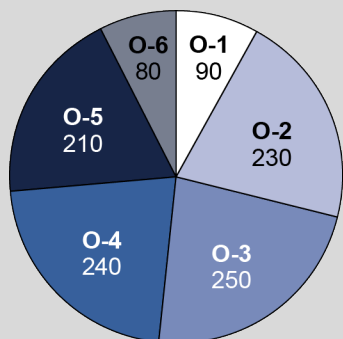


Source: Map Resources. | GAO-21-168

Number of Officers:

1,100 Surface Warfare Officers

- 950 Operations
- 150 Engineering



Source: GAO analysis of French Navy data. | GAO-21-168
 Note: O-1 through O-6 indicate officer grades associated with rank and pay, with O-1 the most junior officer grade. Senior leaders can hold grades above O-6. Figures as of February 2021.

French Navy (Marine Nationale)

Background

The French Navy specializes its Surface Warfare Officer (SWO) career paths by department, with an Operations career path and an Engineering career path. SWOs in the Operations career path serve in deck and weapons positions. SWOs in the Engineering career path serve in positions related to ship propulsion and other engineering areas. The French Navy expects Operations SWOs to drive ships and serve as ship Executive and Commanding Officers at appropriate ranks. Engineering SWOs are not required to drive ships or hold ship Executive and Commanding Officer positions, but they can volunteer to train and qualify to drive ships and serve as ship Executive and Commanding Officers. Engineering SWOs who do not pursue ship command at senior ranks have other opportunities ashore. The French Navy expects its officers to develop proficiency in their assigned areas and to understand a wide variety of ship platforms during their career, according to French Navy officials (see fig. 20).

Figure 20: French Navy Surface Warfare Officer Career Paths and Ships

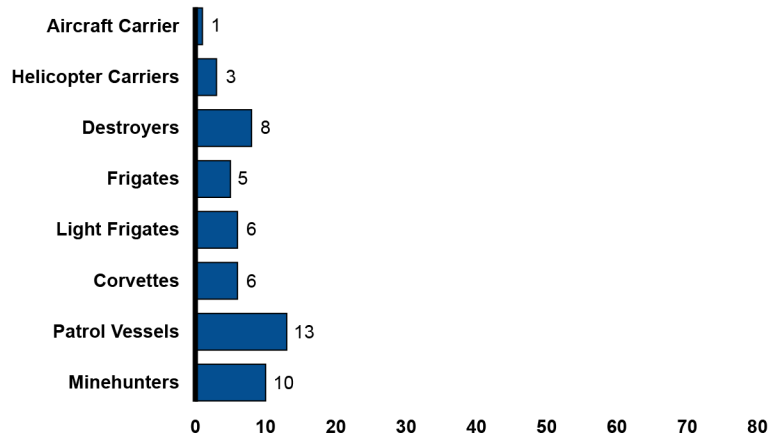
Surface Warfare Officer Career Paths

French Navy (Marine Nationale)
 Split operations and engineering career paths, with both paths eligible to be Executive Officers and Commanding Officers

Operations
 Hold deck and weapons positions, varying based on rank and ship size. Expected to drive ships and serve as ship Executive Officers and Commanding Officers.

Engineering
 Hold ship engineering positions, with the option to drive ships and serve as ship Executive Officers and Commanding Officers.

Number of Ships by Platform (52 total)



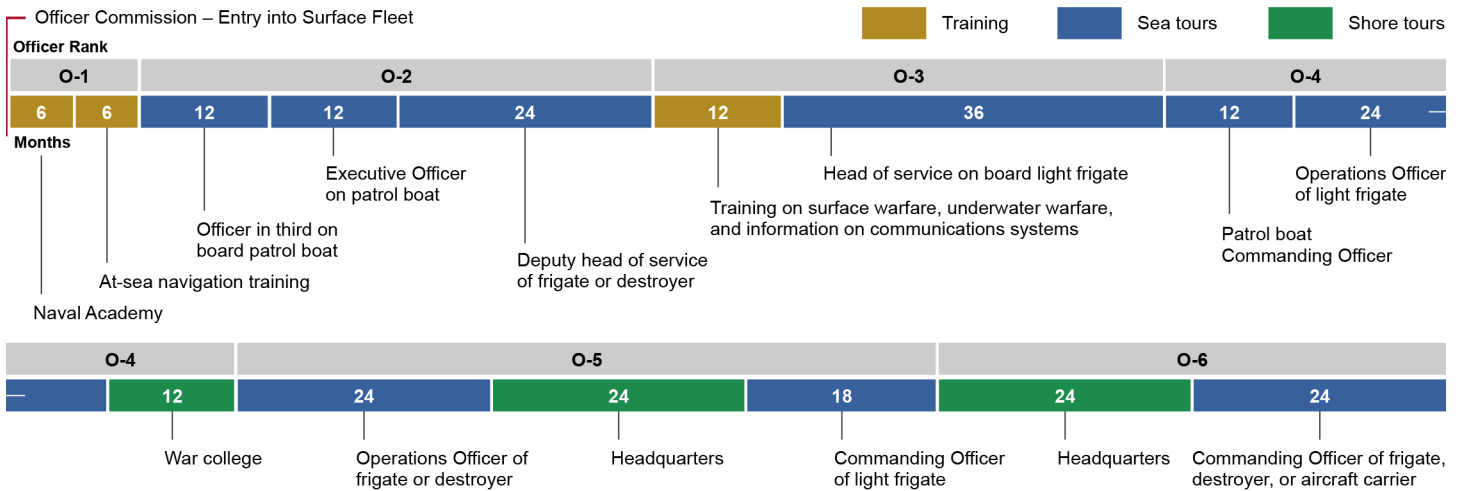
Source: GAO analysis of French Navy data. | GAO-21-168
 Note: Figures as of January 2021.

Career Path Structure

French Navy SWOs specialize into two officer types—Operations and Engineering—and perform their respective roles in specific ship departments. French Navy SWOs are split for their entire career, with SWO candidates recruited specifically as Operations officers or Engineering officers.

Operations SWOs hold positions in ship deck operations and in combat systems management, and the French Navy expects these officers to drive ships and eventually serve as ship Executive and Commanding Officers. Operations SWOs can hold diverse positions during their career. For example, Operations SWOs may hold an Executive Officer position at the O-2 grade on a patrol boat, which may be followed by a lower position on a larger ship, such as a frigate or destroyer (see fig. 21).

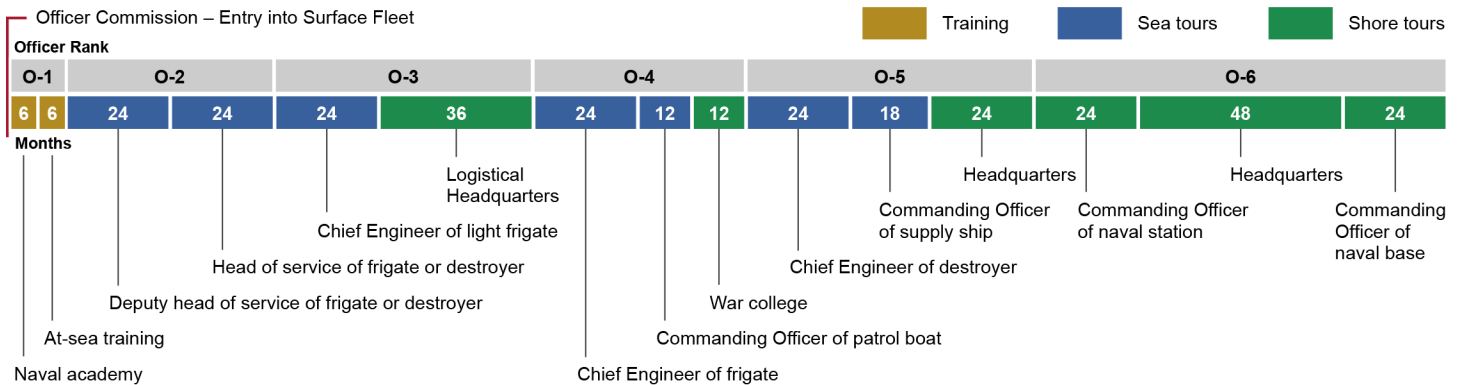
Figure 21: Nominal French Navy Surface Warfare Officer (Operations) Career Path



Source: GAO analysis of French Navy data. | GAO-21-168

Engineering SWOs hold positions in the ship engineering department, eventually advancing to become Department Heads. Engineering SWOs do not typically drive ships or hold Executive or Commanding Officer positions on ships; however Engineering SWOs can volunteer to earn the necessary qualifications to drive ships and hold ship command. Engineering SWOs who do not pursue ship command can hold additional shore positions at senior ranks, including serving as Commanding Officers of ashore units (see fig. 22).

Figure 22: Nominal French Navy Surface Warfare Officer (Engineering) Career Path



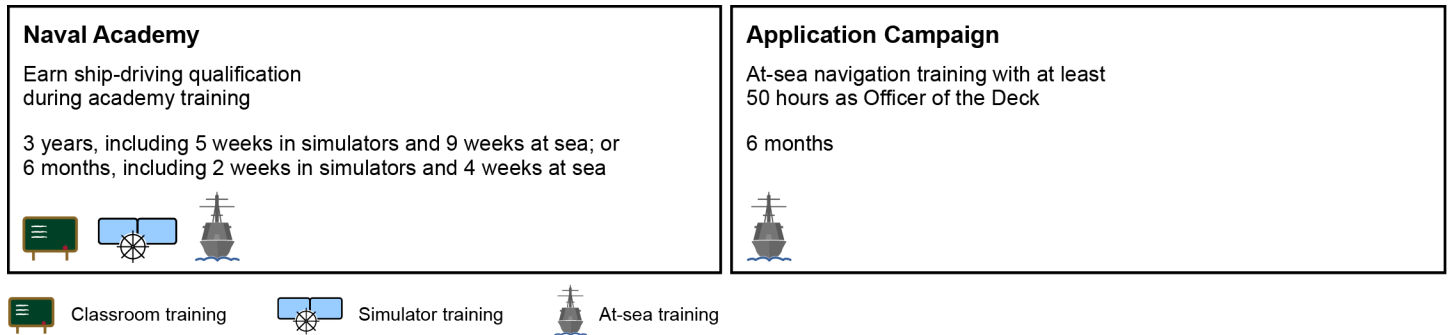
Source: GAO analysis of French Navy data. | GAO-21-168

Goals. According to French Navy officials, the French Navy expects its SWOs to hold a variety of positions on multiple ship platforms and advance to positions of higher responsibility during their career. Ultimately, senior SWOs are eligible to hold command of large ships, including the French Navy’s nuclear aircraft carrier. According to French Navy officials, the SWO career path prepares officers to command aircraft carriers, so they usually draw aircraft carrier Commanding Officers from this career path.

Junior Officer Training

The French Navy provides initial training for Operations SWOs through a standardized French Naval Academy commissioning program specific to their career, followed by a 6-month training cruise. The French Navy recruits SWO candidates through civilian hires and petty officer promotions. According to French Navy officials, SWO civilian candidates graduate from the Naval Academy with an Engineering Diploma—a French method to provide 5 years of science studies—spending their 3 final years in the Naval Academy. Civilian recruits who already have a Master’s degree instead spend 6 months in the Naval Academy before advancing to their training cruise. Finally, those who promote from petty officer spend 3 years in the Naval Academy, where they earn their Master’s degree. After completing their Naval Academy and Application Campaign training programs, Operations SWOs proceed to more varied assignments across the fleet for their sea tours (see fig. 23).

Figure 23: French Navy Junior Surface Warfare Officer (Operations) Training Programs



Source: GAO analysis of French Navy data. | GAO-21-168

Operations SWOs train on simulators and onboard ships during their time in the Naval Academy to prepare for sea duty. The Operations SWOs that spend 3 years at the Naval Academy receive classroom instruction and have ship training periods comprising simulator preparation followed by at-sea training. They receive 300 hours of instruction on maritime information, and spend 5 weeks in simulator training and 9 weeks at sea while at the Naval Academy. Those who spend only 6 months at the Naval Academy have 4 weeks at sea and 2 weeks in simulators. According to French Navy officials, Operations SWOs qualify to lead bridge watches as Officer of the Deck during their time at the Naval Academy. The French Navy ship-driving certification process meets the internationally-recognized Standards of Training, Certification and Watchkeeping for Seafarers, according to French Navy officials.¹

Following graduation, Operations SWOs participate in the Application Campaign, a 6-month navigation training cruise focused on bridge duties. These SWOs must spend at least 50 hours as Officer of the Deck leading bridge watches during this training cruise. SWOs proceed to their regular sea tours after this cruise.

According to French Navy officials, the French Navy ensures the ship-driving proficiency of its Operations SWOs during their career through Commanding Officer assessments and independent evaluations. While Operations SWOs qualify as Officer of the Deck before their regular sea tours, they must pass an assessment by their Commanding Officer at the start of each sea tour before leading bridge watches on their ship. Further, French Navy trainers assess the proficiency of individuals and crews during ashore and at sea training periods. Additionally, SWOs must lead bridge watches above a minimum number of hours annually to maintain their Officer of the Deck qualification.

Engineering SWOs also attend the French Naval Academy and participate in a training cruise focused on engineering department responsibilities. Further, Engineering SWOs can specialize in nuclear or non-nuclear ship propulsion later in their career.

¹International Convention on Standards of Training, Certification and Watchkeeping for Seafarers, July 7, 1978, 1361 U.N.T.S. 2 (entered into force Apr. 20, 1984) (incorporating subsequent amendments).

Personnel Management

Recruitment. The French Navy both recruits civilians and promotes petty officers to become SWOs to help develop a diversity of backgrounds and skills among the SWO workforce. The French Navy bases its recruitment levels on its current need for junior officers and projected need for Department Heads in future years.

Mandatory service requirement. 8 years

Retention rates. Ninety percent of French Navy SWOs serve beyond their mandatory service requirement, with SWOs remaining in the French Navy an average of 21 years. Eighty-five percent of SWOs eventually serve as Department Head, and 66 percent serve as Commanding Officers. According to French Navy officials, the French Navy works to keep retention high through ship crew management and individual career counseling. The French Navy maintains two crews per ship hull on some ship classes to help crews remain cohesive and to keep predictable tour schedules to support SWOs' personal lives. Further, each SWO receives guidance from human resource experts to support their career, to balance family concerns, to identify future career goals, and to encourage retention.

Promotion management. The French Navy assesses SWOs for promotions based on the ship duty qualifications they have obtained and their annual performance ratings. Changes in the expected need for senior officers can also affect promotion rates depending on the timing of promotion screening.

National Flag



Naval Flag



Key Community Facts

Officer Title(s): General Staff, Navy Engineering Officers, Supply Officers

Career Path Type: Specialist by department

Founded: 1860

Headquarters: Rome



Source: Map Resources. | GAO-21-168

Number of Surface Warfare Officer equivalents: 3,043

1,866 General Staff

740 Navy Engineering Officers

437 Supply Officers

Figures as of January 2021.

Italian Navy (Marina Militare)

Background

The Italian Navy has its Surface Warfare Officer equivalent career paths split by department, with General Staff officers managing ship operations, and Navy Engineering officers managing ship engines, facilities, weapons, and other systems. Only General Staff officers are eligible to drive ships and to serve as ship Executive Officers and Commanding Officers at least once in their career after broader exposure to the operations of all ship departments. Navy Engineering officers and Supply officers cannot advance beyond Department Head positions on ships but have other opportunities ashore.

According to Italian Navy officials, the Italian Navy expects General Staff officers to build deep knowledge of naval operations and ship handling, and progress through ship roles to become effective Commanding Officers and otherwise serve as military leaders. The Italian Navy expects Navy Engineering officers to develop deep knowledge of ship designs and functions so they can advance in engineering ship duties and assist with other naval engineering activities, such as ship design, systems integration, procurement, and maintenance (see fig. 24).

Figure 24: Italian Navy Surface Warfare Officer Career Paths and Ships

Surface Warfare Officer Career Paths

Italian Navy
Separate operations and engineering career paths, with engineers ineligible to serve as ship Executive or Commanding Officers

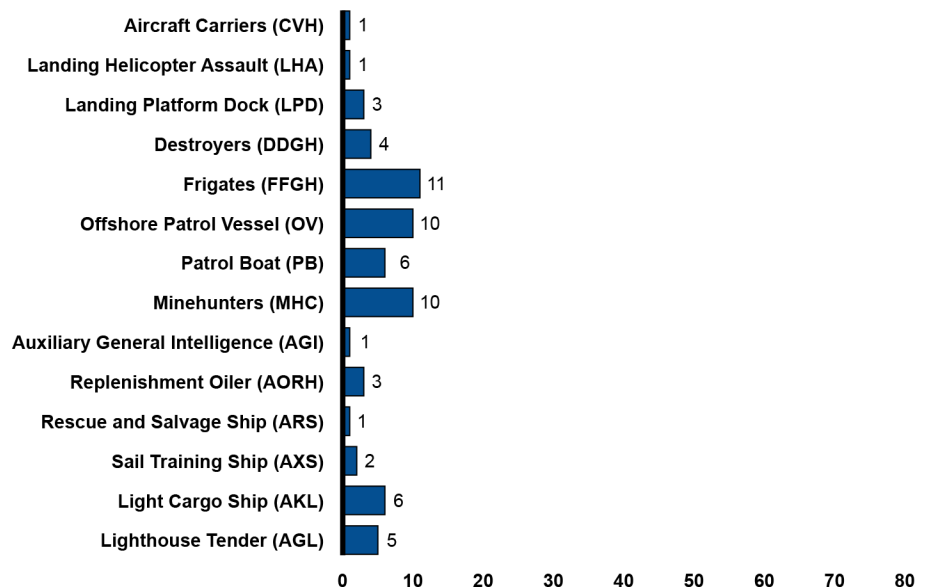
General Staff — Operations officers responsible for ship driving, navigation, and tactics. Only track eligible to drive ships or serve as ship Executive or Commanding Officers.

Navy Engineering — Hold one of two engineering specializations, not eligible to drive ships or serve as ship Executive or Commanding Officers.

- **Naval and Mechanical Engineering** — Responsible for propulsion systems, eligible to become Chief Engineer/Department Head
- **Weapons Engineering** — Responsible for combat systems, not eligible to become Chief Engineer/Department Head

Supply Officers — Responsible for operations support and logistics, including goods supply and small maintenance outsourcing. Eligible to become Department Head. But not eligible to drive ships or serve as ship Executive or Commanding Officers.

Number of Ships by Platform (64 total)



Source: GAO analysis of Italian Navy data. | GAO-21-168

Note: Ship catalog does not include minor coastal units. Figures as of January 2021.

Career Path Structure

The Italian Navy places officers in one of five officer corps: General Staff, Navy Engineering, Medical, Supply, and Coast Guard. Officers from two of these communities—General Staff officers and Navy Engineering officers—provide most officers for surface ships and specialize for roles in specific ship departments.

General Staff Officers

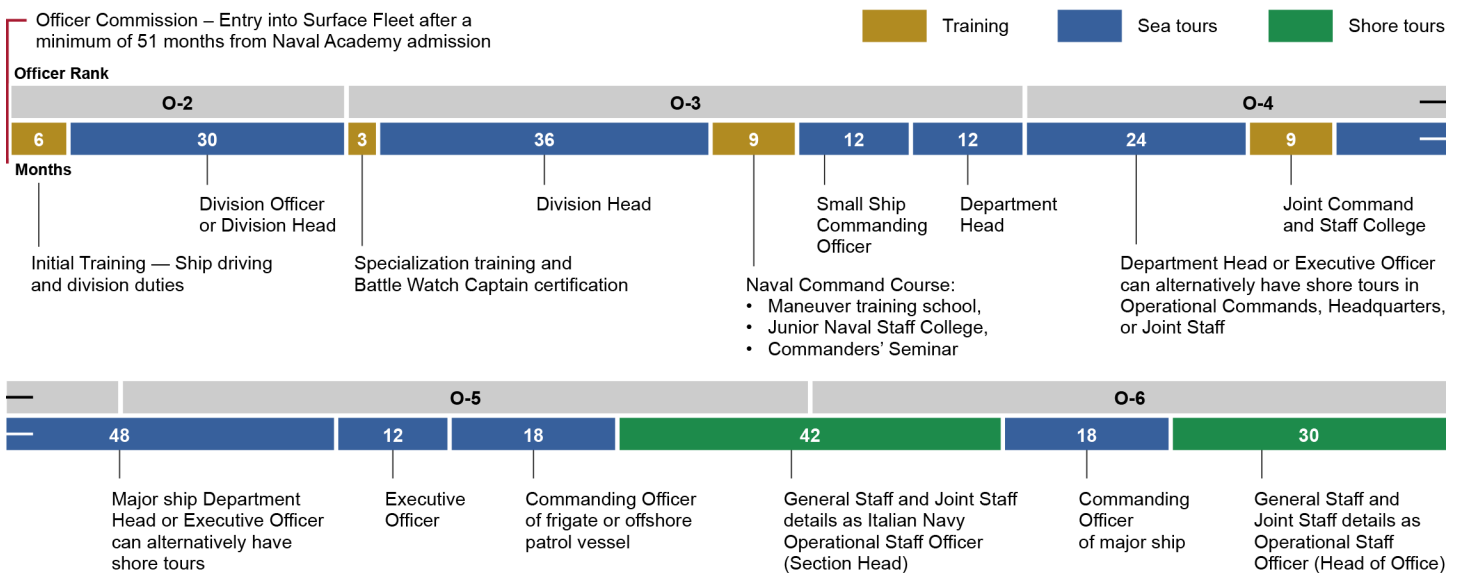
General Staff officers represent a large subset of personnel that include several principal warfare specializations. Those officers specialized in Anti-submarine Warfare, Artillery and Missiles Direction and Anti-air Warfare, and Telecommunications and Information Warfare officers primarily serve on surface ships, and represent the majority of General Staff officers.¹ Other General Staff officers such as amphibious combat, special forces, or aviation, can temporarily hold positions on surface ships during their career, including serving as ship Commanding Officers.

General Staff officers support their principal warfare specialization in their early career and later transition to ship command. After entering the surface fleet and completing their initial training, General Staff officers work toward initial qualification in their principal warfare area during their first Division Officer tour. For example:

- Anti-submarine Warfare officers focus on acoustic sensors and submarine and torpedo countermeasures.
- Artillery and Missiles Direction and Anti-air Warfare officers focus on maintenance and use of firing range radars, sensors, and weapons.
- Telecommunications and Information Warfare officers support either the navigation, communications, or sensors ship divisions.

In addition to their division duties, junior General Staff officers support bridge watches, including leading ship driving as Officer of the Deck. Following their first tour, General Staff officers can further develop in their specialization through training, and advance to higher positions based on rank and the type of ship on which they serve.² For example, a General Staff officer will serve as Commanding Officer of a small ship at the O-3 grade, but may later serve as Department Head on a larger ship at the O-4 grade. General Staff officers can hold Executive and Commanding Officer positions on large ships at senior ranks (see fig. 25).

Figure 25: Nominal Italian Navy General Staff Officer Surface Fleet Career Path



Source: GAO analysis of Italian Navy data. | GAO-21-168

Note: Some timeframes in figure represent average assignment lengths.

¹The Italian Navy also recruits older officers to serve in specific General Staff and Navy Engineering roles on surface ships. Since these officers have a shorter career period, they cannot serve as ship Commanding Officers except for a few opportunities on coastal and special forces' units.

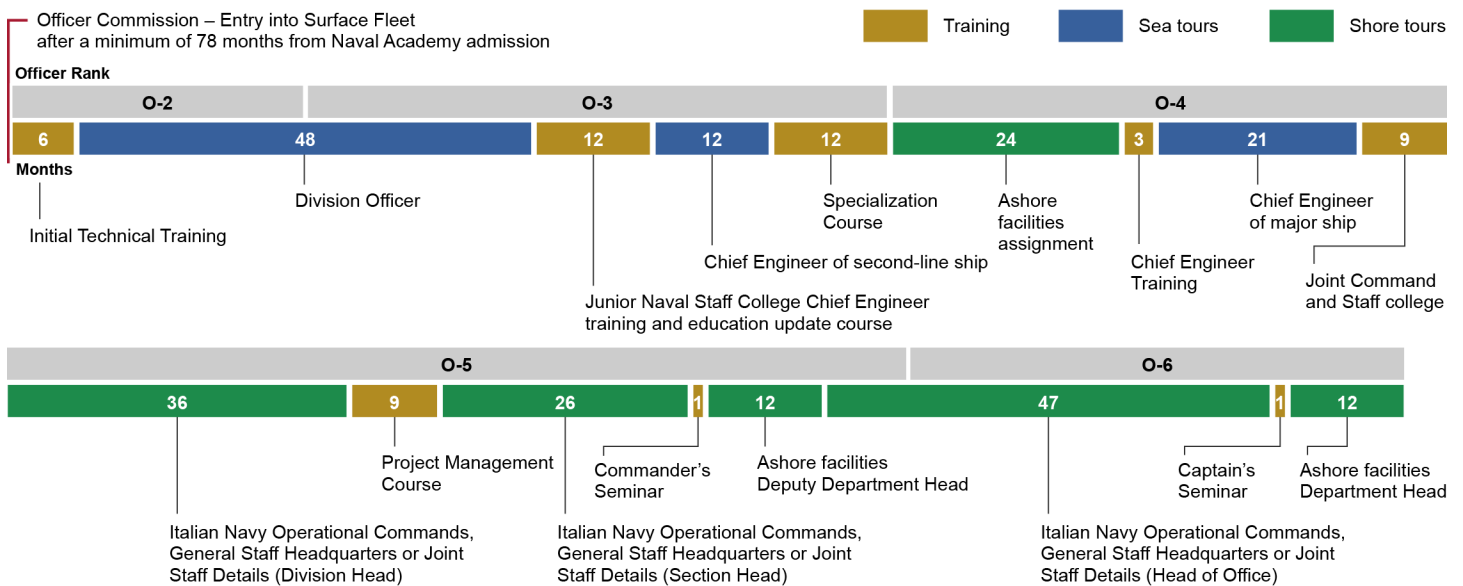
²Instead of continuing in their assigned principal warfare field, General Staff officers can instead apply for an alternate specialization in either Mine Warfare or Hydrography after their first Division Officer tour. These specializations have alternate career paths, with these officers serving exclusively on platforms associated with their specialization until they reach the O-5 grade, at which point they rejoin the rest of General Staff officers for the remainder of their career.

Goals. According to Italian Navy officials, the Italian Navy expects General Staff officers to develop a deep knowledge of naval operations and ship driving, advance in their principal warfare role, become capable ship Commanding Officers, and serve as wider military leaders within Italy and international organizations. According to Italian Navy officials, the career path supports this goal through professional education and diverse at-sea experiences, and works to address the challenge of developing a broad perspective in these officers beyond their assigned ship roles.

Navy Engineering Officers

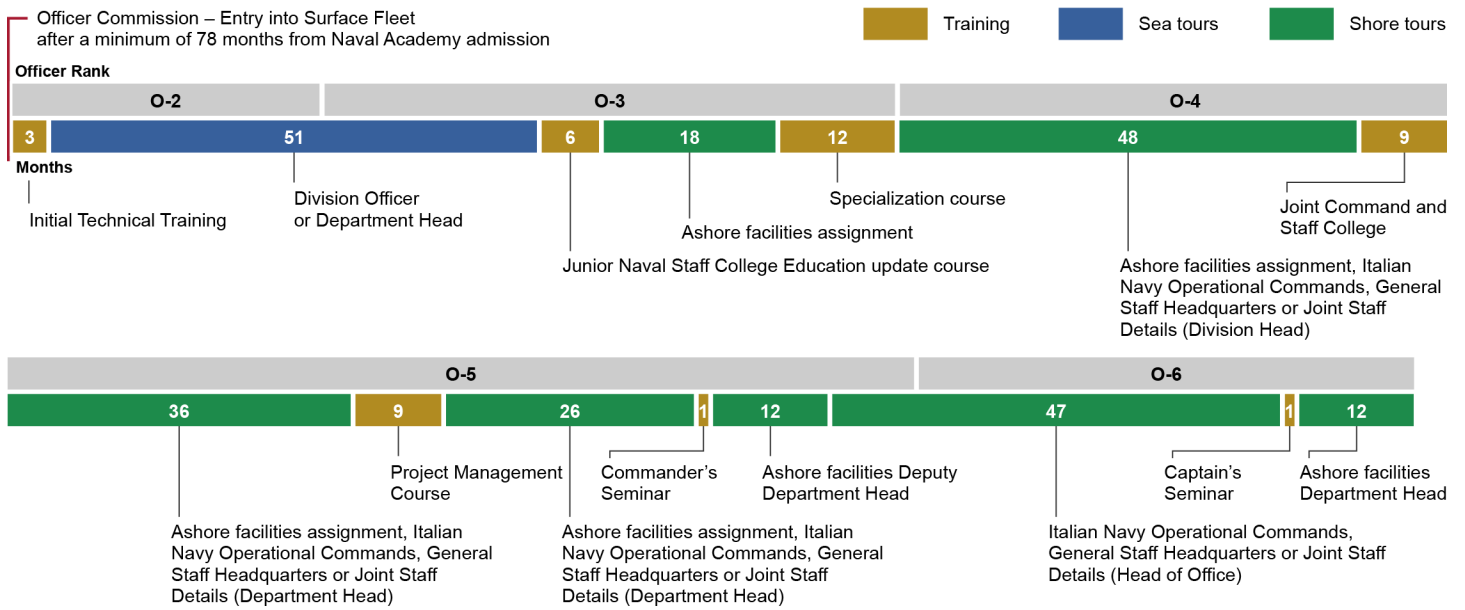
Navy Engineering officers specialize in either Naval and Mechanical Engineering or Weapons Engineering, and spend a smaller portion of their career at sea than General Staff officers. Navy Engineering officers spend over 6 years in the Naval Academy and other universities to receive additional engineering education, compared to over four years for General Staff officers. Upon beginning sea duty, Navy Engineering officers support their relevant ship divisions and departments, with Naval and Mechanical Engineering officers focusing on engine systems and ship facilities, and Weapons Engineering officers on weapons systems. According to Italian Navy officials, Naval and Mechanical Engineering officers cannot advance beyond the role of Chief Engineer aboard ships, and as such do not serve at sea when they advance beyond the grades for available Chief Engineer positions. According to Italian Navy officials, Weapons Engineering officers have an even shorter career at sea, as they are not eligible to hold Chief Engineer positions. Navy Engineering officers spend the remainder of their career in shore positions when they advance beyond available roles, supporting engineering activities such as ship design, acquisition, and maintenance (see figs. 26 and 27).

Figure 26: Nominal Italian Navy Naval and Mechanical Engineering Officer Career Path



Source: GAO analysis of Italian Navy data. | GAO-21-168

Figure 27: Nominal Italian Navy Weapons Engineering Officer Career Path



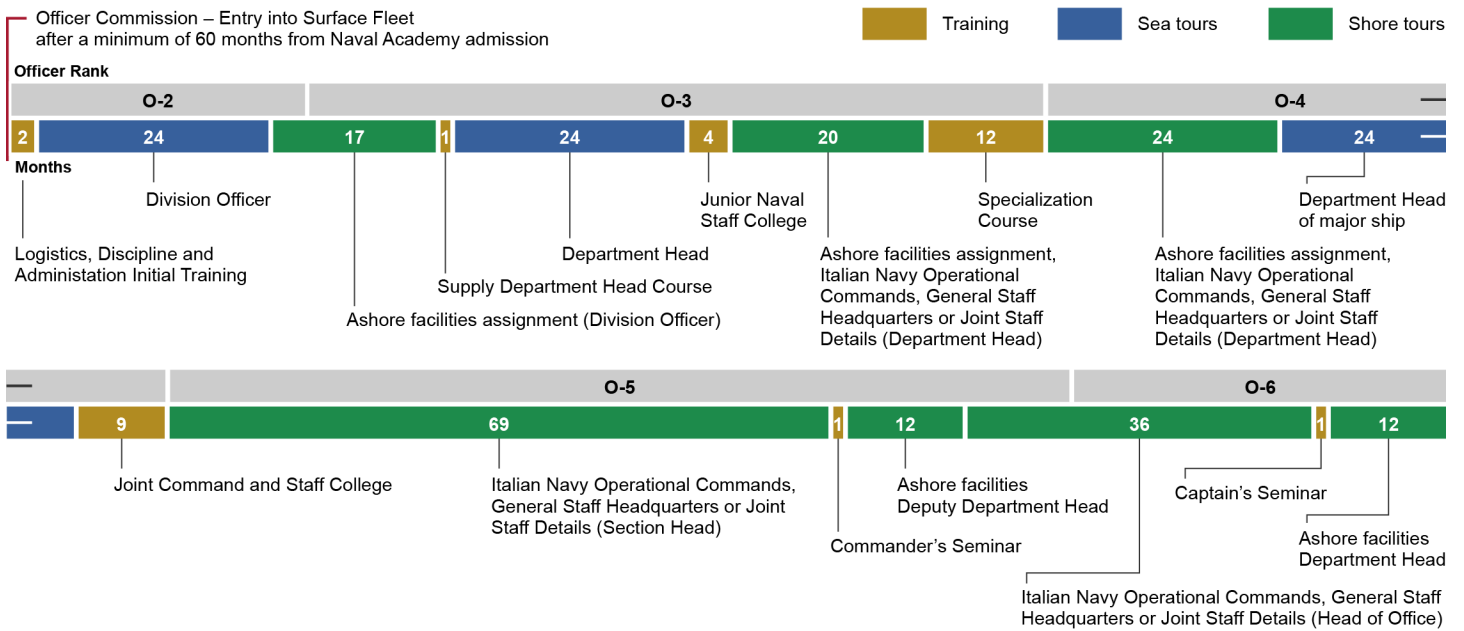
Source: GAO analysis of Italian Navy data. | GAO-21-168

Goals. According to Italian Navy officials, the Italian Navy expects Navy Engineering officers to develop in engineering expertise through a deep knowledge of ship design and systems to support ship operations, advance in ship roles, and support wider Italian Navy engineering needs. According to Italian Navy officials, in addition to their roles on ships, Navy Engineering officers provide expertise for ship design, systems integration, ship construction and maintenance, procurement, and other issues. During later tours these officers can perform leading roles within procurement offices and agencies, both national and multinational, or within Italian Navy High Commands, Naval Divisions, and Italian Navy General Staff Departments.

Supply Officers

Supply officers spend a smaller portion of their career at sea than General Staff officers. Supply officers spend 5 years in the Naval Academy to receive education related to legal, logistics, and administrative matters. Upon beginning sea duty, Supply officers support their relevant ship divisions and departments, focusing on operations support and logistics, including goods supply and small maintenance outsourcing. Their sea tour schedule usually consists of two tours, one in the O-2 grade and one in the O-3 grade, with an optional sea tour at the O-4 grade on major vessels. Supply officers do not serve at sea when they advance beyond the grades for available Supply Department Head positions. Supply officers spend the remainder of their career in shore positions when they advance beyond available roles, supporting supply activities such as logistics, supply, and budget management (see fig. 28).

Figure 28: Nominal Italian Navy Supply Officer Career Path



Source: GAO analysis of Italian Navy data. | GAO-21-168

Goals. According to Italian Navy officials, the Italian Navy expects Supply officers to develop in legal, logistics, supply, and administrative expertise, advance in ship roles, and support wider Italian Navy logistics needs. According to Italian Navy officials, in addition to their roles on ships, Supply officers provide expertise for legal, logistics, support, and budget management, performing leading roles within Regional Supply Divisions, Italian Ministry of Defence, and Italian Navy General Staffs. Senior officers may join Navy High Commands and key national and international organizations.

Junior Officer Training

The Italian Navy provides initial training for General Staff officers through a standard commissioning program, focused ship-driving and division training, and further qualifications during their first sea tour (see fig. 29).

Figure 29: Italian Navy Junior General Staff Officer Surface Training Programs



Source: GAO analysis of Italian Navy data. | GAO-21-168

General Staff officers must attend the Naval Academy for over 4 years, where they receive initial naval education. As part of their time at the Naval Academy, General Staff officers complete four academic navigation courses and spend summer training periods at sea on dedicated training platforms that include both sailing vessels and combatant vessels. Further, they receive an initial ship-driving qualification during their time at the Naval Academy following simulator examinations that according to Italian Navy officials, meet international anti-collision watch standing regulations.³

³Convention on the International Regulations for Preventing Collisions at Sea, Oct. 20, 1972, 1050 U.N.T.S. 17 (entered into force July 15, 1977) (incorporating subsequent amendments).

After completing their time in the Naval Academy, General Staff officers attend Principal Warfare courses where they learn more about their assigned principal warfare division assignment and work toward relevant qualifications. Following this training, General Staff officers begin their first sea tour, where they complete more qualifications through on-the-job training and receive full ship-driving Officer of the Deck certification after receiving approval from their ship Commanding Officer and completing an examination by a designated external commission. The Italian Navy ship-driving certification process is compatible with the internationally Standards of Training, Certification and Watchkeeping for Seafarers.⁴ However, Italian Navy officers do not earn an internationally-recognized ship-driving certification, they instead receive a certification specific to the Italian Navy.

Navy Engineering officers also attend the Naval Academy, but spend over 6 years in the academy and other universities to receive additional education related to their engineering specialization to prepare them for sea duty. They receive further training specific to their specialization as they advance through their career.

Supply officers attend the Naval Academy for 5 years to receive education on legal information and other topics related to their logistics and administrative specialization to prepare them for sea duty. They receive further training specific to their specialization as they advance through their career.

Personnel Management

Recruitment. The Italian government sets annual officer recruitment plans for the Italian Navy based on overall national defense goals for each year and within officer-level ceilings stated in Italian Defence Code law.⁵ The majority of recruits come from an annual recruitment opportunity for those aged 18 to 23 to attend the Naval Academy.

Mandatory service requirement. 10 years

Retention. According to Italian Navy officials, Navy Engineering officers face higher retention challenges compared with General Staff due to fewer career opportunities within the Italian Navy for engineers and more opportunities for engineers in the civilian sector.

Promotion management. The Italian Navy bases promotions on criteria set in law, including completion of statutory assignments, service at sea, and performance reports. For example, General Staff officers have the following requirements for promotion:

- O-1 to O-2: 2 years of service in rank
- O-2 to O-3: 4 years of service in rank, with at least 2 years of sea duty in rank
- O-3 to O-4: 6 years of service in rank, with at least 3 years of sea duty in rank, including a year as Commanding Officer on a small ship or equivalent duty, and a selection process
- O-4 to O-5: 4 years of service in rank
- O-5 to O-6: 4 years of service in rank, with at least 3 years of total sea duty in the O-4 and O-5 grades, including a year of ship command, and a selection process

Navy Engineering officers and Supply officers also have sea duty requirements for promotion to certain ranks:

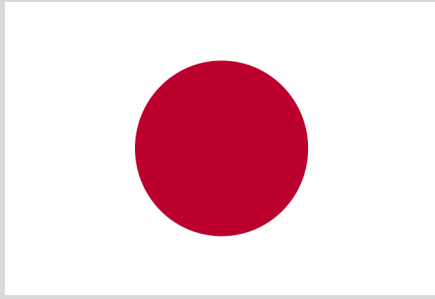
- Navy Engineering officers must complete 3 years of sea duty at the O-3 grade to advance to O-4.
 - Those with the Naval and Mechanical Engineering specialization must spend at least 1 year of their O-3 sea duty as a Chief Engineer, and must also complete at least 18 months of sea duty as a Chief Engineer in the O-4 grade to advance to O-5.

⁴International Convention on Standards of Training, Certification and Watchkeeping for Seafarers, July 7, 1978, 1361 U.N.T.S. 2 (entered into force Apr. 20, 1984) (incorporating subsequent amendments).

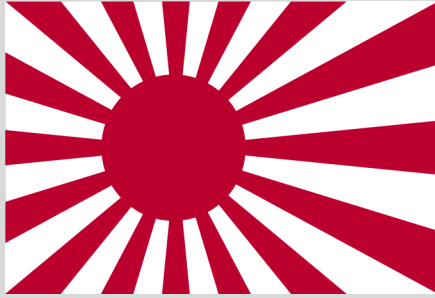
⁵Law 66-2010, and subsequent amendments. GAO did not review any foreign laws or regulations; we relied on information from written responses to the questionnaires we sent to foreign navies.

- Supply officers must complete 2 years of sea duty at the O-2 grade to advance to O-3, and 2 years of sea duty at the O-3 grade, including 1 year as Supply Department Head, to advance to O-4.

National Flag



Naval Flag



Key Facts

Officer Title(s): Surface Warfare Officers

Career Path Type: Generalist junior officers; specialized Department Heads

Founded: 1954

Headquarters: Tokyo



Source: Map Resources. | GAO-21-168

Japan Maritime Self-Defense Force (海上自衛隊)

Background

The Japan Maritime Self-Defense Force (JMSDF) recruits Surface Warfare Officers (SWO) through three means:

- Category 1: Recruit with no prior enlisted experience after earning university degree
- Category 2: Promote from Petty Officers to Ensign below age 36
- Category 3: Promote from Chief Petty Officer or Warrant Officer to Ensign

The remainder of this appendix discusses Category 1 SWOs unless otherwise noted. SWOs rotate through different ship departments in junior ranks to gain experience in all areas of ship operations, then specialize in one of six areas for Department Head positions: Gunnery, Anti-Submarine Warfare, Navigation, Operations, Engineering, and Mine Warfare. All specialties can be selected to become Executive or Commanding Officers, but some are selected less frequently (see fig. 30).

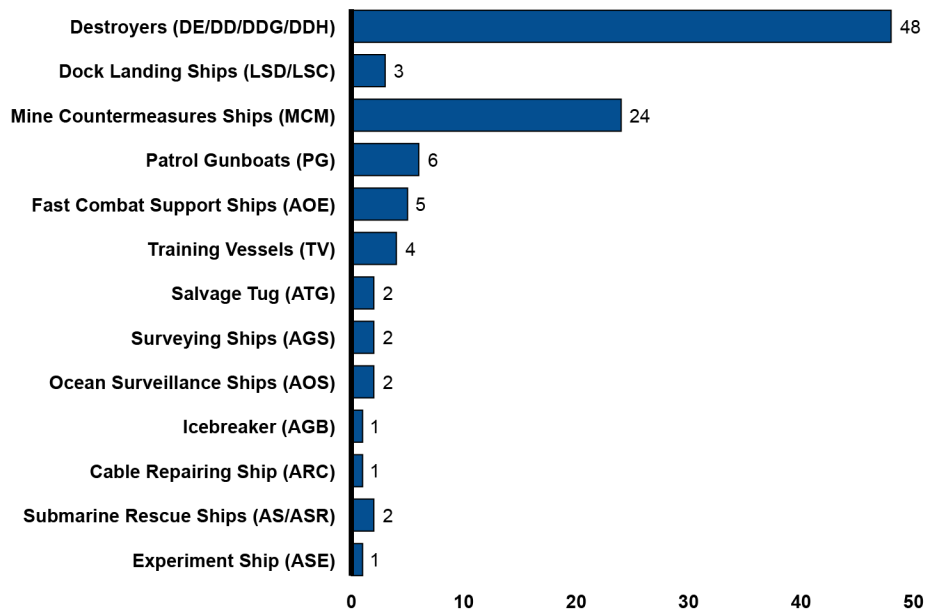
Figure 30: Japan Maritime Self-Defense Force—Category 1 Surface Warfare Officer Career Paths and Ships

Surface Warfare Officer Career Path Milestones

Japan Maritime Self-Defense Force
Surface Warfare Officer career path

O-1	O-2	O-3	O-4	O-5	O-6
Training Cruises	Assistant Officer Tours One 12-month tour each in: • Communications • Gunnery or Anti-submarine • Engineering or Damage Control	Gunnery/ Anti-submarine officer tour	Navigation officer tour	Officers gain one of six specializations for Department Head assignments: Gunnery, Anti-submarine, Navigation, Operations, Engineering, Mine Warfare	Officers are not specialized for O-6 positions
				Officers of all specializations are eligible to hold Executive and Commanding Officer positions at appropriate ranks	

Number of Ships by Platform (101 total)



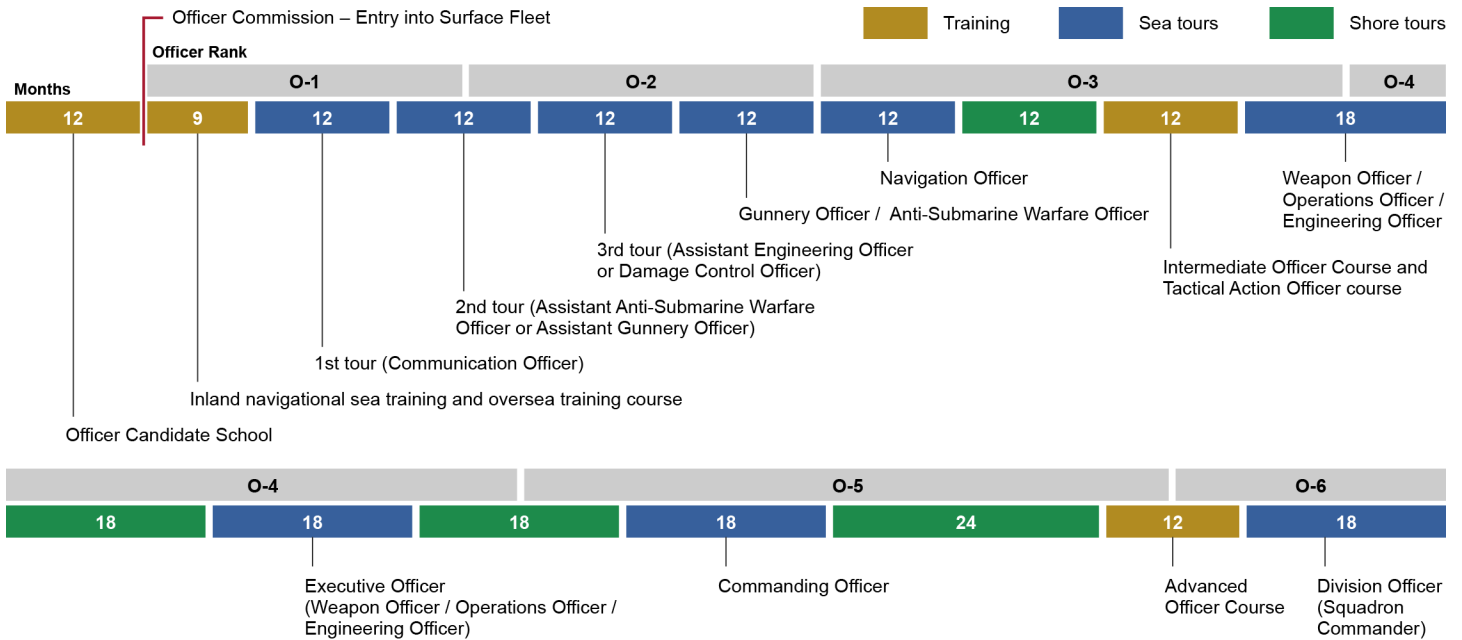
Source: GAO analysis of Japan Maritime Self-Defense Force data. | GAO-21-168
Note: Figures as of January 2021.

Career Path Structure

SWOs receive a variety of experiences as junior officers in each ship department. After entering the JMSDF and completing their initial training cruises, these SWOs rotate through the three ship departments, spending 1 year each in Communications, Gunnery or Anti-Submarine Warfare, and Engineering or Damage Control. Following these tours, they then hold positions as Gunnery or Anti-Submarine Warfare officers and Navigation officers.

Following these early tours, SWOs attend the Intermediate Officer Course at the O-3 grade, where they place into one of six specializations for their Department Head tours. Specializations include: Gunnery, Anti-Submarine Warfare, Navigation, Operation, Engineering, and Mine Warfare. SWOs from all specializations can be selected to become Executive and Commanding Officers at appropriate ranks, though not all SWOs are selected to do so. For example, according to JMSDF officials, few Engineering officers are selected to command ships. SWOs end their specialization when they reach senior positions at the O-6 grade (see fig. 31).

Figure 31: Nominal Japan Maritime Self-Defense Force Surface Warfare Officer Career Path



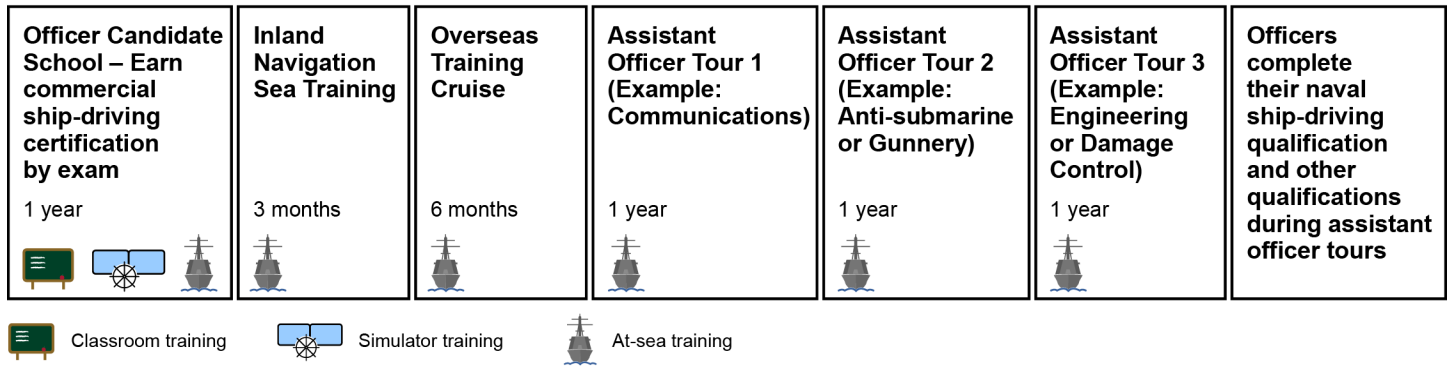
Source: GAO analysis of Japan Maritime Self-Defense Force data. | GAO-21-168
 Note: Some timeframes in figure represent average assignment lengths.

Goals. According to JMSDF officials, JMSDF expects SWOs to possess broad and sophisticated knowledge of military, security, political, scientific, and technological issues, as SWOs become the core of the surface fleet command, and those that become Commanding Officers must be prepared to serve competently in all conditions. SWOs get a foundation of knowledge by serving in three one-year assignments as assistant officers in each ship department: Weapons or Anti-Submarine Warfare; Navigation or Operations; and Engineering. These SWOs build on this foundation later in their career when they specialize in a specific department.¹

¹Category 2 and 3 SWOs have less variable career paths than Category 1 SWOs, and generally serve in roles related to their prior enlisted experience. These SWOs have shorter training periods due to their prior experience, and place permanently into one of the six specializations, where they serve for the remainder of their time on ships. Category 2 and 3 SWOs are more tactical in focus, applying expertise related to their assigned department at the ship or squadron level. For example, those SWOs that specialize in mine warfare focus heavily on their specialization for their career.

Junior Officer Training

Figure 32: Japan Maritime Self-Defense Force Junior Category 1 Surface Warfare Officer Training Programs



Source: GAO analysis of Japan Maritime Self-Defense Force data. | GAO-21-168

JMSDF Category 1 SWOs train in Officer Candidate School before becoming an officer and then conduct training at sea (see fig. 32). All JMSDF officers without prior enlisted experience spend 1 year at Officer Candidate School learning about JMSDF, during which time they earn a commercial ship-driving certification. Following this they complete 3 months of inland navigation and a 6-month training cruise at sea. The inland navigation training provides experience to SWOs on navigation in congested waterways and in understanding Japanese maritime conditions. JMSDF officers are not aware of their officer community placement, such as surface warfare, submarines, or aviation, when they enroll in JMSDF and do not learn their community placement until they complete both Officer Candidate School and the inland and overseas training cruises.

Following placement in the SWO community, Category 1 SWOs serve in three 1-year assistant officer tours, spending 1 year in each ship department: Weapons or Anti-Submarine Warfare; Navigation or Operations; and Engineering, to gain general knowledge of ship operations. During their time in Navigation or Operations, SWOs serve as Assistant Officer of the Deck and can qualify as Officer of the Deck for sea tours after this assignment with Commanding Officer approval. According to JMSDF officials, the JMSDF ship-driving certification process is compatible with the internationally-recognized Standards of Training, Certification and Watchkeeping for Seafarers.²

JMSDF Category 2 and 3 SWOs have a shorter training period due to their prior enlisted experience and narrower career path. Rather than a year, Category 2 SWOs spend eight months and Category 3 SWOs spend three months in Officer Candidate School. These officers know they will be placed into the SWO community with a specialization relevant to their prior enlisted experience, so JMSDF targets their training to their planned career. Category 2 SWOs participate in a shortened 3-month overseas training cruise following Officer Candidate School, and Category 3 SWOs do not have further at-sea training. Following this initial training, these SWOs begin ship assignments in their department specialization.

Personnel Management

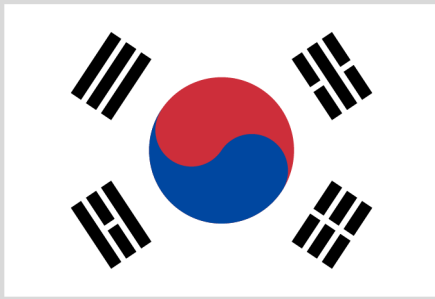
Recruitment. JMSDF recruits SWOs through the Officer Candidate School accession program, with annual numbers of SWO recruits based on recruitment plans and available budget.

Mandatory service requirement. JMSDF does not have a mandatory service requirement for SWOs.

Promotion management. JMSDF determines number of rank promotions each year and then selects candidates based on promotion criteria. Performance in assignments and educational courses affects likelihood of promotion.

²International Convention on Standards of Training, Certification and Watchkeeping for Seafarers, July 7, 1978, 1361 U.N.T.S. 2 (entered into force Apr. 20, 1984) (incorporating subsequent amendments).

National Flag



Naval Flag



Key Community Facts

Officer Title(s): Surface Warfare Officer

Career Path Type: Generalist junior officers, senior officers specialized by ship type

Founded: 1945

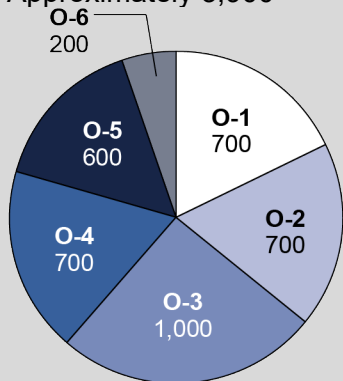
Headquarters: Gyeryong



Source: Map Resources. | GAO-21-168

Number of Officers:

Approximately 3,900



Source: GAO analysis of Republic of Korea Navy data. | GAO-21-168

Note: O-1 through O-6 indicate officer grades associated with rank and pay, with O-1 the most junior officer grade. Senior leaders can hold grades above O-6. Figures as of Feb. 2021.

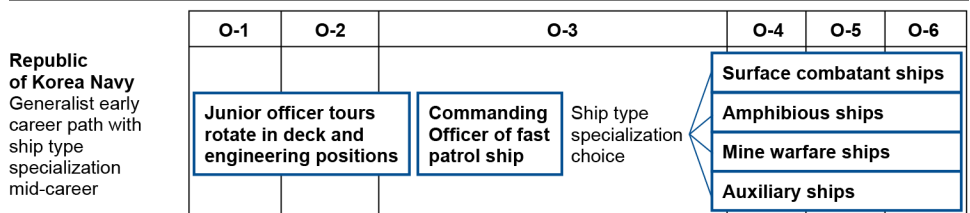
Republic of Korea Navy (대한민국 해군)

Background

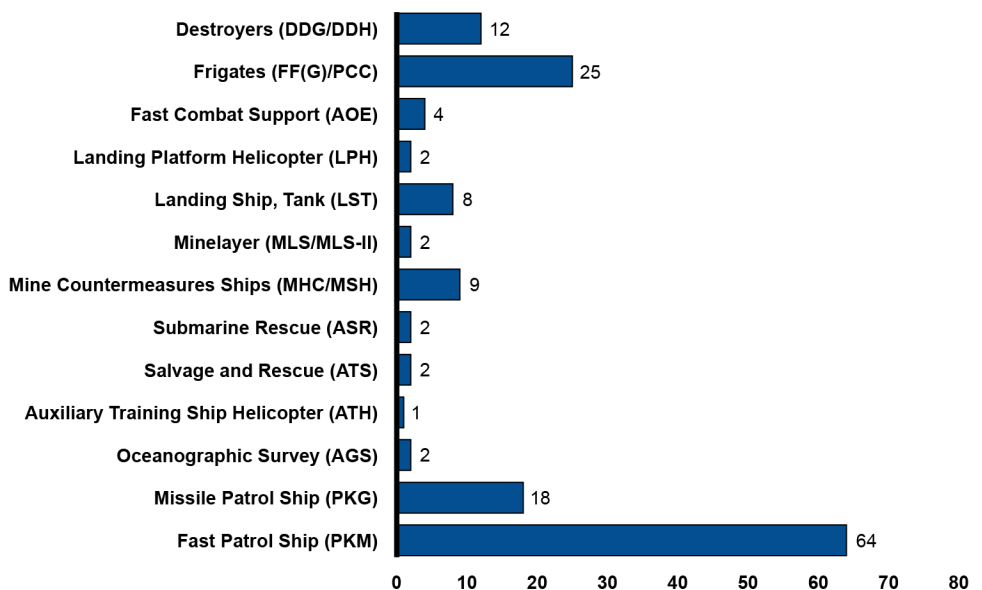
Republic of Korea (ROK) Navy Surface Warfare Officers (SWO) have a generalist career path for early ranks and specialize by ship type for senior ranks. Upon entering the surface fleet, junior officers rotate between deck and engineering positions for their early sea tours to develop knowledge of seamanship and ship operations. At the O-3 grade, all SWOs serve as Commanding Officer on a fast patrol ship to gain experience with ship command and management. Following this assignment, SWOs pick one of four ship type specializations—surface combatant ships, amphibious ships, mine warfare ships, or auxiliary ships—and hold their assigned specialization for the remainder of their sea tours on ships. According to ROK Navy officials, ROK Navy goals for its career path system include maximizing fleet force capability with SWOs specialized by ship type while adapting to the changing SWO work environment as ships and operating conditions evolve (see fig. 33).

Figure 33: Republic of Korea Navy Surface Warfare Officer Career Paths and Ships

Surface Warfare Officer Career Path Milestones



Number of Ships by Platform (151 total)



Source: GAO analysis of Republic of Korea Navy data. | GAO-21-168

Note: Figures as of February 2021.

Career Path Structure

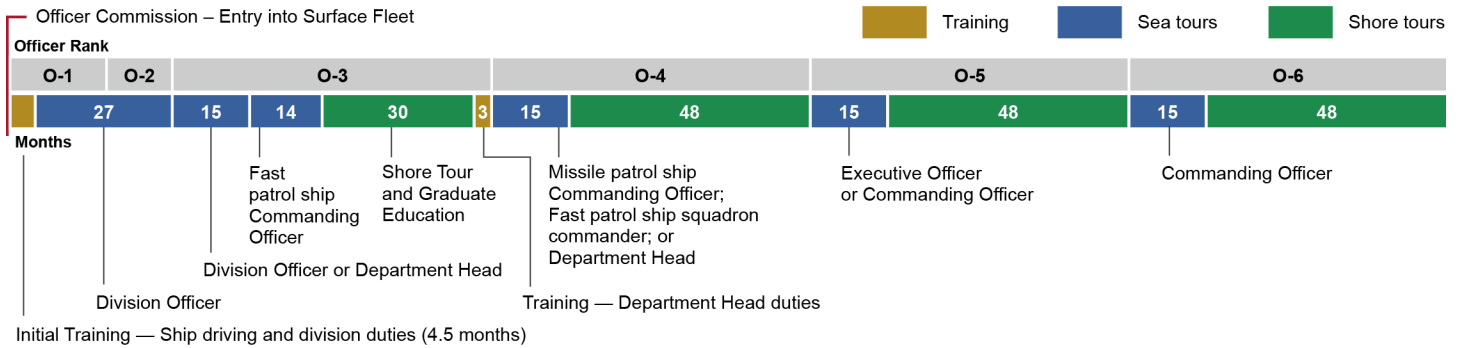
ROK Navy SWOs have a generalist career path for junior officers, holding positions among all ship departments in early grades before becoming the Commanding Officer of a fast patrol ship at the O-3 grade. Early Division Officer and Department Head assignments rotate between different ship departments, ship types, and sea regions to give SWOs a variety of experiences and understand more about ship operations according to ROK Navy officials. At the O-3 grade, ROK Navy SWOs serve as Commanding Officers of fast patrol ships, giving them command and management experience on a small ship to provide a foundation for their roles on larger ships at more senior grades.

After completing their fast patrol ship command assignment, ROK Navy SWOs select one of four ship type specializations for their following sea tours as Department Heads, Executive Officers, and Commanding Officers. These ship type specializations include:

- **Surface combatant ships.** Destroyers; frigates; missile patrol ships; fast patrol ships
- **Amphibious ships.** Landing platform helicopter; landing ship, tank
- **Mine warfare ships.** Minelayers; mine countermeasures ships
- **Auxiliary ships.** Fast combat support; oceanographic survey; submarine rescue; salvage and rescue

The ROK Navy specializes its senior officers by ship type due to the significant differences in missions, operations, and ship management among the four ship groups. According to ROK Navy officials, this helps SWOs to accumulate experience related to their assigned ships and missions (see fig. 34).

Figure 34: Nominal Republic of Korea Navy Surface Warfare Officer Career Path



Source: GAO analysis of Republic of Korea Navy data. | GAO-21-168

Note: Some timeframes in figure represent average assignment lengths.

All ROK Navy SWOs are expected to drive ships, and all are eligible to apply for ship Executive and Commanding Officer positions during their career. Those that fail to qualify as ship Commanding Officers on large ships can still advance in rank through shore opportunities.

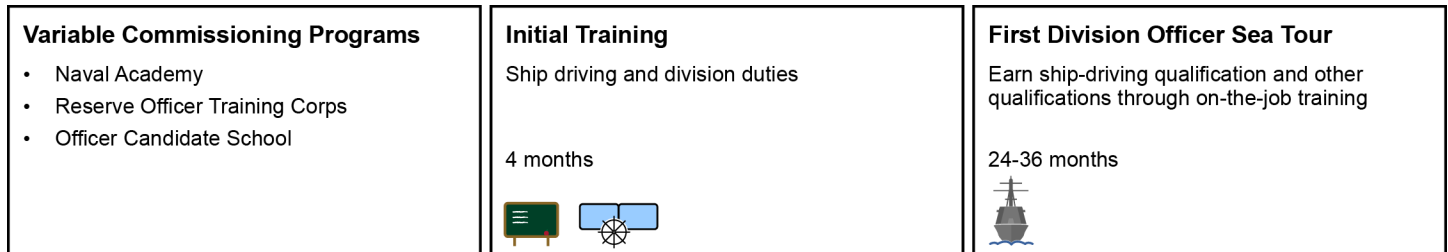
Goals. According to ROK Navy officials, the goals for ROK Navy SWO career paths are to maintain maximum fleet force capacity by:

- managing appropriate career paths that adapt to the changing SWO work environment;
- managing SWOs specialized by ship types;
- managing Commanding Officer opportunities to maintaining appropriate SWO career paths; and
- managing female SWO assignments based on ship living facilities and operations environment.

Junior Officer Education and Training

ROK Navy SWOs receive their officer commission through variable programs, and receive initial training specific to SWO responsibilities after receiving their commission. The ROK Navy uses multiple programs to recruit officers, including its Naval Academy, Reserve Officer Training Corps, and Officer Candidate School programs. Officer candidates in the ROK Naval Academy receive their commission after completing a training cruise of 3 to 5 months. All SWOs attend SWO initial training courses for 4 months after receiving their officer commission, learning ship-driving and division duties (see fig. 35).

Figure 35: Republic of Korea Navy Junior Surface Warfare Officer Training Programs



Source: GAO analysis of Republic of Korea Navy data. | GAO-21-168

ROK Navy SWOs earn further qualifications through on-the-job training during their first sea tour. Following their initial training, SWOs work to complete qualification requirements as Division Officers, including watch duty, engine room duty, and damage control. ROK Navy SWOs earn their ship-driving qualification to serve as Officer of the Deck after completing these initial requirements and receiving favorable assessment by their Department Head, Executive Officer, and Commanding Officer, typically after about 1 year at sea.

Personnel Management

Recruitment. The ROK Navy recruits SWOs according to junior officer staffing needs. The ROK Navy sets staffing levels based on overall need among communities, so staffing of different divisions may affect SWO recruiting levels.

Mandatory service requirement. 10 years for Naval Academy graduates; 3 years for Officer Command School; and 2 years for Reserve Officer Training Corps.

Retention rates. From 2017 through 2019, an average of 53 percent of ROK Navy SWOs chose to become career SWOs after completing their mandatory service requirement.

Separately, ROK Navy SWOs have the option to extend their initial service requirement by 1 year or more. An average of 55 percent of ROK Navy SWOs approaching the end of their service requirement extended their initial service period from 2017 through 2019.

Promotion management. From 2016 through 2018, eligible ROK Navy SWOs received promotions to the next grade on average at the following rates each year, with the number of actual promotions varying based on the number of legally specified candidates.¹

- O-3 to O-4: 90 percent
- O-4 to O-5: 31 percent
- O-5 to O-6: 10 percent
- O-6 to O-7: 8 percent

¹GAO did not review any foreign laws or regulations; we relied on information from written responses to the questionnaires we sent to foreign navies.

National Flag



Naval Flag



Key Community Facts

Officer Title(s): Warfare Officer, Engineer Officer

Career Path Type: Specialist by department

Founded: 1546

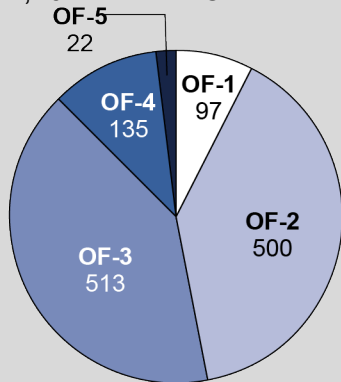
Headquarters: Whale Island, Hampshire



Source: Map Resources. | GAO-21-168

Number of Surface Warfare Officer equivalents:

1,267 Warfare Officers



Source: GAO analysis of United Kingdom Royal Navy data. | GAO-21-168

Note: OF-1 through OF-5 indicate officer grades associated with rank and pay, with OF-1 the most junior officer grade. Senior leaders can hold grades above OF-5.

492 Engineer Officers

Figures as of January 2021.

United Kingdom Royal Navy

Background

The United Kingdom (UK) Royal Navy has its Surface Warfare Officer equivalent career paths split by department, with Warfare Officers managing ship operations, and Engineer Officers managing ship engines, facilities, weapons, and other systems. Only Warfare Officers are eligible to drive ships and to serve as ship Executive and Commanding Officers. Engineer Officers cannot advance beyond Department Head positions on ships but have other opportunities ashore. According to UK Royal Navy officials, Warfare and Engineer Officers are expected to develop high levels of proficiency in their assigned departments and come to sufficiently understand the full range of ship operations through their training and career experiences (see fig. 36).

Figure 36: United Kingdom Royal Navy Surface Warfare Career Paths and Ships

Surface Warfare Officer Career Paths

U.K. Royal Navy
Split Warfare and Engineer career paths

Warfare

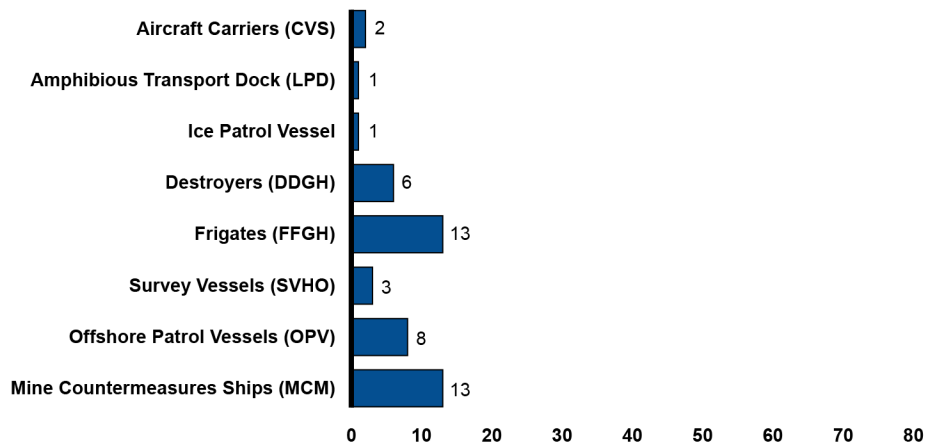
Officers specialized for ship driving, navigation, and tactics. Only path eligible to drive ships or serve as ship Executive Officers or Commanding Officers.

Engineer

Hold one of two engineering specializations, not eligible to drive ships or serve as ship Executive Officers or Commanding Officers.

- **Weapon Engineering** – Responsible for weapons, communications, information technology and sensors
- **Marine Engineering** – Responsible for propulsion, auxiliary power generation, and hotel systems such as heat, lighting, and firefighting

Number of Ships by Platform (47 total)



Source: GAO analysis of United Kingdom Royal Navy data. | GAO-21-168

Note: Figures as of January 2021.

Career Path Structure

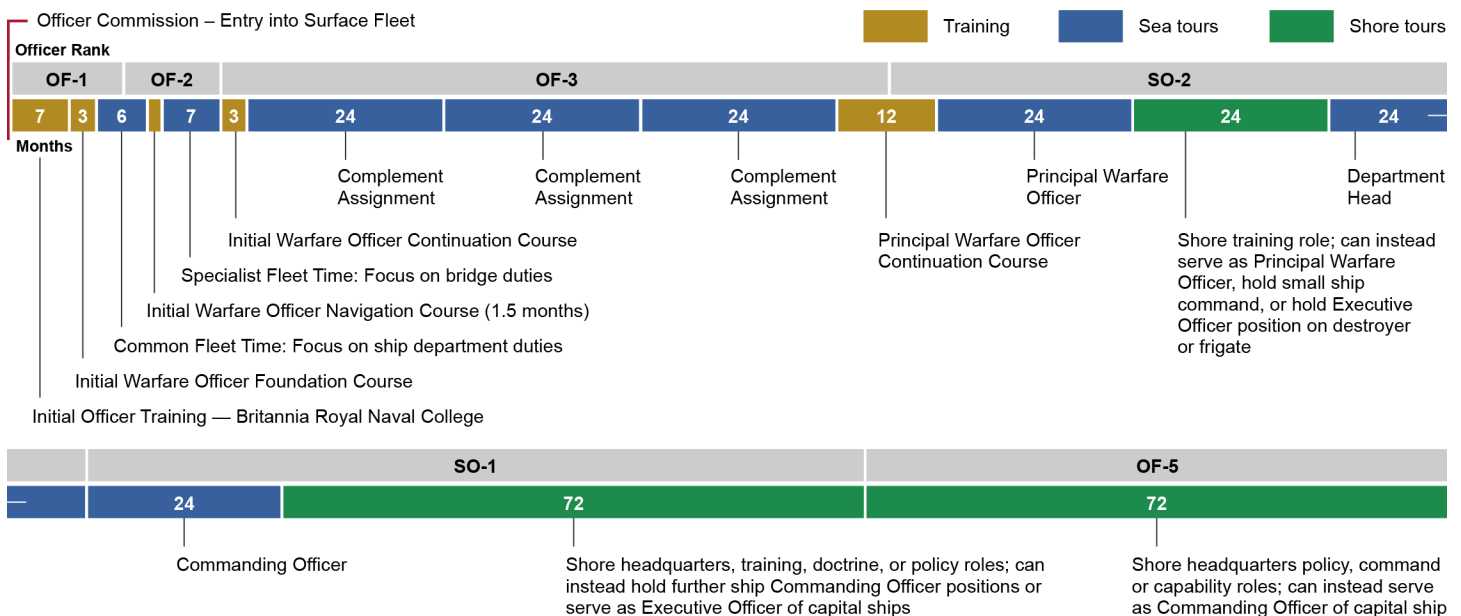
The UK Royal Navy equivalents to Surface Warfare Officers come from two officer communities—Warfare Officers and Engineer Officers—which specialize for roles in specific ship departments.¹

Warfare Officers

Warfare Officers lead ship operations, including ship driving, navigation, tactics, and ship command. Warfare Officers advance through junior positions, Department Head, Executive Officer, and Commanding Officer roles, but not always in a linear progression. For example, according to UK Royal Navy officials, Warfare Officers can hold advanced roles on smaller vessels like patrol craft early in their careers. The UK Royal Navy refers to sea tours at the OF-3 (lieutenant) grade as complement assignments, which vary in ship duties. After the first complement assignment, a surface junior officer may seek additional bridge watchkeeping duties in ships or may sub-specialize. The available sub-specializations include mine clearance diving, hydrography and meteorology, fighter control, intelligence, and navigation.

Following the three complement assignments, Warfare Officers train to be Principal Warfare Officers that can hold Department Head and Deputy Head of Department positions on large ships. For example, on a frigate or destroyer there are typically three or four Warfare Officers in junior watchkeeping positions; one as a Navigation Officer; two as Principal Warfare Officers for department leadership. Warfare Officers also hold ship Executive and Commanding Officer positions. Warfare Officers can develop sub-specializations to help them perform specific roles, including Anti-Air, Fleet Anti-Submarine, Communications, and Specialist Navigators (see fig. 37).

Figure 37: Nominal United Kingdom Royal Navy Warfare Officer Surface Fleet Career Path



Source: GAO analysis of United Kingdom Royal Navy data. | GAO-21-168

Note: SO-2 grade officers can hold Staff officer positions equal to the OF-3 grade and SO-1 grade officers can hold Staff officer positions equal to the OF-4 grade. Capital ships are major naval vessels, such as aircraft carriers.

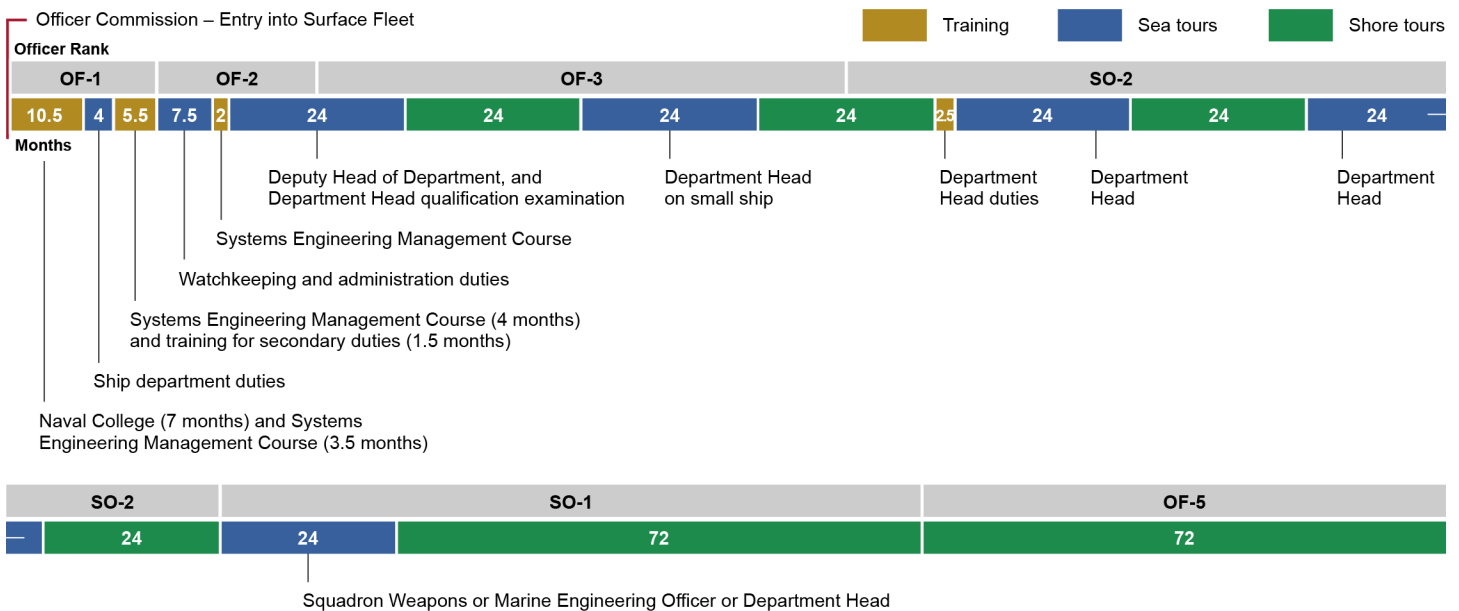
Goals. According to UK Royal Navy officials, Warfare Officers are expected to develop toward the Commanding Officer role, ultimately earning command qualifications that allow them to command all vessels. The goal of the Warfare Officer career path is to develop officers with detailed knowledge ready to handle complex shipping situations and combat operations.

¹The UK Royal Navy also has a separate career path for Logistics Officers, who provide logistics support on ships and in shore establishments. Logistics Officers can advance to the Department Head level aboard ships, and manage the delivery of equipment, accommodation, food and other vital services. A Logistics Officer's wider responsibilities also include assistance with policy, personnel, legal, and accounting matters to support fleet activities.

Engineer Officers

Engineer Officers are responsible for the condition and operation of ship systems, subdivided into Weapon Engineering to maintain weapon systems, and Marine Engineering to maintain ship engine systems and ship facilities. Engineer Officers are not eligible to drive ships or to hold ship Executive Officer or Commanding Officer positions, and as a result do not hold ship positions at sea beyond the Department Head level. For example, on a frigate or destroyer there is typically one Marine Engineering officer as Department Head, one as Deputy Head of Department, and two trainees participating in Common Fleet Time—a junior officer training tour where the officer performs duties associated with all ship departments—with the same number of Weapon Engineering officers in the weapons department. Engineer Officers serve as Deputy Head of Department at junior ranks, and then after passing a qualification examination serve as Department Head on increasingly larger ships as they increase in rank. Senior Engineer Officers serve in squadron-level positions and in shore positions. Engineer Officers often hold shore positions related to their specialization, such as acquisition or maintenance (see fig. 38).

Figure 38: Nominal United Kingdom Royal Navy Engineer Officer Career Path



Source: GAO analysis of United Kingdom Royal Navy data. | GAO-21-168

Note: SO-2 grade officers can hold Staff officer positions equal to the OF-3 grade and SO-1 grade officers can hold Staff officer positions equal to the OF-4 grade.

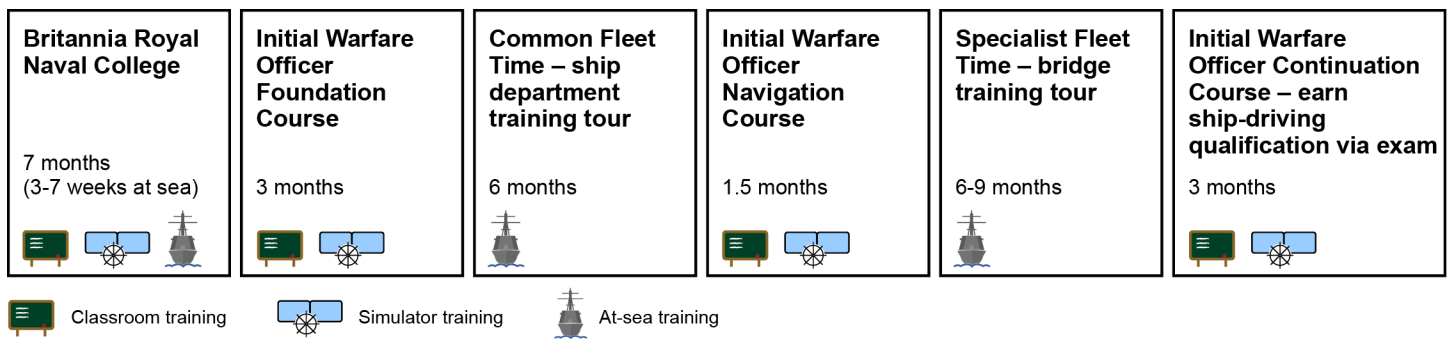
Goals. According to UK Royal Navy officials, Engineering Officers are expected to develop in their ability to operate ship systems and conduct preventive and corrective maintenance, eventually leading ship departments.

Junior Warfare Officer Training

The UK Royal Navy provides initial training for Warfare Officers through a standardized accession program, sequenced training tours, and a ship-driving qualification process that meets internationally-recognized Standards of Training, Certification and Watchkeeping for Seafarers.² After completing the training and qualification program, Warfare Officers proceed to more varied assignments across the fleet (see fig. 39).

²International Convention on Standards of Training, Certification and Watchkeeping for Seafarers, July 7, 1978, 1361 U.N.T.S. 2 (entered into force Apr. 20, 1984) (incorporating subsequent amendments).

Figure 39: UK Royal Navy Junior Warfare Officer Surface Training Programs



Source: GAO analysis of United Kingdom Royal Navy data. | GAO-21-168

Warfare Officers attend a standard accession program at the Britannia Royal Naval College, including 15 weeks of military skills training, and 15 weeks of maritime skills training. The maritime period includes a training cruise of three to seven weeks where cadets serve in junior positions on a ship to better understand ship operations.

Following graduation, Warfare Officers attend a series of courses and training and qualification cruises.

- Warfare Officers attend the Initial Warfare Officer Foundation course for 3 months, where they study ship handling, navigation, and strategy.
- The first tour at sea for Warfare Officers is referred to as Common Fleet Time, a 6-month period where Warfare Officers must perform junior officer duties in all ship departments and complete a set of personal requirements.
- Following Common Fleet Time, Warfare Officers attend the Initial Warfare Officer Navigation course for seven weeks, where they learn further ship handling and navigation skills.
- Next is a second tour, Specialist Fleet Time, where Warfare Officers primarily serve on the bridge as a conning officer for 6 to 9 months to gain experience in ship handling and navigation. Warfare Officers must spend at least 600 hours as conning officers.
- Finally, Warfare Officers can earn their ship-driving qualification via a standardized examination in the Initial Warfare Officer Continuation course. The certification process meets the internationally-recognized Standards of Training, Certification and Watchkeeping for Seafarers.³

Personnel Management

Recruitment. The Royal Navy sets recruitment goals based on three factors:

- Expected ability to recruit officer cadets
- Expected need for officers
- Available officer training capacity

Mandatory service requirement. 8 years

Retention rates. According to UK Royal Navy officials, the UK Royal Navy had difficulty retaining Engineer Officers in the past due to limited career opportunities, but has had success improving Engineer Officer retention by reserving additional senior positions for Engineer Officers. The UK Royal Navy also provides a financial retention bonus to Engineer Officers.

Promotion management. The UK Royal Navy has a promotion system based on merit and eligibility. Advancement to OF-2 rank is automatic based on successful time in service. For more advanced ranks, officers must compete in selection boards.

³International Convention on Standards of Training, Certification and Watchkeeping for Seafarers, July 7, 1978, 1361 U.N.T.S. 2 (entered into force Apr. 20, 1984) (incorporating subsequent amendments).

National Flag



Community Flag



Key Community Facts

Officer Title(s): Surface Warfare Officers

Career Path Type: Generalist

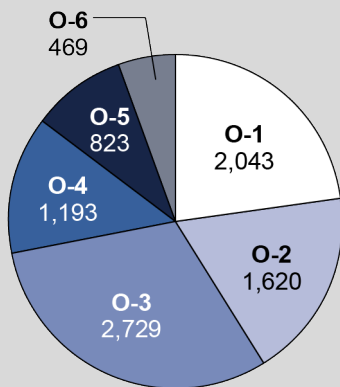
Founded: 1775

Headquarters: San Diego, CA



Source: Map Resources. | GAO-21-168

Number of Officers: 8,877



Source: GAO analysis of U.S. Navy data. | GAO-21-168

Note: O-1 through O-6 indicate officer grades associated with rank and pay, with O-1 the most junior officer grade. Senior leaders can hold grades above O-6.

U.S. Navy Surface Warfare Officers

Background

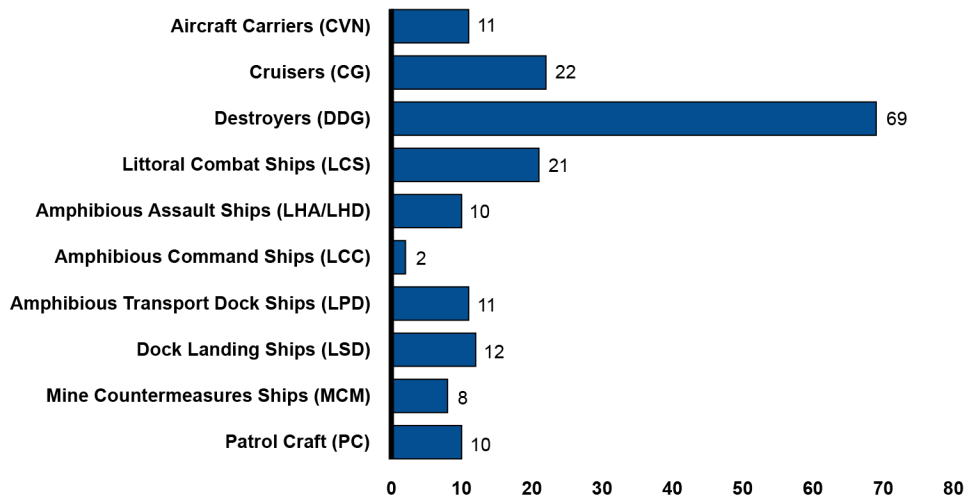
The nominal U.S. Navy Surface Warfare Officer (SWO) career path consists of a generalist career path where officers move between ship departments and nine different ship types over their career.¹ SWOs begin as Division Officers, and progress to Department Head, and eventually to Executive Officers and Commanding Officers (see fig. 40).

SWOs do not select formal career specializations by ship department or ship platform type. The U.S. Navy requires all SWO candidates to qualify as ship drivers to earn their SWO qualification, and all SWOs are eligible to serve as Executive Officers and Commanding Officers provided they meet all required career milestones and assessments. According to U.S. Navy officials, the U.S. Navy expects that the generalist career path develops a depth of experience among all SWOs, collectively supporting the ability of ships to deploy and to operate for sustained periods of time and in combat conditions due to the presence of SWOs qualified in many areas of ship operations.

Figure 40: U.S. Navy Surface Warfare Officer Career Path and Ships
Surface Warfare Officer Career Path Milestones

	O-1	O-2	O-3	O-4	O-5	O-6
U.S. Navy Generalist career path	Division Officer tours		Department Head tours and some early command opportunities		Executive Officer and Commanding Officer tours	

Number of Ships by Platform (176 total)



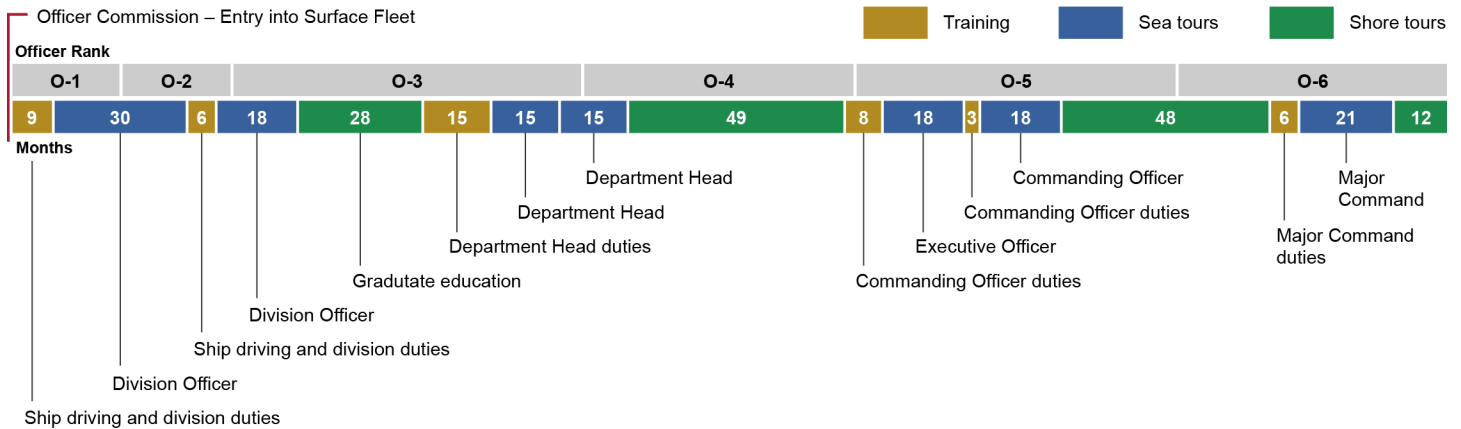
Source: GAO analysis of U.S. Navy data. | GAO-21-168

¹See section below for more information on the available variations to the nominal SWO career path.

Career Path Structure

Career progression in ship positions generally occurs for SWOs from Division Officer to Department Head to Executive Officer to Commanding Officer. SWOs typically serve two sea tours as Division Officers as O-1 to O-2; two tours as Department Heads as O-3 to O-4; an Executive Officer tour as O-5; and then any remaining ship positions as Commanding Officers beginning as O-5. Commanding Officer positions at the O-6 level, such as on cruisers and amphibious transport docks, are designated Major Commands and require further qualification (see fig. 41).

Figure 41: Nominal U.S. Navy Surface Warfare Officer Career Path



Source: GAO analysis of U.S. Navy data. | GAO-21-168

There are variations on the standard career path available to a select number of SWOs. Some Unrestricted Line Officer SWOs can qualify for early command opportunities, serving as Commanding Officer on a smaller ship in place of a Department Head tour, such as on patrol craft at the O-3 level or mine countermeasures ships at the O-4 level.² Some SWOs serve in narrower Restricted Line Officer communities with other career paths in the surface fleet. SWO (Nuclear) officers alternate between nuclear-trained officer positions on aircraft carriers and conventional SWO positions on other platforms, and some SWOs serve as Division Officers on ships before leaving for other Restricted Line communities, such as Engineering.

The U.S. Navy supplements SWOs by selecting senior enlisted personnel to serve as Limited Duty Officers and Chief Warrant Officers that provide specialized subject matter expertise.

Goals. According to U.S. Navy documentation, the U.S. Navy expects SWOs to develop competency in four areas through the use of the generalist career path: (1) Seamanship, navigation, and ship handling; (2) Combat systems and maritime warfighting; (3) Engineering, material readiness, and program management/administration; and (4) Command and leadership. By giving SWOs a wide variety of experiences and training over their careers, the U.S. Navy expects to develop well-rounded ship Commanding Officers and other senior leaders, according to U.S. Navy guidance.³

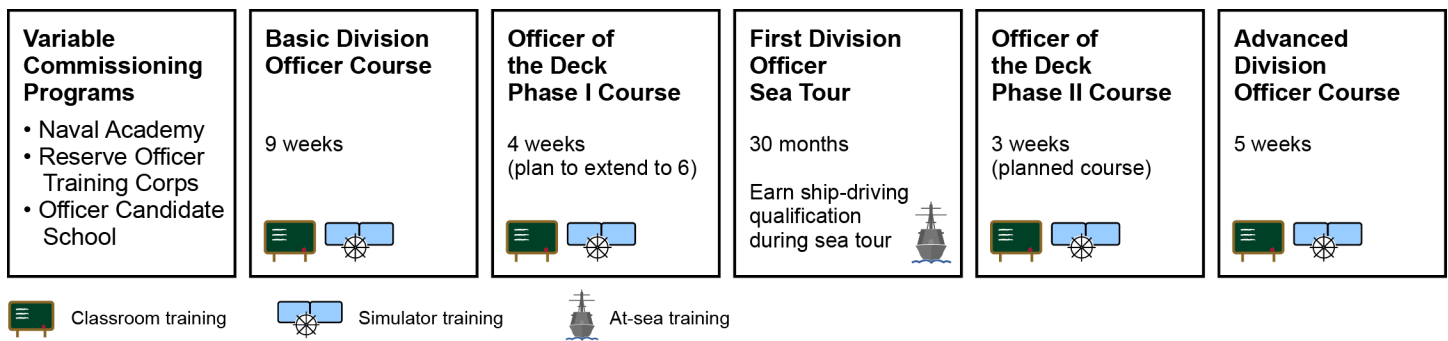
Junior Officer Training

The U.S. Navy provides training to junior SWOs before and after their first Division Officer tour, and has on-the-job training and qualification requirements for SWOs during their first Division Officer tour in addition to their normal ship duties. SWO candidates must complete a series of requirements called Personnel Qualification Standards during their initial training and sea duty to earn necessary SWO qualifications, such as for ship-driving (see fig. 42).

²Unrestricted Line Officers are U.S. Navy officers that are unrestricted in terms of opportunities for advancing into command positions. Restricted Line Officers are limited in terms of their eligibility for advancement into command positions.

³Commander, Naval Surface Forces Instruction 1412.4A, *Surface Warfare Officer Requirements Document* (Oct. 11, 2018).

Figure 42: U.S. Navy Junior Surface Warfare Officer Ship-Driving Training Programs



Source: GAO analysis of U.S. Navy data. | GAO-21-168

Note: Junior U.S. Navy Surface Warfare Officers also receive additional training related to their other assigned ship duties.

Before their first Division Officer tour, SWO candidates attend the Basic Division Officer Course, a 9-week classroom and simulator course covering ship-driving and other ship operations and SWO responsibilities. SWO candidates then attend the 4-week Officer of the Deck Phase I course, which the U.S. Navy plans to expand to 6 weeks in 2021, where they receive additional classroom and simulator ship-driving training. Following this ship-driving training, SWO candidates attend additional training specific to their Division Officer duty assignment.

During their first Division Officer tour, SWO candidates must complete shipboard training and experience requirements. SWO candidates must earn their ship-driving qualification and subsequent SWO qualification during this tour. These qualifications require experience on bridge watches and other duties, in addition to a Division Officer's assigned personnel management and ship department responsibilities while at sea.

Following their first Division Officer tour, SWOs attend the 5-week Advanced Division Officer Course, receiving further classroom and simulator training on ship-driving and other SWO responsibilities. The U.S. Navy plans to add a preceding 3-week Officer of the Deck Phase II Course in 2021 with additional classroom and simulator ship-driving training.

Personnel Management

Recruitment. The U.S. Navy primarily recruits SWO candidates with no enlisted experience through the U.S. Naval Academy, Naval Reserve Officer Training Program, and Officer Candidate School commissioning programs. U.S. Navy officer candidates are not certain of their community placement when recruited and may not have expected to become SWOs. The SWO training program in Figure 41 above begins after completing an officer commissioning program.

The U.S. Navy determines SWO recruitment needs based on expected Department Head requirements 8 years in the future, matched against the retention rate of SWOs to the Department Head level based on the past 5 years of data.

Mandatory service requirement. Five years for U.S. Naval Academy and Naval Reserve Officer Training Program; 4 years for Officer Candidate School.

Retention rates. According to GAO's analysis of retention rates, 38 percent of SWOs retained to Department Head at 8 years of service.⁴ Those not retained include both officers discharged from the U.S. Navy and those that transferred to other officer communities. The U.S. Navy may provide monetary retention bonuses to those SWOs that remain in service beyond their mandatory service requirement.

Promotion management. According to U.S. Navy officials, the U.S. Navy aims to produce about 90 SWO Commanding Officers each year. Officers seeking promotion to the O-4, O-5, and O-6 grades are selected through assessments and a promotion board. Officers at lower grades receive promotion based on successful completion of work requirements, assessments, and time in service.

⁴See appendix I for more information on U.S. Navy officer retention rates.

National Flag



Naval Flag



Key Community Facts

Officer Title(s): Naval Aviation Officers

Career Path Type: Specialized by ship type

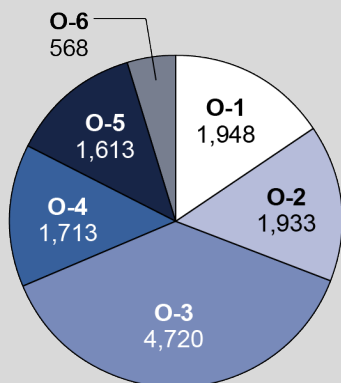
Navy Founded: 1775

Headquarters: San Diego, CA



Source: Map Resources. | GAO-21-168

Number of Officers: 12,495



Source: GAO analysis of U.S. Navy data. | GAO-21-168

Note: O-1 through O-6 indicate officer grades associated with rank and pay, with O-1 the most junior officer grade. Senior leaders can hold grades above O-6.

U.S. Naval Aviation Officers

Background

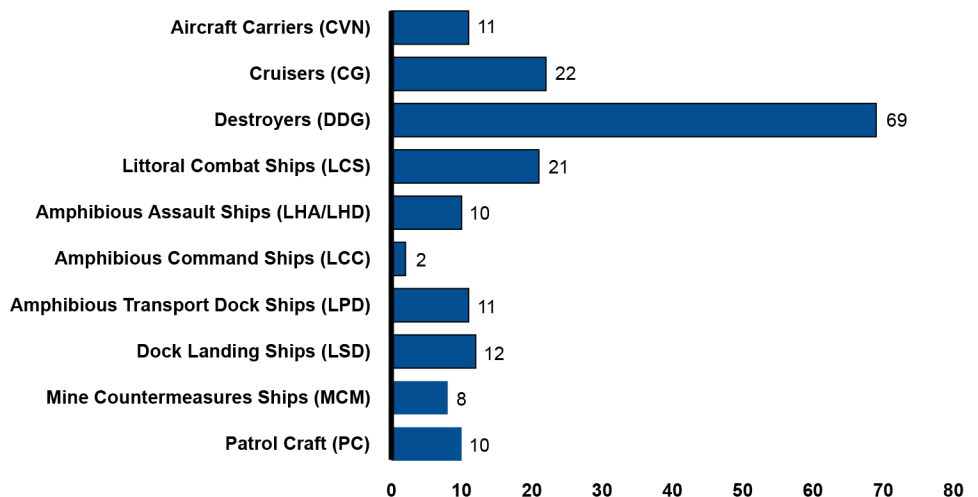
U.S. Naval Aviation Officers begin their career specialized for a specific type of aircraft, serving either as a Navy Pilot or a Naval Flight Officer on ships or ashore before progressing in their career. The remainder of this appendix discusses the career progression for Naval Aviation Officers aboard ships. After serving as a Navy Pilot or Naval Flight Officer on ships, Naval Aviation Officers progress to Department Head. Naval Aviation Officers can further advance to become Executive Officers and Commanding Officers on aircraft carriers and amphibious ships with major aviation elements (see fig. 43). The U.S. Navy expects Naval Aviation Officers to develop high proficiency in their assigned aircraft type during training and demonstrate strong performance at sea during junior grades. More advanced officers provide leadership to training squadrons, aviation and air control units at sea, and lead operational missions at sea.

Figure 43: U.S. Naval Aviation Officer Career Path and Ships

Naval Aviation Officer Career Path Milestones

	O-1	O-2	O-3	O-4	O-5	O-6
U.S. Navy Naval Aviation Officer career path	Navy Pilot or Naval Flight Officer			Department Head	Executive Officer	Commanding Officer tours

Number of Ships by Platform (176 total)



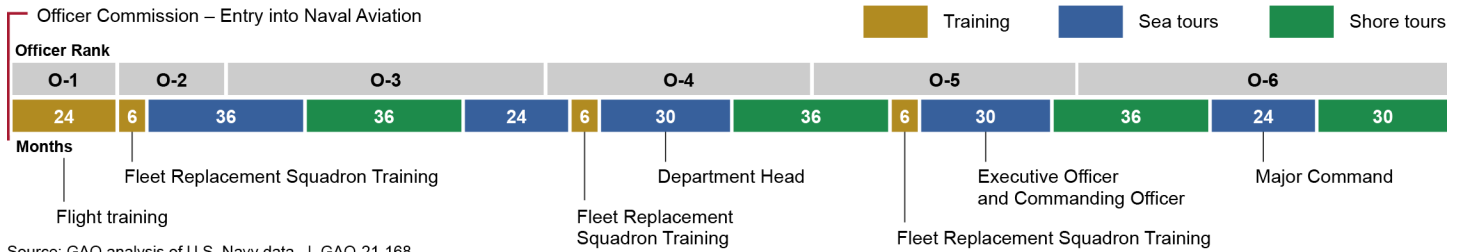
Source: GAO analysis of U.S. Navy data. | GAO-21-168

Note: U.S. Naval Aviation Officers can operate aircraft based aboard U.S. Navy surface ships.

Career Path Structure

U.S. Naval Aviation Officers advance in positions from Navy Pilot or Naval Flight Officers to Department Head to Executive Officer to Commanding Officer. Naval Aviation Officers place into one of two career options— Navy Pilots, who pilot and operate aircraft, and Naval Flight Officers, who operate electronic warfare systems, sensors, and other systems aboard aircraft. Naval Aviation Officers attend two years of flight training, where they receive flight certification before their first sea tour. Naval Aviation Officers can advance to Department Head at the O-4 grade, with further advancement opportunities available for Executive Officer and Commanding Officer positions on aircraft carrier and amphibious ships with major aviation elements. Those Commanding Officer positions on aircraft carriers and amphibious assault ships are O-6 positions designated as Major Commands (see fig. 44).

Figure 44: Nominal U.S. Naval Aviation Officers Career Path



Source: GAO analysis of U.S. Navy data. | GAO-21-168

Note: Navy Pilots become proficient on their assigned aircraft during Fleet Replacement Squadron Training.

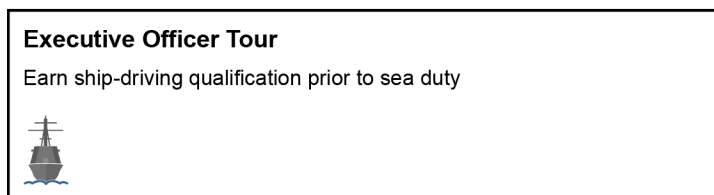
A select number of officers can advance in training officer roles following their Department Head tour, rather than serving as Executive Officers or Commanding Officers. Those officers wishing to advance in a training role may be selected for the Professional Flight Instructor program, where they support training activities rather than pursue ship command.


Goals. The U.S. Navy expects Naval Aviation Officers to develop high proficiency in their assigned aircraft type during training and to demonstrate strong performance at sea during junior grades, according to U.S. Navy officials. More advanced officers provide leadership to training squadrons, aviation and air control units at sea, and lead operational missions at sea.

Ship-Driving Training

Due to the importance of ship-driving expertise among ship leadership, those Naval Aviation Officers that advance to the Executive Officer position aboard ships must have completed ship-driving training prior to their Executive Officer tour (see fig. 45).

Figure 45: Ship-Driving Training for U.S. Naval Aviation Officers



 At-sea training

Source: GAO analysis of U.S. Navy data. | GAO-21-168

To earn their ship-driving qualification, U.S. Naval Aviation Officers must complete a series of ship-driving requirements, qualifying as either Underway Officer of the Deck or Aircraft Carrier Officer of the Deck.

Personnel Management

Recruitment. The U.S. Navy sets Naval Aviation Officers recruitment goals based on the requirement for first sea tour Naval Aviation Officers and retention considerations based on historical attrition rates.

Mandatory service requirement. The mandatory service requirement for Naval Aviation Officers begins after completing 2 years of initial flight training. The post-training mandatory service requirement is 8 years for Navy Pilots and 6 years for Naval Flight Officers.

Retention rates. According to GAO's analysis of retention rates, 64 percent of Aviation officers retained to 8 years of service.¹ According to U.S. Navy documentation, about 30 percent of Naval Aviation Officers will remain in the U.S. Navy to 12 years of commissioned service, which is the approximate timing for the start of the Department Head milestone tour. The U.S. Navy provides retention bonuses to Naval Aviation Officers that reach the Department Head and Commanding Officer milestones. Further, the Professional Flight Instructor program provides an alternative career path to Naval Aviation Officers that do not wish to pursue ship command.

Promotion management. The U.S. Navy sets criteria for the promotion of Naval Aviation Officers based on several factors, including: superior performance in prior sea and shore tours; attainment of relevant qualifications including education; and time in service.

¹See appendix I for more information on U.S. Navy officer retention rates.

National Flag



Naval Flag



Key Community Facts

Officer Title(s): Submarine Officers

Career Path Type: Generalist junior officers, specialized Department Heads

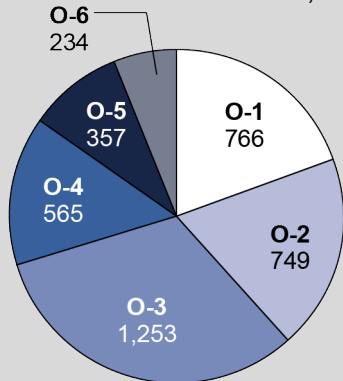
Navy Founded: 1775

Headquarters: Norfolk, VA



Source: Map Resources. | GAO-21-168

Number of Officers: 3,924



Source: GAO analysis of U.S. Navy data. | GAO-21-168

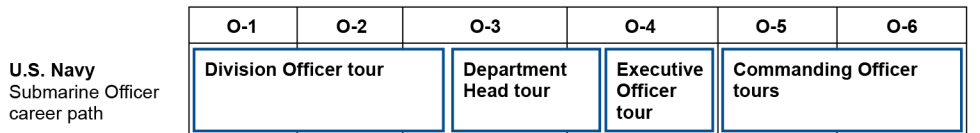
Note: O-1 through O-6 indicate officer grades associated with rank and pay, with O-1 the most junior officer grade. Senior leaders can hold grades above O-6.

U.S. Navy Submarine Officers

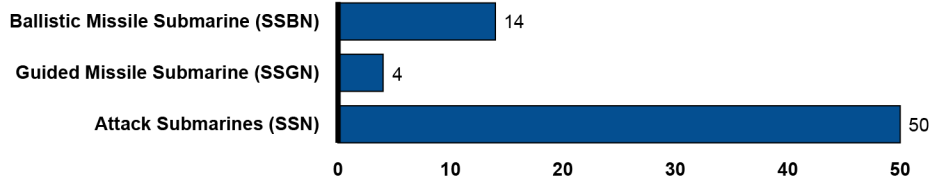
Background

The primary U.S. Navy Submarine Officer career path consists of a generalist Division Officer tour where officers gain experience in both engineering and operations, as well as navigation or weapons. U.S. Navy Submarine Officers begin their career on submarines as Division Officers, then place in either weapons, navigation, or engineering roles for their single Department Head tour at sea. Each of these three roles has distinct responsibilities but also share similar watchstanding responsibilities, and each role is involved with engineering and tactical responsibilities. U.S. Navy Submarine Officers may then advance to the Executive Officer and Commanding Officer roles on submarines (see fig. 46). According to U.S. Navy officials, the U.S. Navy selects one officer that served in a Department Head tour in an engineering role to serve as either Executive Officer or Commanding Officer on each submarine. According to U.S. Navy documentation, this career path system provides knowledge and experience prioritizing submarine safety, stealth, and mission accomplishment.

Figure 46: U.S. Navy Submarine Officer Career Path and Submarine Submarine Officer Career Path Milestones



Number of Submarines by Platform (68 total)

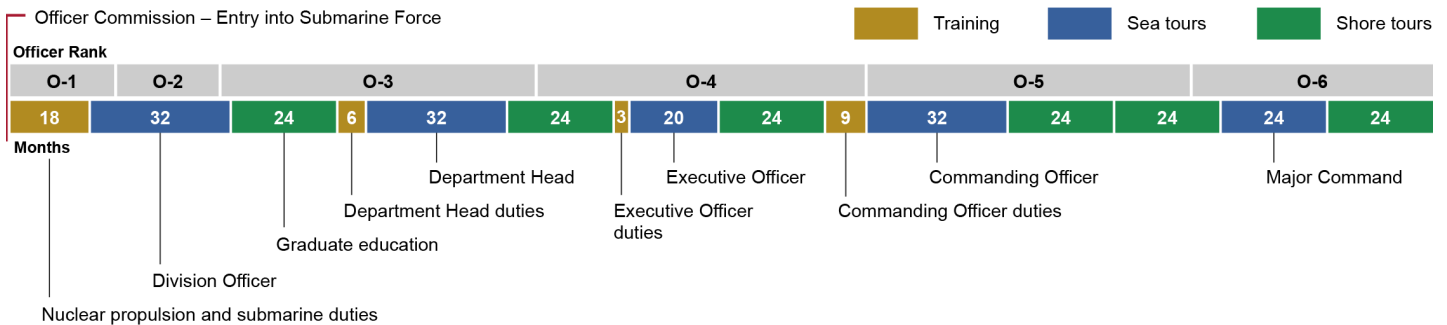


Source: GAO analysis of U.S. Navy data. | GAO-21-168

Career Path Structure

U.S. Navy Submarine Officers advance in submarine positions from Division Officer to Department Head to Executive Officer to Commanding Officer. Submarine Officers serve one sea tour as a generalist Division Officer, where they serve in both engineering and operations roles, as well as either navigation or weapons roles, to gain understanding of each submarine department. They begin this tour by first qualifying in engineering responsibilities. Following completion of these qualifications, they begin qualifying in watchstanding duties. Afterward, U.S. Navy Submarine Officers qualify in either navigation or weapons roles. U.S. Navy Submarine Officers who advance to Department Head serve one sea tour in either a weapons, navigation, or engineering role. While each of these three roles has distinct responsibilities, they share similar watchstanding responsibilities. Each of these three roles also have engineering and tactical responsibilities. U.S. Navy Submarine Officers that continue to advance in submarine roles serve as Executive Officer at the O-4 grade and Commanding Officer at the O-5 grade. Positions at the O-6 level, such as Commanding Officer on guided missile submarines, Squadron Commodores, or base Commanding Officers, are designated Major Commands and require further qualification (see fig. 47).

Figure 47: Nominal U.S. Navy Submarine Officer Career Path



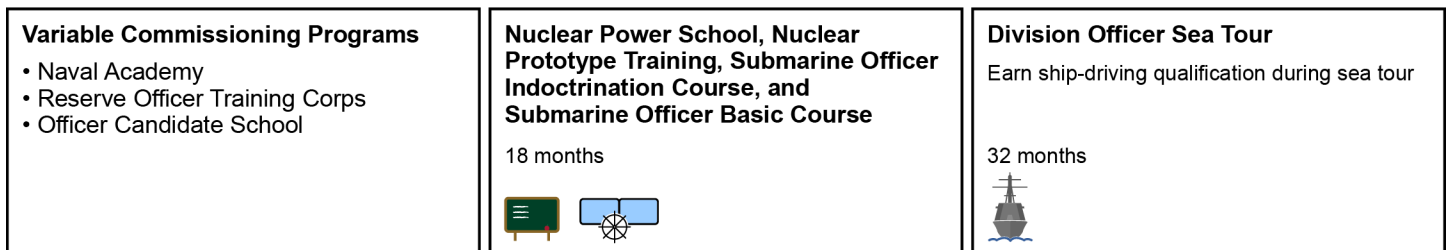
Source: GAO analysis of U.S. Navy data. | GAO-21-168

Goals. The U.S. Navy expects Submarine Officers to develop expertise in nuclear propulsion, ship-driving, tactics, and weapons to prioritize submarine safety, stealth, and mission accomplishment, according to U.S. Navy documentation. Further, the U.S. Navy prioritizes at-sea tactical experience so that submarine Commanding Officers are prepared for independent peacetime and combat operations.

Junior Officer Training

The U.S. Navy provides training to U.S. Navy Junior Submarine Officers before their Division Officer tour, and has on-the-job training and qualification requirements during their first Division Officer tour in addition to their normal ship duties (see fig. 48).

Figure 48: U.S. Navy Junior Submarine Officer Training Programs



Classroom training Simulator training At-sea training

Source: GAO analysis of U.S. Navy data. | GAO-21-168

U.S. Navy Submarine Officer candidates spend 18 months completing nuclear propulsion training and training on other ship duties. This includes two courses on nuclear propulsion: Nuclear Power School and Nuclear Prototype Training, and two courses on other duties: Submarine Indoctrination Course and Submarine Basic Officer Course. Training courses include the use of high fidelity simulators to support training in ship duties and

ship-driving. U.S. Navy Submarine Officers must complete a series of requirements during their initial training and sea duty to earn necessary qualifications, such as for engineering, ship-driving, and weapons.

Personnel Management

Recruitment. The U.S. Navy applies two models in setting Submarine Officer recruitment plans. First, it uses near-term staffing needs to determine the number of Division Officers needed in upcoming years. Second, the U.S. Navy predicts the expected number of Department Heads needed in the Submarine Officer community in the long term based on planned submarine operations and expected retention levels. The U.S. Navy then plans Submarine Officer recruitment numbers to satisfy these two goals.

Mandatory service requirement. All newly commissioned Submarine Officers must serve at least 5 years, regardless of accession source.

Retention rates. According to GAO's analysis of retention rates, 38 percent of Submarine officers retained to 8 years of service.¹ Those officers who do not reach the Department Head level either leave the U.S. Navy or transfer to other communities. According to U.S. Navy documentation, maintaining sufficient Submarine Officers to reach Department Head is the most significant retention challenge for the Submarine Officer community. Further, the U.S. Navy Submarine Officer community can select for Executive Officer, Commanding Officer, and Major Command positions from among those that retain to Department Head. The U.S. Navy may provide monetary retention bonuses to those Submarine Officers that retain beyond their mandatory service requirement

Promotion management. The U.S. Navy sets criteria for Submarine Officer promotion that include performance measures and completion of at-sea service. There are some opportunities for Submarine Officers who do not serve in at-sea milestone tours to promote by serving in certain ashore positions. From November 2019 through June 2020, U.S. Navy Submarine Officers progressed to the further at-sea positions at the following rates, according to U.S. Navy documentation:

- Department Head: 88 percent (as of June 2020)
- Executive Officer: 54 percent (as of June 2020)
- Commanding Officer: 73 percent (as of June 2020)
- Major Command: 51 percent (as of November 2019)

¹See appendix I for more information on U.S. Navy officer retention rates.

National Flag



Coast Guard Flag



Key Community Facts

Officer Title(s):

Junior ranks: Deck Watch Officers; Student Engineers

Advanced ranks: Operations Afloat; Naval Engineer

Career Path Type: Specialist by department

Founded: 1790

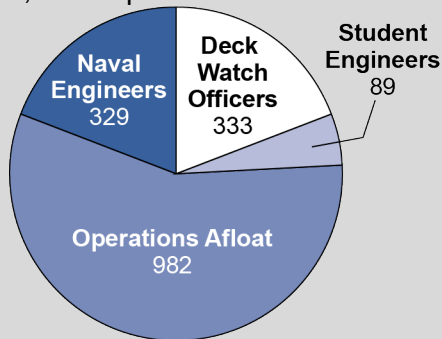
Headquarters: Washington, D.C.



Source: Map Resources. | GAO-21-168

Number of Officers:

1,733 ship officers



Source: GAO analysis of U.S. Coast Guard data. | GAO-21-168

Note: O-1 through O-6 indicate officer grades associated with rank and pay, with O-1 the most junior officer grade. Senior leaders can hold grades above O-6. Figures as of March 2021.

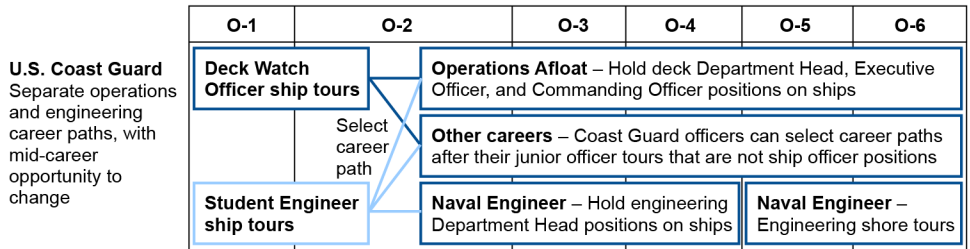
U.S. Coast Guard

Background

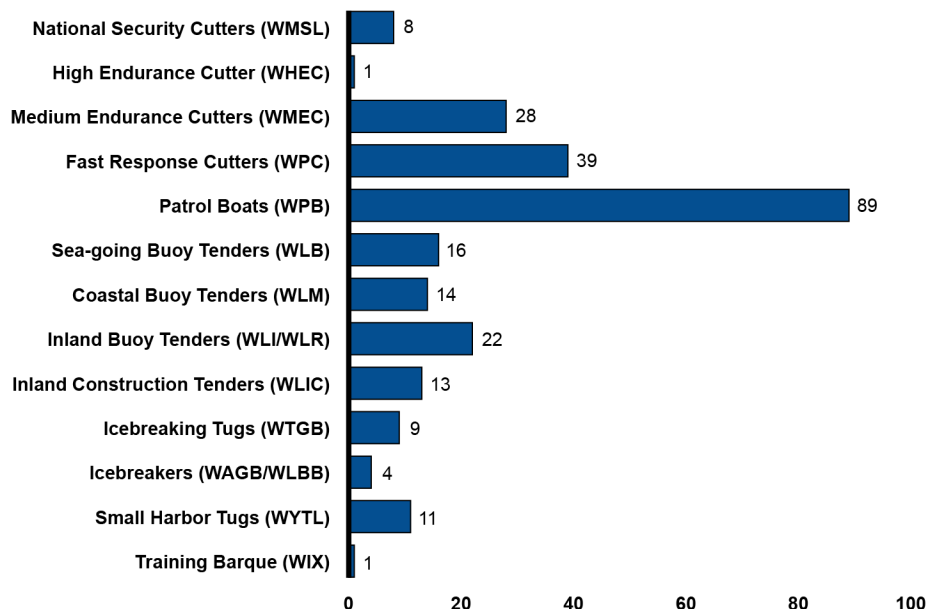
U.S. Coast Guard ship officers specialize by department, with separate career paths for deck operations and engineering. U.S. Coast Guard ship officers join the fleet as either Deck Watch Officers or Student Engineers and generally have at least one sea tour as junior officers. Following these initial sea tours, these officers can choose a long-term career path for themselves—both Deck Watch Officers and Student Engineers can choose to specialize in deck operations at senior ranks as Operations Afloat officers, or can choose career paths that do not involve further duty as ship officers. Further, Student Engineers can choose to advance in ship engineering responsibilities as Naval Engineer officers. U.S. Coast Guard goals include developing Operations Afloat officers that are effective in ship-handling and command, and Naval Engineers that are capable ship engineers and able to support shore engineering efforts like acquisition, project management, and ship sustainment (see fig. 49).

Figure 49: Nominal U.S. Coast Guard Officer Career Paths and Ships

U.S. Coast Guard Ship Officer Career Path Milestones



Number of Ships by Platform (255 total)



Source: GAO analysis of U.S. Coast Guard data. | GAO-21-168

Note: Figures as of March 2021.

Career Path Structure

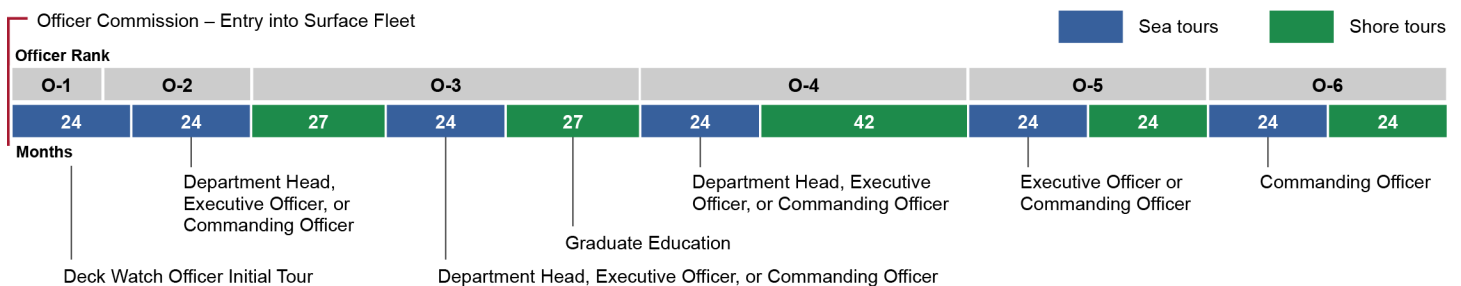
The U.S. Coast Guard specializes ship officer career paths by department, with a career path for deck operations and a career path for engineering. The U.S. Coast Guard titles officers on the deck operations career track as Deck Watch Officers at junior ranks and Operations Afloat officers as senior ranks, and those on the engineering career path as Student Engineers at junior ranks and Naval Engineers at senior ranks.

While it has separate career paths for ship departments, the U.S. Coast Guard allows ship officers to change career paths after an initial sea tour. U.S. Coast Guard ship officers enter the fleet as either Deck Watch Officers or Student Engineers and must complete two tours in their assigned specialization. U.S. Coast Guard ship officers can select different long-term career paths for themselves beginning at the O-2 grade. Deck Watch Officers can advance in ship deck operations and become Operations Afloat officers, or can select a career path that does not involve further duty as a ship officer. Student Engineers can advance in ship engineering and become Naval Engineers, can change to a deck operations career path and become Operations Afloat officers, or can select another career path that does not involve further duty as a ship officer. Career paths that do not involve further duty as ship officers include Operations Ashore Prevention officers that conduct vessel and facility inspections, waterways management, and marine casualty investigations; Cybersecurity Officers that employ and manage Coast Guard computer infrastructure; and other career paths.

U.S. Coast Guard Deck Watch Officers and Operations Afloat Officers

The U.S. Coast Guard expects Deck Watch Officers and Operations Afloat officers to develop in deck operations, such as ship-driving and navigation, and that these officers will increase in responsibility to eventually command ships. This is the only career path eligible to hold Executive Officer and Commanding Officer positions aboard ships. These officers advance in responsibility over their career, with an officer's position on a ship varying over their career based on their rank and the size of their assigned ship. For example, Deck Watch Officers can serve as Commanding Officer as early as the O-2 grade on 87-foot patrol boats, but may serve as a Department Head at the O-4 grade on a larger 418-foot National Security Cutter (see fig. 50).

Figure 50: Nominal U.S. Coast Guard Deck Watch Officer to Operations Afloat Career Path



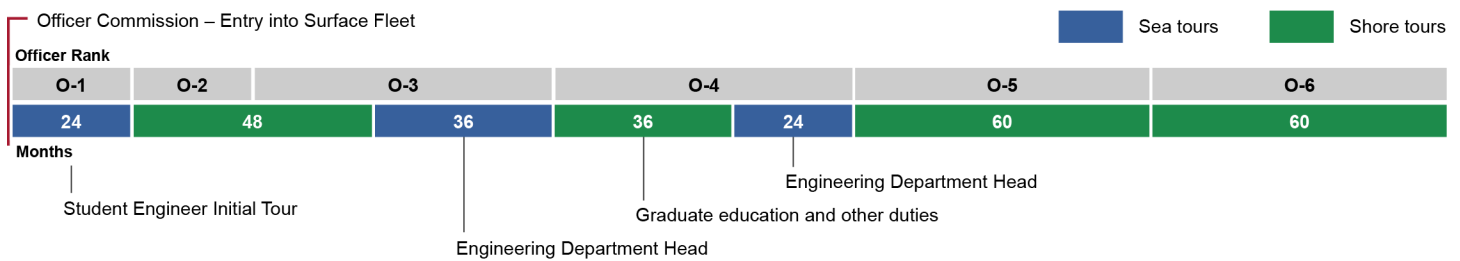
Source: GAO analysis of U.S. Coast Guard data. | GAO-21-168

Goals. According to U.S. Coast Guard officials, the Operations Afloat career path develops ship-driving and ship command expertise, with the goal of preparing capable ship Commanding Officers at the O-5 and O-6 grades. Further, according to U.S. Coast Guard officials, this career path produces capable ship drivers, and it is valuable to have a specialized career track for deck operations as it is difficult for an officer to be sufficiently skilled in all ship areas at lower grades.

U.S. Coast Guard Student Engineers and Naval Engineers

The U.S. Coast Guard expects Student Engineers and Naval Engineers to develop in ship engineering skills over their career and support shore-based engineering activities. The engineering career track does not include positions beyond Department Head aboard ships, so all Naval Engineer positions beyond the O-4 grade are shore positions. However, Naval Engineers can volunteer to pursue a secondary specialization in Operations Afloat if they wish to serve as ship Executive Officers or Commanding Officers at higher grades (see fig. 51).

Figure 51: Nominal U.S. Coast Guard Student Engineer to Naval Engineer Career Path

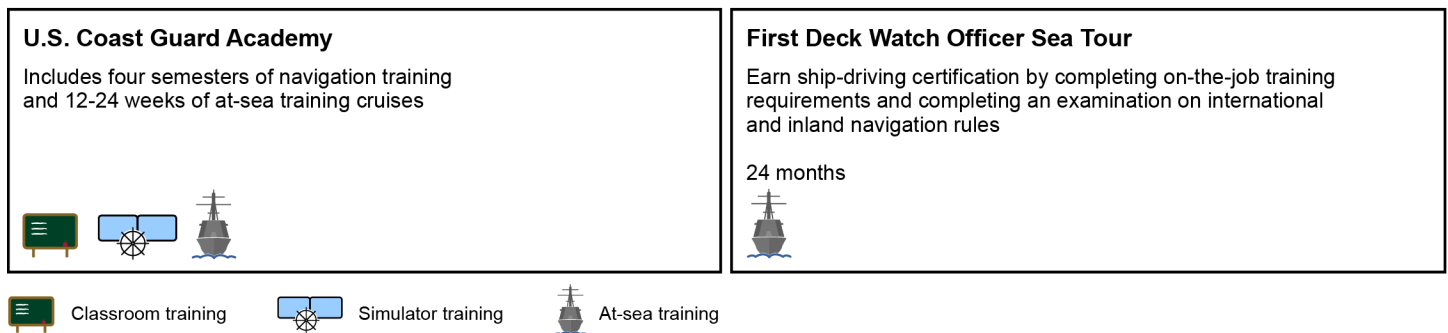


Source: GAO analysis of U.S. Coast Guard data. | GAO-21-168

Goals. According to U.S. Coast Guard documentation, the goal of the Naval Engineer career path is to develop officers’ maritime engineering skills to serve as ship Department Heads and support shore-based engineering efforts. In addition to their value aboard ships Naval Engineers provide a professional engineering workforce to support ship design, maintenance, acquisition, and other activities. Further, according to U.S. Coast Guard officials, this career path produces capable engineers, and it is valuable to have a specialized career track for engineering as it is difficult for an officer to be sufficiently skilled in all ship areas at lower grades.

Junior Officer Training

Figure 52: U.S. Coast Guard Deck Watch Officer Ship-driving Training Programs



Source: GAO analysis of U.S. Coast Guard data. | GAO-21-168

Those U.S. Coast Guard officer candidates with no prior enlisted experience primarily earn their officer commission through the U.S. Coast Guard Academy, where they receive education in ship operations.¹ The U.S. Coast Guard Academy curriculum includes four semesters of nautical science and 12 to 24 weeks at sea aboard ships to help prepare officer candidates for ship duty. After commissioning, U.S. Coast Guard ship officers must complete work experience requirements to earn ship duty certifications related to their position. Deck Watch Officers must complete sea duty requirements and pass an examination on international and inland navigation rules to receive their ship-driving qualification to serve as Officer of the Deck. Ship-driving qualification is voluntary for Student Engineers. According to U.S. Coast Guard officials, in later sea tours, U.S. Coast Guard officers must attend training sessions in the weeks before beginning sea duty, and Operations Afloat officers must pass a ship driving examination before their tour begins.

Personnel Management

Recruitment. The U.S. Coast Guard predicts recruitment needs based on retention rates and statutory requirements to determine recruitment levels for new ship officers. The U.S. Coast Guard assigns an average of 262 new officers to sea duty positions each year.

Mandatory service requirement. Five years for U.S. Coast Guard Academy graduates; 3 years for prior enlisted completing Officer Candidate School; varying requirements for other programs.

¹82 percent of ship officers attend the U.S. Coast Guard Academy, with most of the remainder receiving their commission after enlisted experience, and a smaller portion receiving their commission through other programs with no enlisted experience. Other U.S. Coast Guard commissioning programs include Officer Candidate School, a Chief Warrant Officer to Lieutenant program, and others.

Retention. For those officers that joined the U.S. Coast Guard as Deck Watch Officers or Student Engineers from fiscal years 2006 through 2014, an average of 81 percent of these officers remained in the U.S. Coast Guard beyond their mandatory service requirement. However, this reflects the retention of officers into any U.S. Coast Guard career path, including those with primarily only shore duty. U.S. Coast Guard officials attributed the high overall retention rate in part to the U.S. Coast Guard practice of allowing officers to select from several career paths after completion of one sea tour, supporting personal preference. The U.S. Coast Guard has difficulty retaining officers within its two ship officer career paths, Operations Afloat and Naval Engineer. Those U.S. Coast Guard officers who return to sea in these career paths can earn the Cutterman designation—a designation showing they have served at least 5 years of sea duty—only 16 percent of Coast Guard officers have this designation. Coast Guard officials also reported higher difficulty in retaining engineers, and stated that the Coast Guard uses a monetary retention bonus for engineers and additional shore duty for those that select in the Naval Engineer career path.

Promotion management. The Coast Guard does not use a specific rate or percentage for promotion of different officer specialties. Rather, all officers compete against each other for promotions each year. Every year the Commandant of the Coast Guard provides guidance to promotion boards and panels that provides their desired focus for selections for promotion. Each promotion board develops its own rules and metrics for weighting of a candidate based on four categories: Performance, Professionalism, Leadership, and Education. However, the U.S. Coast Guard does screen officers for consideration for command afloat (and command ashore).

Appendix IV: Surface Warfare Officer Survey Questionnaire, Demographic Information, and Weighted Responses

This appendix contains the Surface Warfare Officer (SWO) survey questionnaire, weighted demographic information, and weighted responses to the questions from our generalizable survey of SWOs. The information presented in this appendix supplements the generalizable survey information discussed in the body of this report and is intended to provide specific data points and additional context regarding the SWOs included in our survey and their experiences, perspectives, and preferences for a generalized versus specialized career path. Survey-based estimates included in this appendix have a margin of error of plus or minus 10 percentage points or fewer, unless otherwise noted. In categorizing narrative responses, two analysts independently coded narrative responses then met to reconcile differences in coding.¹

Surface Warfare Officer survey questionnaire. We administered the survey questions shown in this appendix to learn more about U.S. SWO preference for a generalized versus specialized career path. Survey questions without response options were open-ended. This appendix shows the content of the web-based survey questions but the format of the questions and responses options have been changed for readability in this report. Further, the survey questions shown in this appendix were part of a broader survey questionnaire which contained additional questions outside the scope of this review. These questions are not shown below.² Terms used in the survey were defined at their first appearance in the survey and provided to respondents through pop-up windows in subsequent questions. For more information about our methodology for designing and administering the survey, see appendix V.

¹For open-ended, narrative responses provided in support of the SWO survey questions we identified common themes from across the responses and determined their frequencies. To do this, two analysts independently evaluated each survey question response and coded the information into the identified categories. The analysts then met, discussed, and resolved any initial disagreements in the coding to arrive at final themes and their frequencies.

²Specifically, survey questions 3-26 and Section II of the survey were omitted from this appendix because they were specific to another GAO engagement ([GAO-21-366](#)) focused on Navy crewing and fatigue management practices. For more information, see appendix V.

**Appendix IV: Surface Warfare Officer Survey
Questionnaire, Demographic Information, and
Weighted Responses**

SECTION I: Background

1. What is your current rank? (Please mark only one response)

- O1
- O2
- O3
- O4
- O5
- O6
- Other, please specify.

2. Approximately how many years have you served as an active duty SWO?

- 1 - 6
- 7 - 12
- 13 - 19
- 20 or more

**SECTION III: Your Experience with the SWO Career Path and Your Preference for
Specialist SWO Career Path**

27. How many Commanding Officers who were SWOs have you worked for during your entire career on ships? For example, please do not consider aviation officers who were Commanding Officers of carriers. (Please mark only one response)

- 0
- 1 - 5
- 6 - 10
- 11 - 15
- 16 - 20
- 21 or more

**Appendix IV: Surface Warfare Officer Survey
Questionnaire, Demographic Information, and
Weighted Responses**

28. Based on your observations of your SWO Commanding Officers across your entire career, how effective, if at all, do you feel the generalist U.S. Navy SWO career path is at producing SWO Commanding Officers who are experienced in all four SWO specialty areas described above? (Please mark only one response)

- Not effective at all
- Slightly effective
- Moderately effective
- Very effective
- Don't know

29. Based on your observations of your SWO Commanding Officers across your entire career, how effective, if at all, do you feel the generalist U.S. Navy SWO career path is at producing SWO Commanding Officers who are experienced in each of the following: (Please mark one response per row)

	Not at all effective	Slightly effective	Moderately Effective	Very effective	Don't know
Seamanship, Navigation, and Ship Handling	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Combat Systems and Maritime Warfighting	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Engineering, Material Readiness, and Program Management/Administration	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Command and Leadership	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

30. How satisfied or unsatisfied are you with the opportunities you have received throughout your career to develop the skills needed to perform proficiently as a SWO? (Please mark only one response)

- Very unsatisfied
- Moderately unsatisfied
- Slightly unsatisfied
- Neither satisfied nor unsatisfied
- Slightly satisfied
- Moderately satisfied
- Very satisfied

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31. What career path do you believe would best prepare SWOs for their service in the United States Navy in the future? Assume that regardless of your choice, you will still have the opportunity to advance throughout your career. *(Please mark only one response)*

- The U.S. Navy SWO generalist career path
- A specialist SWO career path that focuses on a distinct specialty area which may or may not lead to the opportunity to command a ship in the future.
- Other
- It depends
- No preference

32. Why did you select the response to the question above?

33. If you were presented today with the choice between continuing on the current U.S. SWO generalist career path or changing to a specialized SWO career path that focuses on a distinct specialty area such as ship handling, engineering, or maritime warfare, which career path would you choose? Assume that regardless of your choice you will still have the opportunity to advance throughout your career. *(Please mark only one response)*

- The current U.S. Navy SWO generalist career path
- A specialist SWO career path that focuses on a distinct specialty area which does not lead to the opportunity to command a ship in the future
- A specialist SWO career path that focuses on a distinct specialty area which leads to the opportunity to command a ship in the future
- It depends.
- No preference

34. Why did you select the response to the question above?

35. Please restate, are you currently an O-1, O-2, or O-3? *(Please mark only one response)*

- Yes
- No → SKIP TO QUESTION #39

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36. Once you have satisfied your current service requirement how likely, if at all, would you be to continue your career as an active-duty SWO in the current U.S. SWO generalist path? (Please mark only one response)

- Not at all likely
- Slightly likely
- Somewhat likely
- Very likely
- Definitely likely
- It depends, please elaborate

37. Once you have satisfied your current service requirement how likely, if at all, would you be to continue your career as an active-duty SWO if placed into a specialist career path that did not lead to the opportunity to command a ship? Assume that this specialist career path still provided you the opportunity to advance throughout your career. (Please mark only one response)

- Not at all likely
- Slightly likely
- Somewhat likely
- Very likely
- Definitely likely
- It depends, please elaborate

38. Once you have satisfied your current service requirement how likely, if at all, would you be to continue your career as an active-duty SWO if placed into a specialist career path which leads to the opportunity to command a ship? (Please mark only one response)

- Not at all likely
- Slightly likely
- Somewhat likely
- Very likely
- Definitely likely
- It depends, please elaborate

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39. Provided the U.S. Navy keeps the current SWO generalist career path in place, what changes, if any, do you suggest that would provide you with additional opportunities to develop the skills needed to perform as a SWO?

40. If you have not already served as a Commanding Officer, do you want to eventually be a Commanding Officer? *(Please mark only one response)*

Yes

Maybe

No

Don't Know

Not applicable (current or prior Commanding Officer)

41. What additional comments, if any, would you like to make about any topic covered in this survey?

Demographic information. Our survey asked SWOs demographic information such as their rank and years of active duty service in the U.S. Navy. Table 18 contains weighted demographic information based on the SWOs surveyed.

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Table 18: Survey-Based Estimates of U.S. Navy Surface Warfare Officers Demographic Information

Category	Count	Estimated percentage	95 percent confidence interval		Margin of error percentage
			Lower bound	Upper bound	
1. Rank (n=351)					
O-1	12	14	8	24	9
O-2	34	20	13	28	8
O-3	94	37	30	44	7
O-4	104	13	10	17	4
O-5	73	10	7	14	4
O-6	34	5	3	8	3
2. Gender (n=351)					
Male	209	60			
Female	142	40			
3. Years of active duty service (n=351)					
1-6	95	53	47	60	7
7-12	83	22	16	28	6
13-19	101	14	10	18	4
20 or more	72	11	8	15	4

Source: GAO analysis of survey data. | GAO-21-168

Note: Military officers have a personnel grade associated with their rank and pay ranging from O-1 through O-10. In the U.S. Navy the O-1 to O-6 grades include the main body of officers, from the ranks of Ensign at O-1 to Captain at O-6. In the U.S. Navy, lower grades include junior officers, representing the ranks of Ensign at O-1, Lieutenant (junior grade) at O-2, and Lieutenant at O-3. Middle grades include Department Heads, Executive Officers, and Commanding Officers; representing the ranks of Lieutenant Commander O-4, Commander O-5 and Captain O-6. The O-7 to O-10 grades include senior leadership, from the ranks of Rear Admiral (lower half) at O-7 to Admiral at O-10. 37 U.S.C. § 201(a).

Surface Warfare Officer—Commanding Officers. Our survey asked several questions about SWO Commanding Officers and the effectiveness of the generalist career path in producing proficient Commanding Officers. Table 19 presents information about the number of SWO Commanding Officers that SWOs have worked for during their entire careers on ships.³

³SWOs can serve on ships with Commanding Officers who are not SWOs themselves. For example, SWOs may work for Commanding Officers from the Naval Aviation Officer community while serving on aircraft carriers or amphibious ships. Commanding Officers not from the SWO community were not counted in our survey.

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Table 19: Survey-Based Estimates Regarding the Number of Surface Warfare Officer (SWO) Commanding Officers U.S. Navy SWOs Have Worked For (n=343)

Category	Count	Estimated percentage	95 percent confidence interval		Margin of error percentage
			Lower bound	Upper bound	
0	3	4	1	12	8
1-5	130	56	49	63	7
6-10	170	33	27	39	6
11-15	34	7	4	10	3
16-20	4	0	0	2	1
21 or more	2	0	0	2	2

Source: GAO analysis of survey data. | GAO-21-168

Note: SWOs can serve on ships with Commanding Officers who are not SWOs themselves. For example, SWOs may work for Commanding Officers from the Naval Aviation Officer community while serving on aircraft carriers or amphibious ships. Commanding Officers not from the SWO community were not counted in our survey.

In addition, our survey asked about the effectiveness of the U.S. Navy’s generalist career path for SWOs at producing Commanding Officers who are experienced in all four SWO specialty areas: 1) seamanship, navigation, and ship handling; 2) combat systems and maritime warfighting; 3) engineering, material readiness, and program management and administration; and 4) command and leadership.

When it comes to the generalist career path for U.S. Navy SWOs, our survey found that:⁴

- 15 percent of SWOs believe that the generalist career path is very effective in developing Commanding Officers that are experienced in all four SWO specialty areas, 39 percent responded moderately effective, and 46 percent responded slightly effective, not effective at all, or don’t know;
- 28 percent of SWOs believe that the generalist career path is very effective in developing Commanding Officers that are experienced in navigation, seamanship, and shiphandling, 44 percent responded moderately effective, and 28 percent responded slightly effective, not effective at all, or don’t know;
- 23 percent of SWOs believe that the generalist career path is very effective in developing Commanding Officers that are experienced in

⁴Totals may not equal 100 percent due to rounding.

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combat systems and maritime warfighting, 49 percent responded moderately effective, and 27 percent responded slightly effective, not effective at all, or don't know;

- 15 percent of SWOs believe that the generalist career path is very effective in developing Commanding Officers that are experienced in engineering, material readiness, and program management and administration, 44 percent responded moderately effective, and 41 percent responded slightly effective, not effective at all, or don't know; and
- 23 percent of SWOs believe that the generalist career path is very effective in developing Commanding Officers that are experienced in command and leadership, 38 percent responded moderately effective, and 39 percent responded slightly effective, not effective at all, or don't know.

Table 20 summarizes SWO perceptions on how effective the U.S. Navy's generalist career path for SWOs is in developing Commanding Officers who are experienced in the four SWO specialty areas.

Table 20: Survey-Based Estimates Regarding the Effectiveness of Generalist Career Path in Developing U.S. Navy Commanding Officers

Survey questions	Count	Estimated percentage	95 percent confidence interval		Margin of error percentage
			Lower bound	Upper bound	
1. Experienced in all four Surface Warfare Officer specialty areas (n=343)					
Not effective at all	37	13	8	20	7
Slightly effective	94	29	21	36	7
Moderately effective	153	39	32	47	8
Very effective	54	15	10	22	7
Don't know	5	4	1	10	6
2. Experienced in seamanship, navigation, and ship handling (n=344)					
Not effective at all	9	4	1	10	6
Slightly effective	63	22	15	30	8
Moderately effective	177	44	36	52	8
Very effective	92	28	21	36	7
Don't know	3	1	0	4	3
3. Combat systems and maritime warfare (n=342)					
Not effective at all	12	5	2	11	6
Slightly effective	66	17	12	23	7
Moderately effective	173	49	41	57	8

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Survey questions	Count	Estimated percentage	95 percent confidence interval		Margin of error percentage
			Lower bound	Upper bound	
Very effective	85	23	17	30	6
Don't know	6	5	1	13	7
4. Engineering, material readiness, and program management and administration (n=344)					
Not effective at all	23	5	2	9	4
Slightly effective	111	33	25	40	7
Moderately effective	150	44	36	52	8
Very effective	56	15	11	21	6
Don't know	4	3	0	9	6
5. Command and leadership (n=344)					
Not effective at all	9	4	1	10	6
Slightly effective	82	31	24	39	8
Moderately effective	144	38	31	46	7
Very effective	105	23	17	30	6
Don't know	4	4	1	11	7

Source: GAO analysis of survey data. | GAO-21-168

Opportunities to develop the skills needed to perform proficiently as a SWO. Our survey asked SWOs how satisfied or unsatisfied they are with the opportunities they have received throughout their careers to develop the skills needed to perform proficiently as a SWO. According to the survey results, about half of SWOs are very, moderately, or slightly unsatisfied with their opportunities to develop skills needed to perform proficiently as a SWO. The other half of SWOs are either neither satisfied or unsatisfied, or slightly, moderately, or very satisfied with their opportunities to develop skills needed to perform proficiently as a SWO. Table 21 summarizes how satisfied or unsatisfied SWOs are with the opportunities they have received throughout their careers to develop the skills needed to perform proficiently as a SWO.

Table 21: Survey-Based Estimates Regarding Opportunities to Develop the Skills Needed to Perform Proficiently as a Surface Warfare Officer (SWO) (n=340)

Category	Count	Estimated percentage	95 percent confidence interval		Margin of error percentage
			Lower bound	Upper bound	
Very unsatisfied	37	12	7	19	7
Moderately unsatisfied	53	18	12	24	7
Slightly unsatisfied	55	16	10	22	7

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Category	Count	Estimated percentage	95 percent confidence interval		Margin of error percentage
			Lower bound	Upper bound	
Neither satisfied nor unsatisfied	24	11	6	19	8
Slightly satisfied	50	19	12	27	8
Moderately satisfied	76	17	12	23	6
Very satisfied	45	7	5	11	3

Source: GAO analysis of survey data. | GAO-21-168

Career paths. Our survey asked SWOs a series of questions about different career paths. Specifically, SWOs were asked: what career path do you believe would best prepare Surface Warfare Officers for their service in the United States Navy in the future? Respondents were asked to assume that regardless of career path choice, they would still have the opportunity to advance throughout their careers. According to the survey:

- 65 percent of SWOs believe that specialized SWO career paths would best prepare them for their duties, compared with 16 percent who believe that a generalist model like the current career path is best.
- 69 percent of SWOs ranked O-1 through O-3 believe that specialized SWO career paths would best prepare them for their duties, compared with 54 percent of SWOs ranked O-4 through O-6.⁵
- 13 percent of SWOs ranked O-1 through O-3 believe that a generalist model like the current career path is best, compared with 26 percent of officers ranked O-4 through O-6.
- 73 percent (+/- 13) of female SWOs believe that specialized SWO career paths would best prepare them for their duties, compared with 62 percent of male SWOs.

Table 22 summarizes the type of career path that SWOs believe would best prepare SWOs for their service in the U.S. Navy.

⁵Military officers have a personnel grade associated with their rank and pay ranging from O-1 through O-10. In the U.S. Navy the O-1 to O-6 grades include the main body of officers, from the ranks of Ensign at O-1 to Captain at O-6. In the U.S. Navy, lower grades include junior officers, representing the ranks of Ensign at O-1, Lieutenant (junior grade) at O-2, and Lieutenant at O-3. Middle grades include Department Heads, Executive Officers, and Commanding Officers; representing the ranks of Lieutenant Commander O-4, Commander O-5 and Captain O-6. The O-7 to O-10 grades include senior leadership, from the ranks of Rear Admiral (lower half) at O-7 to Admiral at O-10. 37 U.S.C. § 201(a).

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Table 22: Survey-Based Estimates Regarding What Career Path Surface Warfare Officers (SWOs) Believe Would Best Prepare SWOs For Their Service in the United States Navy

Category	Count	Estimated percentage	95 percent confidence interval		Margin of error percentage
			Lower bound	Upper bound	
1. Full population (n=344)					
The U.S. Navy SWO generalist career path	68	16	11	23	7
A specialist SWO career path ^a	203	65	57	72	8
Other	16	4	2	7	3
It depends	54	13	9	19	6
No preference	3	2	0	9	7
2. O-1 through O-3 (n=137)					
The U.S. Navy SWO generalist career path	16	13	6	23	10
A specialist SWO career path ^a	92	69	59	79	10
Other	6	4	1	8	5
It depends	21	12	6	21	9
No preference	2	2	0	12	10
3. O-4 through O-6 (n=207)					
The U.S. Navy SWO generalist career path	52	26	18	34	8
A specialist SWO career path ^a	111	54	46	63	8
Other	10	4	2	8	4
It depends	33	16	10	23	7
No preference	1	0	0	3	3
4. Female (n=139)					
The U.S. Navy SWO generalist career path	29	12	5	22	10
A specialist SWO career path ^a	85	73	60	84	13
Other	5	3		10	7
It depends	18	11	4	22	11
No preference	2	0	0	4	4
5. Male (n=205)					
The U.S. Navy SWO generalist career path	39	18	11	26	9
A specialist SWO career path ^a	118	62	53	71	9
Other	11	4	2	8	4
It depends	36	14	8	21	7
No preference	1	2	0	11	9

Source: GAO analysis of survey data. | GAO-21-168

^aA specialist SWO career path that focuses on a distinct specialty area which may or may not lead to the opportunity to command a ship in the future.

As a follow-up question, SWOs were asked to elaborate on why they selected their particular response to the question: what career path do you believe would best prepare Surface Warfare Officers for their service in the United States Navy in the future?⁶ The following is a summary of the narrative responses provided by SWOs:

- Specialized career paths would best prepare SWOs (203 responses)
 - SWOs are more effective if they have mastery of a particular ship department rather than attempting to learn everything about ship operations (76)
 - Not all SWOs have the aptitude or interest to become Commanding Officers so there should be career options to recruit and retain these SWOs (31)
 - The low level of experience in ship departments or long gaps between certain experiences in the current path is detrimental to the quality of SWOs (30)
 - Opinion based on observation of other navies (16)
 - Commanding Officers are more effective if they specialize in deck activities (12)
 - Having a choice of area of interest would help morale and crew quality (6)
 - SWO (Nuclear) should not include traditional SWO duties (4)
 - Other topics (14)
 - No narrative response (14)
- The generalist career path best prepares SWOs (68 responses)
 - Commanding Officers need to understand the full range of ship operations to be effective (26)
 - SWOs are more effective if they understand the full range of ship operations (12)

⁶For open-ended, narrative responses provided in support of survey questions 31—what career path do you believe would best prepare Surface Warfare Officers for their service in the United States Navy in the future—we used professional judgment based on our interviews with Navy officials to identify common themes from across the responses and determine their frequencies. The two analysts evaluated question responses and coded the information into categories. For this question, we coded each SWO response in only one category. The analysts then met, discussed, and resolved any initial disagreements in the coding to arrive at final themes and their frequencies. We included any response category that received fewer than five responses in “Other topics.”

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- Opinion based on observation of other navies (6)
- Other topics (18)
- No narrative response (6)
- Whether generalist or specialist career paths would better prepare SWOs depends on certain conditions (54 responses)
 - There are advantages and disadvantages to both approaches (16)
 - Different approaches work better for different people and working conditions (8)
 - Other topics (29)
 - No narrative response (1)
- Another option would best prepare SWOs (16 responses)
 - Training improvements are more important than the difference between career paths (7)
 - Other topics (9)
- No preference (3 responses)

In addition, our survey asked SWOs: if you were presented today with the choice between continuing on the current U.S. SWO generalist career path or changing to a specialized SWO career path that focuses on a distinct specialty area such as ship handling, engineering, or maritime warfare, which career path would you choose? Respondents were asked to assume that regardless of career path choice, they would still have the opportunity to advance throughout their careers. According to the survey:⁷

- 18 percent of U.S. Navy SWOs prefer the current generalist career path for themselves, 30 percent prefer a specialized career path that leads to ship command, while 37 percent prefer a specialized career path that does not lead to ship command, and the remaining 16 percent either responded it depends or no preference.
- 13 percent of SWOs ranked O-1 through O-3 prefer the current generalist career path for themselves, 26 percent (+/- 11) prefer a specialized career path that leads to ship command, while 44 percent prefer a specialized career path that does not lead to ship command, and the remaining 18 percent either responded it depends or no preference.

⁷Total may not equal 100 percent due to rounding.

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- 31 percent of SWOs ranked O-4 through O-6 prefer the current generalist career path for themselves, 40 percent prefer a specialized career path that leads to ship command, while 19 percent prefer a specialized career path that does not lead to ship command, and the remaining 10 percent either responded it depends or no preference.
- 13 percent of female SWOs prefer the current generalist career path for themselves, 27 percent (+/- 15) prefer a specialized career path that leads to ship command, while 54 percent (+/- 13) prefer a specialized career path that does not lead to ship command, and the remaining 7 percent responded it depends.
- 20 percent of male SWOs prefer the current generalist career path for themselves, 31 percent prefer a specialized career path that leads to ship command, while 32 percent prefer a specialized career path that does not lead to ship command, and the remaining 18 percent either responded it depends or no preference.

Table 23 summarizes SWO personal preference of career path option.

Table 23: Survey-Based Estimates Regarding Surface Warfare Officers (SWO) Personal Preference of a Career Path Option

Category	Count	Estimated percentage	95 percent confidence interval		Margin of error percentage
			Lower bound	Upper bound	
1. Full population (n=344)					
The current U.S. Navy SWO generalist career path	89	18	13	25	6
A specialist SWO career path with no opportunity to command a ship ^a	101	37	29	44	8
A specialist SWO career path with the opportunity to command a ship ^b	104	30	23	37	7
It depends	42	11	7	17	6
No preference	8	4	1	11	6
2. O-1 through O-3 (n=137)					
The current U.S. Navy SWO generalist career path	22	13	7	22	9
A specialist SWO career path with no opportunity to command a ship ^a	59	44	33	54	10
A specialist SWO career path with the opportunity to command a ship ^b	33	26	17	36	11
It depends	18	12	6	20	8
No preference	5	6	1	15	9
3. O-4 through O-6 (n=207)					

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Category	Count	Estimated percentage	95 percent confidence interval		Margin of error percentage
			Lower bound	Upper bound	
The current U.S. Navy SWO generalist career path	67	31	23	38	8
A specialist SWO career path with no opportunity to command a ship ^a	42	19	13	27	8
A specialist SWO career path with the opportunity to command a ship ^b	71	40	32	48	8
It depends	24	8	5	13	5
No preference	3	2	0	6	4
4. Female (n=139)					
The current U.S. Navy SWO generalist career path	37	13	6	22	9
A specialist SWO career path with no opportunity to command a ship ^a	52	54	40	67	13
A specialist SWO career path with the opportunity to command a ship ^b	34	27	15	41	15
It depends	15	7	3	14	7
No preference	1	0	0	4	4
5. Male (n=205)					
The current U.S. Navy SWO generalist career path	52	20	13	28	8
A specialist SWO career path with no opportunity to command a ship ^a	49	32	23	41	9
A specialist SWO career path with the opportunity to command a ship ^b	70	31	22	39	8
It depends	27	12	7	20	7
No preference	7	6	2	14	8

Source: GAO analysis of survey data. | GAO-21-168

^aA specialist SWO career path that focuses on a distinct specialty area which does not lead to the opportunity to command a ship in the future.

^bA specialist SWO career path that focuses on a distinct specialty area which leads to the opportunity to command a ship in the future.

As a follow-up question, SWOs were asked to elaborate on why they selected their particular response the question: if you were presented today with the choice between continuing on the current U.S. SWO generalist career path or changing to a specialized SWO career path that focuses on a distinct specialty area such as ship handling, engineering, or

maritime warfare, which career path would you choose?⁸ The following is a summary of the narrative responses provided by SWOs:

- Among those that prefer a specialized career path that would lead to the opportunity to command a ship (104 responses):
 - The respondent expects they would be more valuable or effective for their ship crews with a stronger understanding of a specialized career area (29)
 - The respondent has a personal interest in a specific ship department that would likely lead to command (28)
 - The respondent expects they would be more effective as a ship Commanding Officer by specializing in certain career areas (16)
 - Other topics (17)
 - No narrative response (14)
- Among those that prefer a specialized career path that would not lead to the opportunity to command a ship (101 responses):
 - The respondent is not interested in becoming a Commanding Officer but would like to continue otherwise contributing to the U.S. Navy as a SWO (47)
 - The respondent expects they would be more valuable or effective for their ship crews with a stronger understanding of a specialized career area (23)
 - The respondent has personal interest in a specific ship department that would likely not lead to command (6)
 - Other topics (14)
 - No narrative response (11)

⁸For open-ended, narrative responses provided in support of survey questions 33—if you were presented today with the choice between continuing on the current U.S. SWO generalist career path or changing to a specialized SWO career path that focuses on a distinct specialty area such as ship handling, engineering, or maritime warfare, which career path would you choose—we used professional judgment based on our interviews with Navy officials to identify common themes from across the responses and determine their frequencies. The two analysts evaluated question responses and coded the information into categories. For this question, we coded each SWO response in only one category. The analysts then met, discussed, and resolved any initial disagreements in the coding to arrive at final themes and their frequencies. We included any response category that received fewer than five responses in “Other topics.”

- Among those that prefer the current U.S. Navy SWO generalist career path (89 responses):
 - Commanding Officers need to understand the full range of ship operations to be effective (24)
 - SWOs are more effective if they understand the full range of ship operations (19)
 - The respondent enjoys the experience of learning all aspects of ship operations (12)
 - Other topics (22)
 - No narrative response (12)
- Among those whose preference of career path depends on certain conditions (42 responses):
 - There are pros and cons to both career models (13)
 - If only certain specializations were available in each career track then they might not want specialized career paths if their favored specialization did not align with their advancement goals (8)
 - Other topics (21)
- Eight respondents reported no preference of career path model

Retention. Our survey asked junior Navy SWOs (O-1 through O-3) a series of questions about how likely, if at all, they would be to continue their careers in active-duty under various career paths and command opportunities. According to the survey:

- 19 percent of SWOs are very likely or definitely likely to continue their active-duty career in the current U.S. SWO generalist path; compared with 28 percent of SWOs very likely or definitely likely to continue in a specialist career path which leads to the opportunity to command a ship; and 31 percent of SWOs very likely or definitely likely to continue in a specialist career path that did not lead to the opportunity to command a ship
- 45 percent (+/- 11) of SWOs are not at all likely to continue their active-duty career in the current U.S. SWO generalist path, compared with 28 percent (+/- 11) in a specialist career path which leads to the opportunity to command a ship, and 13 percent in a specialist career path that did not lead to the opportunity to command a ship

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Table 24 summarizes how likely, if at all, SWOs would be to continue their careers in active-duty under various career paths and command opportunities.

Table 24: Survey Responses from Junior Surface Warfare Officers: How Likely Would You be to Continue your Career After You Have Satisfied Your Current Service Requirement?

Category	Count	Estimated percentage	95 percent confidence interval		Margin of error percentage
			Lower bound	Upper bound	
1. Current Generalist Career Path (n=134)					
Not at all likely	55	45	34	56	11
Slightly likely	17	11	5	20	9
Somewhat likely	20	16	9	26	10
Very likely	11	7	3	15	7
Definitely likely	20	12	6	19	7
It depends	11	9	3	18	9
2. Specialist Career Path—Opportunity to Command a Ship (n=133)					
Not at all likely	39	28	19	38	11
Slightly likely	20	17	9	27	10
Somewhat likely	29	24	15	35	11
Very likely	16	14	7	23	10
Definitely likely	22	14	8	22	8
It depends	7	4	1	11	6
3. Specialist Career Path—No Opportunity to Command a Ship Command (n=133)					
Not at all likely	22	13	7	22	9
Slightly likely	33	29	18	40	12
Somewhat likely	33	24	16	34	10
Very likely	25	20	12	30	10
Definitely likely	14	11	6	19	8
It depends	6	3	1	9	6

Source: GAO analysis of survey data. | GAO-21-168

Note: Most U.S. Navy Surface Warfare Officers are required to complete 4 or 5 years of active duty service after commissioning.

Desire to become a Commanding Officer. Our survey asked SWOs who had not already served as a Commanding Officer if they want to eventually be a Commanding Officer. According to our survey:

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- 22 percent of SWOs want to become Commanding Officers, compared with 42 percent who do not and an additional 36 percent who do not know or are uncertain.
- 16 percent (+/- 12) of female SWOs want to become Commanding Officers, 63 percent (+/- 14) do not, and 21 percent are uncertain (15 percent +/- 12) or do not know (7 percent +/- 11).
- 24 percent of male SWOs want to become Commanding Officers, 36 percent do not, and 40 percent are uncertain (37 percent +/- 11) or do not know (3 percent).
- 15 percent of SWOs at the O-1 through O-3 grades who have not already been ship Commanding Officers want to become Commanding Officers, 46 percent (+/- 11) do not, and 39 percent are uncertain or do not know.
- 49 percent (+/- 11) of SWOs at the O-4 through O-6 grades who have not already been ship Commanding Officers want to become Commanding Officer, 29 percent (+/- 11) do not, and 22 percent are uncertain or do not know.

Table 25 summarizes U.S. Navy SWOs desire to become a Commanding Officer.

Table 25: Survey-Based Estimates from U.S. Navy Surface Warfare Officers Who Have Not Served as Commanding Officers on their Desire to Become a Commanding Officer

Category	Count	Estimated percentage	95 percent confidence interval		Margin of error percentage
			Lower bound	Upper bound	
1. Full population (n=265)					
Yes	91	22	16	29	7
Maybe	62	32	23	40	8
No	96	42	34	51	9
Don't know	16	4	2	8	4
2. Female (n=110)					
Yes	34	16	8	27	12
Maybe	19	15	7	26	12
No	49	63	49	76	14
Don't know	8	7	1	18	11
3. Male (n=155)					
Yes	57	24	17	33	9
Maybe	43	37	26	47	11

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Category	Count	Estimated percentage	95 percent confidence interval		Margin of error percentage
			Lower bound	Upper bound	
No	47	36	25	46	10
Don't know	8	3	1	7	4
4. O-1 through O-3 (n=133)					
Yes	26	15	9	24	9
Maybe	38	36	25	46	10
No	62	46	35	56	11
Don't know	7	4	1	9	5
5. O-4 through O-6 (n=132)					
Yes	65	49	38	60	11
Maybe	24	17	10	26	9
No	34	29	20	41	11
Don't know	9	5	2	11	6

Source: GAO analysis of survey data. | GAO-21-168

Survey respondents suggested changes for generalist career path. Our survey asked SWOs what changes they would suggest, if any, to provide additional opportunities to develop skills needed to perform as a SWO, provided the U.S. Navy keeps its current SWO generalist career path.⁹ SWOs gave narrative responses in the following categories:

- Changes to training and certification (200 responses)
 - SWOs should have additional overall training throughout their career (33)
 - SWOs should have additional ship-driving training (28)
 - SWOs should have increased access to ship-driving simulators during shore tours and other times (25)

⁹For open-ended, narrative responses provided in support of survey question 39—provided the U.S. Navy keeps the current SWO generalist career path in place, what changes, if any, do you suggest that would provide you with additional opportunities to develop the skills needed to perform as a SWO—we used professional judgment based on our interviews with Navy officials to identify common themes from across the responses and determine their frequencies. The two analysts evaluated question responses and coded the information into categories. For this question, we allowed for coding each response in multiple categories, so each respondent may be represented in multiple categories. The analysts then met, discussed, and resolved any initial disagreements in the coding to arrive at final themes and their frequencies. We included any response category that received fewer than five responses in “Other topics.”

- SWOs should receive additional initial training (24)
- SWOs should receive additional warfare and tactics training (21)
- SWOs should receive industry-recognized ship-driving certifications (13)
- SWOs should participate in at-sea training cruises (13)
- The U.S. Navy should change the Officer of the Deck or SWO pin certification processes (11)¹⁰
- SWOs should receive additional leadership training (9)
- Department Heads should participate in additional ship-driving (7)
- SWOs that did not have initial classroom training should receive additional catch-up training (5)
- Other topics (11)
- Changes to SWO career management (67 responses)
 - Reduce the amount of time SWOs spend in maintenance and increase the amount of time spent at sea (14)
 - Increase the rigor of SWO selection and retention to improve the quality of SWOs (13)
 - Better manage the variety of experiences SWOs receive over their career to improve their development (11)
 - Reduce SWO ship platform type changes (5)
 - Give SWOs more focused assignments and fewer responsibilities at any given time (5)
 - Other topics (19)
- Ship workforce changes (47 responses)
 - Reduce administrative or inspection burdens on ship crews (18)
 - Give ship crews more time for training and assessments under Commanding Officer leadership (12)
 - Improve ship staffing levels (8)
 - Other topics (9)
- Tour structure changes (33 responses)

¹⁰The Officer of the Deck qualification allows a SWO to lead ship-driving watches.

- Change Division Officer tours to improve SWO development (19)
- Increase consideration for SWO personal and family life in tour policies (7)
- Change tour lengths to improve SWO development (5)
- Change tour timing to reduce long gaps in sea experience (2)
- Commanding Officer development changes (24 responses)
 - Better manage the knowledge and skill development of Commanding Officers (13)
 - Change the Executive Officer to Commanding Officer Fleet-up system (6)
 - Change the Commanding Officer selection process (5)
- Enhance management of the surface ship fleet (8 responses)
- Change the culture of the SWO community (5 responses)
- Other Topics (16 responses)
 - The U.S. Navy should adopt specialized career paths (11)
 - Change the SWO (Nuclear) program (5)
- No changes suggested or no narrative response (80 responses)

Other Survey responses related to SWO career path. Our survey asked SWOs if they had other comments related to the SWO career path not covered by the survey questions.¹¹ Those that provided comments related to the SWO career path gave narrative responses in the following categories:

- Comments on generalist versus specialist career paths (40 responses)
 - Would like career paths specialized by department (16)

¹¹For open-ended, narrative responses provided in support of survey question 41—what additional comments, if any, would you like to make about any topic covered in this survey—we used professional judgment based on our interviews with Navy officials to identify common themes from across the responses and determine their frequencies. The two analysts evaluated question responses and coded the information into categories. For this question, we allowed for coding each response in multiple categories, so each respondent may be represented in multiple categories. The analysts then met, discussed, and resolved any initial disagreements in the coding to arrive at final themes and their frequencies. We included any response category that received fewer than four responses in “Other topics”—we reduced the threshold from five responses due to the lower response rate to this question.

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- Keep the current generalist career path (9)
- Would like a career track that does not involve ship command (8)
- Would like career paths specialized by ship type or platform (4)
- Other topics (3)
- Ship workforce changes (31 responses)
 - Reduce administrative and/or inspection burdens on ship crews (14)
 - Increase ship staffing levels (8)
 - Reduce the number of Division Officers on ships (4)
 - Give ship crews more time for training and assessments under Commanding Officer leadership (4)
 - Other topics (1)
- Training and certification changes (25 responses)
 - Additional overall training throughout career (7)
 - Change the Officer of the Deck or SWO pin certification processes (6)¹²
 - Give additional training to those SWOs that did not have initial schoolhouse training (4)
 - Other topics (8)
- Tour structure changes (16 responses)
 - Increase considerations for SWO personal family lives in tour policies (13)
 - Other topics (3)
- Commanding Officer development changes (13 responses)
 - Change the Commanding Officer selection process (6)
 - Better manage the knowledge and skill development of Commanding Officers (6)
 - Other topics (1)
- SWO career management changes (13 responses)

¹²The Officer of the Deck qualification allows a SWO to lead ship-driving watches.

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- Increase the rigor of SWO selection and retention to increase the quality of SWOs (5)
- Other topics (8)
- Commentary on the status of the SWO community (12 responses)
 - The SWO community needs further wide-ranging improvements (5)
 - The SWO community has made improvements since 2017 (4)
 - Other topics (3)
- Changes should be made to surface fleet culture (5 responses)
- Other topics (12 responses)

Appendix V: Objectives, Scope, and Methodology

The John S. McCain National Defense Authorization Act for Fiscal Year 2019 contained a provision that we review the U.S. Navy Surface Warfare Officer (SWO) career path to include comparing it to those of foreign navies.¹ This report (1) assesses the extent to which there are differences in separation rates for the U.S. Navy SWO community and other U.S. Navy officer communities, and gender differences in separation rates for the U.S. Navy SWO community;² (2) assesses the extent to which U.S. Navy commissioning practices affect SWOs training opportunities aboard ships; (3) describes how the career paths of U.S. Navy SWOs compare to those of selected foreign navies and other U.S. Navy and U.S. maritime communities; and (4) assesses the extent to which the U.S. Navy has used or evaluated alternative career paths and means of developing proficiency for SWOs.

For objective one, we obtained and analyzed personnel data on officers across the U.S. Navy's Unrestricted Line Officer communities for fiscal year 2004 through March 2020 from the Defense Manpower Data Center, including service start date, grade, gender, race, marital status, and whether the officer has dependents.³ We selected fiscal year 2004 through March 2020 because this is the most recent time period for which the Department of Defense (DOD) has complete data available and allows for a robust longitudinal trend analysis.

We obtained data from three different files that the Defense Manpower Data Center maintains. We aggregated these data into a single file that allowed us to analyze them for both descriptive statistics to show trends, as well as model using a variety of statistical analyses to examine the likelihood that specific events would occur for various demographic characteristics. We used the Life Table method to calculate the probable

¹Pub. L. No. 115-232, § 514 (2018).

²Separation refers to an officer either leaving the U.S. Navy or transferring to another officer community.

³Unrestricted Line Officers are not restricted in the performance of duty and are eligible to command U.S. Navy ships, submarines, aircraft squadrons, fleets and shore bases. Conversely, Restricted Line Officers are designated for specific duties—such as intelligence, public affairs, aviation maintenance, or oceanography—in the U.S. Navy. Unrestricted Line Officers include Surface Warfare, Aviation, Submarine, Naval Special Warfare, and Explosive Ordnance Disposal Officers. These officers are commissioned through Officer Candidate School, the Naval Reserve Officers Training Corps, or the Naval Academy.

separation rate at any point in time.⁴ Separation refers to the voluntary or involuntary loss of military personnel other than retirement or death. We used bivariate Cox Proportional Hazard models to calculate an individual officer's risk of separation for each demographic variable pertaining to the individual officer.⁵ We also used the multivariate Cox Proportional Hazard models to test the extent of association with outcome and statistical significance of multiple factors including officer community, years of service, education, gender, race, marital status, and dependent status.⁶ For a detailed description of each of these methods and our analyses, see appendix I.

We could not control for all factors that may affect separation, such as an officer's performance and labor market conditions. We also did not model for the promotion process. Therefore, our modeling provides information on possible associations in the data, and it does not establish causal relationships. We discussed the results of our analyses with officials from Commander, Naval Surface Forces; Navy Personnel Command; the Office of the Chief of Naval Operations; and the Defense Manpower Data Center. We assessed the reliability of U.S. Navy personnel data by reviewing the relevant data dictionary; interviewing knowledgeable officials from Defense Manpower Data Center; and conducting both electronic and manual data testing to look for missing and erroneous data. Based on our assessments, we determined that the data used in our analyses are sufficiently reliable for the purposes of determining SWO separation rates, comparing them to those of other U.S. Navy officer communities, and assessing the extent to which there are gender differences in separation rates.

We collected nominal career path costs, as of February 2021, from officials in the Office of the Chief of Naval Operations, Surface Warfare Division, Air Warfare Division, and Undersea Warfare Division using a standardized data request. We reviewed related documentation, checked the data for missing fields and erroneous data, interviewed officials from each of the three divisions at Office of the Chief of Naval Operations, and

⁴The Life Table method retention rates represent the percentage of officers that are still in active duty after each year of commissioned service.

⁵Bivariate Cox Proportional Hazard models estimate the association between selected attribute factors (or independent variables) and the outcome variable (or dependent variable).

⁶Multivariate Cox Proportional Hazard models test the extent of association with outcome and statistical significance of all independent factors.

verified the data with officials to ensure that their information was reliable and accurately represented. We did not assess the U.S. Navy's assumptions underlying the career path cost data provided nor did we adjust costs for inflation. We determined that the data were sufficiently reliable for the purposes of reporting the nominal career path costs for the U.S. Navy's Surface Warfare, Aviation, and Submarine officer communities.

We determined that the control environment and risk assessment components of *Standards for Internal Control in the Federal Government* were significant to this objective, along with the underlying principles that management demonstrate a commitment to recruit, develop, and retain competent individuals and have plans with clearly defined goals, performance measures, and timelines.⁷ We reviewed publications on female recruitment and retention efforts in the military to determine what others had found and recommended with regard to female recruitment, retention, and participation in the military.⁸ We compared this information to documentation detailing U.S. Navy goals and guidance that establishes responsibilities related to strategic human capital planning and retention of a diverse workforce to identify any gaps.⁹

For objective two, we obtained and analyzed data on the required number of Junior Officer positions aboard ships with the actual number of Junior Officers aboard ships for fiscal years 2017 through February 2021. This data includes descriptions of the different types of officers commissioned into the SWO community, including officers with the option to transfer to another U.S. Navy community, and nuclear-trained SWOs. We also obtained data on the nominal amount of time SWOs and nuclear-trained SWOs spend at-sea over their entire careers, and analyzed the differences between the career paths for each type of officer.

⁷GAO, *Standards for Internal Control in the Federal Government*, [GAO-14-704G](#) (Washington, D.C.: September 10, 2014).

⁸Defense Advisory Committee on Women in the Services (DACOWITS), 2015 Annual Report (December 2015) and GAO, *Female Active-Duty Personnel: Guidance and Plans Needed for Recruitment and Retention Efforts*, [GAO-21-61](#) (Washington, D.C.: May 19, 2020).

⁹Office of the Chief of Naval Operations Instruction 5450.337B, *Missions, Functions, and Tasks of Commander, United States Pacific Fleet* (Jan. 21, 2016). Office of the Chief of Naval Operations Instruction 5420.115, *Navy Diversity Policy Coordination* (Dec. 20, 2012).

We also reviewed information on junior SWO recruitment and training expectations and analyzed ship staffing data to assess junior SWO staffing levels. We discussed SWO commissioning practices and policies with officials from Commander, Naval Surface Forces; Navy Personnel Command; and the Office of the Chief of Naval Operations. We assessed the reliability of U.S. Navy personnel requirements data and actual counts of personnel by reviewing U.S. Navy guidance, interviewing knowledgeable officials from the U.S. Navy, and conducting both electronic and manual data testing to look for missing or erroneous data. Based on our assessments, we determined that the personnel requirements data used in our analyses are sufficiently reliable for the purposes of reporting on U.S. Navy personnel requirements, commissioning practices, and personnel levels.

We assessed SWO commissioning practices and policies against U.S. Navy guidance on training requirements and proficiency development, and our prior work on *Key Principles for Effective Strategic Workforce Planning*, and against relevant *Standards for Internal Control in the Federal Government*.¹⁰ We determined that the risk assessment component of *Standards for Internal Control in the Federal Government* was significant to this objective, along with the underlying principle that management identify, analyze, and respond to risks related to achieving the defined objectives.¹¹

For objective three, we reviewed U.S. Navy documentation on the content, purpose, and cost of SWO career paths, and identified means of comparing with foreign navies and other U.S. Navy and U.S. maritime communities. We discussed SWO policies with officials from Commander, Naval Surface Forces; Navy Personnel Command; and the Office of the Chief of Naval Operations. Based on this work, we developed a standard question set to compare SWO career path and proficiency models among foreign navies and U.S. maritime communities. We selected foreign navies for comparison based on fleet size and characteristics, and U.S.

¹⁰GAO, *Human Capital: Key Principles for Effective Strategic Workforce Planning*, [GAO-04-39](#) (Washington, D.C.: Dec. 11, 2003). Commander, Naval Surface Force, U.S. Pacific Fleet and Commander, Naval Surface Force Atlantic Instruction 1412.9, *Surface Warfare Mariner Skills Logbook Requirements* (Sept. 6, 2018).

¹¹GAO, *Human Capital: Key Principles for Effective Strategic Workforce Planning*, [GAO-04-39](#) (Washington, D.C.: Dec. 11, 2003) and GAO, *Standards for Internal Control in the Federal Government*, [GAO-14-704G](#) (Washington, D.C.: September 2014).

maritime officer communities based on their role defined in U.S. Code.¹² To select foreign navies, we found *Jane's Fighting Ships* naval ship database¹³ on global naval vessels to be sufficiently authoritative and reliable for purposes of identifying the size of naval surface fleets, and selected the six foreign navies with the largest number of surface combatant vessels based on *Jane's Fighting Ships'* data as of September 2019, along with additional criteria:

- We excluded navies from countries that the Department of Defense identified in its 2018 *National Security Strategy Summary* as challenges to U.S. national security because our methods required gathering information from these navies.¹⁴
- We selected no more than three navies from any one continent to support geographic diversity in our selections.
- We selected only navies with at least one surface combatant vessel of destroyer size or larger to help select navies with combat capabilities similar to those of the U.S. Navy.

After selecting foreign navies for comparison based on fleet size and other characteristics, we requested the participation of six foreign navies. Five of the six foreign navies we selected—those of France, Italy, Japan, the Republic of Korea, and the United Kingdom—agreed to participate in our review. We met with officials from each of the foreign navies and they provided official responses to a standardized question set and related documentation.

We selected U.S. maritime communities by identifying officer communities that lead ship crews in those military services with maritime missions defined in U.S. Code.¹⁵ As a result, we included U.S. Navy Submarine officers; U.S. Navy Aviation officers; and U.S. Coast Guard officers. We met with officials from these organizations and collected information using interviews and the same question set we sent the foreign navies to support comparison between officer communities.

¹²10 U.S.C. § 8602(a); 14 U.S.C. § 102.

¹³Jane's Fighting Ships 2019/2020.

¹⁴The White House, *National Security Strategy Summary* (Washington, D.C.: January 2018)

¹⁵10 U.S.C. § 8602(a); 14 U.S.C. § 102.

For objective four, we reviewed Navy documentation on efforts to review career path and proficiency development policies, including changes made since the 2017 collisions. We discussed U.S. Navy efforts to review the U.S. Navy SWO career path with officials from Commander, Naval Surface Forces; Navy Personnel Command; and the Office of the Chief of Naval Operations. We assessed the U.S. Navy's development of the SWO career path against our prior work on *Effective Strategic Workforce Planning*.¹⁶

To determine the opinions of U.S. Navy SWOs across the fleet on current and potential career path and proficiency policies we conducted a web-based survey of a generalizable, stratified random sample of SWOs. We defined the target population for this survey to include all active-duty U.S. Navy officers of grades O-1 through O-6 who are designated as either SWO-trainees or qualified SWOs.¹⁷ SWOs are officers whose training and primary duties focus on the operation of U.S. Navy ships at sea and the management of various shipboard systems. The target population of SWOs between grades O-1 through O-6 covers a broad range of experience with the U.S. Navy's SWO career path.

To conduct the survey, we developed questions covering, among other things, the appropriateness of current and alternate SWO career paths, proficiency development measures, and personal career preferences and ambitions. Based on general information we provided on the survey, the U.S. Navy provided a list of all officers who met the population definition, and we identified the sample frame of 8,606 SWOs. We selected a stratified sample of 852 SWOs from this sample frame.¹⁸ We stratified the sampling frame into eight mutually exclusive strata first by identifying

¹⁶GAO, *Human Capital: Key Principles for Effective Strategic Workforce Planning*, GAO-04-39 (Washington, D.C.: Dec.11, 2003).

¹⁷Military officers have a personnel grade associated with their rank and pay ranging from O-1 through O-10. In the U.S. Navy the O-1 to O-6 grades include the main body of officers, from the ranks of Ensign at O-1 to Captain at O-6. In the U.S. Navy, lower grades include junior officers, representing the ranks of Ensign at O-1, Lieutenant (junior grade) at O-2, and Lieutenant at O-3. Middle grades include Department Heads, Executive Officers, and Commanding Officers; representing the ranks of Lieutenant Commander O-4, Commander O-5 and Captain O-6. The O-7 to O-10 grades include senior leadership, from the ranks of Rear Admiral (lower half) at O-7 to Admiral at O-10. 37 U.S.C. § 201(a).

¹⁸Our initial sample design included 858 officers in the sample. During the fielding of our survey, we identified six SWOs that were out of scope and removed these SWOs from our sample frame and sample. As a result, we selected a sample of 852 SWOs from the population of 8,606 SWOs in our population.

officers that were deployed in the last 12 months and were qualified for one or more of Officer of the Deck-Underway, Engineering Officer of the Watch, and/or Tactical Action Officer watch stations and all others.¹⁹ Next, we stratified by rank (grouped as O1-O3 and O4-O6) and gender (male and female). We computed sample sizes necessary to obtain a precision of at least plus or minus 10 percentage points, at the 95 percent confidence level, for each subpopulation of interest. Finally, we inflated sample sizes within each stratum for an expected response rate of 50 percent.

To minimize errors that might occur from respondents interpreting our questions differently than we intended, we developed the survey with the assistance of several survey specialists and received feedback on a draft from a separate survey specialist. We provided a draft of the questions to two U.S. Navy subject matter experts for their review and made changes as appropriate. Furthermore, we pretested our survey with five volunteer SWO reviewers (including males and females and in grades O3-O6). During each pretest, all of which were conducted by phone, we tested whether (1) the instructions and questions were clear and unambiguous, (2) the terms we used were accurate, and (3) pretest participants could offer a potential solution to any problems identified. We noted any potential problems identified by the reviewers through the pretests and modified the questionnaire based on the feedback received. A full copy of the survey questions is provided in appendix IV.

We conducted the survey from August 2020 through October 2020. To maximize our response rate, we sent notification emails and reminder emails to encourage SWOs to complete the survey. In total, the survey received responses from 351 of the 852 SWOs selected in our sample, for an unweighted response rate of 41 percent. The weighted response rate, which controls for the disproportionate sample design, was 38 percent. We generated weighted estimates to the population of 8,606 SWOs.

We conducted a multifaceted analysis of our survey results to identify potential sources of nonresponse bias using two methods. First, we

¹⁹For efficiency and to reduce burden on Navy personnel, this survey was conducted in collaboration with another GAO engagement ([GAO-21-366](#)) focused on reviewing U.S. Navy crewing and fatigue management. Sampling, design, and analysis elements were developed to meet the needs of both surveys. Results from the survey are valid for each engagement's purposes.

examined the response propensity of the sampled SWOs by several demographic characteristics. These characteristics included rank, gender, number of days at sea during the last deployment, and designator code.²⁰ Our second methodology consisted of comparing weighted estimates from respondents and nonrespondents to known population values for these demographic characteristics. We conducted statistical tests of differences, at the 95 percent confidence level, between estimates and known population values, and between respondents and nonrespondents.

Based on this analysis, we observed significant differences in response propensities for all of the characteristics we examined. Specifically, we found that lower ranking SWOs, females, officers with more days at sea during the last deployment and SWO trainees—were all significantly under-represented by our respondents. Additionally, we found significant differences between weighted estimates from the respondents when compared with known population values for rank, number of days at sea, and designator code.

To ensure that the survey results appropriately represented the population of SWOs, we calculated weights to adjust for the differential response propensities we observed. The nonresponse adjustment was calculated using a propensity based weighting class adjustment where adjustment cells were based on quintiles of the predicted response propensities estimated by a logistic regression model that included rank, gender, and the number of days at sea during the last deployment. To compute the final adjusted sampling weight, we applied a simple raking procedure to ensure adjusted weights summed to the number of SWOs in the population and by stratum.

We repeated the nonresponse bias analysis using the adjusted weights and found no significant differences with known population values and the weighed estimates for all of the characteristics we examined. This provided us with evidence that the nonresponse weighting class adjustments help mitigate any potential nonresponse bias introduced by the differences in response propensities we identified for the characteristics we included in this analysis.

Because we followed a probability procedure based on random selections, our sample is only one of a large number of samples that we

²⁰There are two SWO officer designator codes, one for trainees and the other for qualified SWOs.

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might have drawn. Since each sample could have provided different estimates, we express our confidence in the precision of our particular sample's results as a 95 percent confidence interval (e.g., plus or minus 10 percentage points). We present the survey results as estimates to the population of U.S. Navy Surface Warfare Officers and have margins of error, at the 95 percent confidence level, of plus or minus 10 percentage points or fewer, unless otherwise noted. A statistician performed the quantitative analysis as described above. Another statistician verified the analyses to ensure their accuracy.

Table 26: Sample Design and Number of Responses

Surface Warfare Officer Characteristics by Stratum	Population size	Sample size	Respondents	Unweighted response rate
1. Deployed within last 12 months, OOD-Underway, EOOW, and/or TAO: O-1 through O-3, Male	606	106	39	37
2. Deployed within last 12 months, OOD-Underway, EOOW, and/or TAO: O-1 through O-3, Female	234	87	25	29
3. Deployed within last 12 months, OOD-Underway, EOOW, and/or TAO: O-4 through O-6, Male	869	145	76	52
4. Deployed within last 12 months, OOD-Underway, EOOW, and/or TAO: O-4 through O-6, Female	123	73	38	52
5. All other Officers: O-1 through O-3, Male	3901	145	49	34
6. All other Officers: O-1 through O-3, Female	1472	142	34	24
7. All other Officers: O-4 through O-6, Male	1245	81	45	56
8. All other Officers: O-4 through O-6, Female	156	73	45	62
Total	8606	852	351	41

Legend:

OOD-Underway: Officer of the Deck-Underway

EOOW: Engineering Officer of the Watch

TAO: Tactical Action Officer

Source: GAO analysis of Department of Defense data. | GAO-21-168

For all open-ended survey questions, two analysts independently reviewed the responses to identify examples relevant to our objectives. In addition, for open-ended survey questions that provided respondents the opportunity to explain their answers to questions regarding preferences and/or opinions of the current U.S. Navy SWO career path and potential alternative career paths, we used professional judgment based on our interviews with U.S. Navy officials to identify common themes from across the responses and determine their frequencies. The two analysts evaluated question responses and coded the information into categories.

The analysts then met, discussed, and resolved any initial disagreements in the coding to arrive at final themes and their frequencies.

In addition to meeting with U.S. Navy officials and surveying SWOs, we also used information gathered during a related review of SWO training in which we visited 12 surface ships in the Pacific and Atlantic fleets. We selected the ships according to which ships and crews were available at each of the sites we visited. Aboard the ships, we held group discussions and interviews with approximately 225 SWOs to discuss their views on SWO career paths and other SWO community policies. Discussion group sizes ranged from two to 20 SWOs. In conducting these group discussions, we:

- held 24 group discussions, with two separate discussions for each of the 12 ships—one with Department Heads and one with Division Officers;
- interviewed Commanding and Executive Officers aboard each of the 12 ships, where available; and
- conducted each group discussion without the group’s supervisors or subordinates present.

The ship crews we visited were those the U.S. Navy identified as available to hold group discussions with us during site visits, and the results of these group discussions are not generalizable to anyone outside these groups. Due to the timing of our work, the interviews and group discussions did not include SWOs that experienced changes made or planned for SWO training beyond April 2019.

We asked each group a standard set of questions to obtain their views on the following topics:

- the sufficiency and appropriateness of SWO training programs in preparing SWOs for their ship responsibilities, including ship driving;
- the SWO career path, including the potential benefits and drawbacks of more specialized career paths; and
- any opportunities to improve the SWO community.

We conducted an analysis of the discussion group responses to identify common themes and to provide illustrative examples in our report. Specifically, we reviewed the responses received during discussion groups, grouped the responses by themes, and counted how many discussion groups and interviews provided similar feedback to our

questions. One analyst conducted this analysis, coding the information and entering it into a record of summary, and a different analyst checked the information for accuracy and agreement on themes. Any initial disagreements in the coding were discussed and reconciled by the analysts. The analysts then tallied the responses to determine the extent to which the certain themes were covered during our discussion groups and interviews.

We interviewed officials, or where appropriate, obtained documentation at the organizations listed below:

Office of the Chief of Naval Operations

- Director of Surface Warfare (N96)
- Surface Warfare Division (N96) Manpower and Training
- Undersea Warfare Division (N97) Manpower and Training
- Air Warfare Division (N98) Manpower and Training
- Readiness Reform and Oversight Council

Navy Personnel Command

- Surface Warfare Officer Assignments (PERS-41)
- Submarine and Nuclear Officer Distribution (PERS-42)
- Aviation Officer Distribution (PERS-43)
- Active Officer Community Management Division (BUPERS-31)
 - Surface Warfare Officer Community Manager (BUPERS-311)
 - Nuclear (Submarine and Surface) Officer Community Manager (BUPERS-312)
 - Aviation Officer Community Manager (BUPERS-313)

U.S. Navy Surface Warfare Officers School Command

U.S. Navy Center for Surface Combat Systems

Commander, Naval Surface Forces, U.S. Pacific Fleet

- USS *Ardent* (MCM 12)
- USS *Lake Champlain* (CG 57)
- USS *New Orleans* (LPD 18)

- USS *Paul Hamilton* (DDG 60)
- USS *Tulsa* (LCS 16)

Commander, Naval Surface Forces, Atlantic

- USS *Bataan* (LHD 5)
- USS *Cole* (DDG 67)
- USS *Mahan* (DDG 72)
- USS *Mesa Verde* (LPD 19)
- USS *Oak Hill* (LSD 51)
- USS *San Antonio* (LPD 17)
- USS *San Jacinto* (CG 56)

Office of the Secretary of Defense

- Defense Manpower Data Center

United States Department of State

- Bureau of Europe and Eurasian Affairs, Office of Western Europe, France
- Bureau of Europe and Eurasian Affairs, Office of Western Europe, United Kingdom
- Bureau of European and Eurasian Affairs, Office of Western Europe, Italy
- Bureau of East Asian and Pacific Affairs, Office of Japan Affairs
- Bureau of East Asian and Pacific Affairs, Office of the Republic of Korea

U.S. Coast Guard

- Office of Cutter Forces (CG-751)
- U.S. Coast Guard Cutter *Bear* (WMEC 901)

Republic of Korea Navy

- The Embassy of the Republic of Korea (Washington, D.C.)
- Republic of Korea Naval Attaché, Office of Defense (Washington, D.C.)

Italian Navy

- Italian Naval Attaché (Washington, D.C.)
- Office, Education, Career Paths, and Emergency Deployment Policy
French Navy
- French Embassy (Washington, D.C.)
- French Naval Attaché (Washington, D.C.)
Japan Maritime Self-Defense Force
- Japan Maritime Self-Defense Force Naval Attaché (Washington, D.C.)
- Office of the Chief of Naval Operations
United Kingdom Royal Navy
- United Kingdom Royal Navy Naval Attaché (Washington, D.C.)
- United Kingdom Royal Navy's Maritime Warfare School
- U.S. Naval Attaché to the United Kingdom (U.S. Embassy, London England)

We conducted this performance audit from September 2019 to June 2021 in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

Appendix VI: Comments from the Department of the Navy



DEPARTMENT OF THE NAVY
NAVAL SURFACE FORCE
UNITED STATES PACIFIC FLEET
2841 RENDOVA ROAD
SAN DIEGO CALIFORNIA 92155-5490

IN REPLY REFER TO
5860
Ser N00/353
June 1, 2021

Mr. Cary Russell
Director, Defense Capabilities and Management
U.S. Government Accountability Office
441 G Street, NW
Washington DC 20548

Dear Mr. Russell,

This is the Department of Defense (DoD) response to the GAO Draft Report GAO-21-168, "NAVY READINESS: Actions Needed to Evaluate and Improve Surface Warfare Officer Career Path," dated June, 2021 (GAO Code 103784).

Attached represents DoD's response to the subject report. The Navy concurs with all seven recommendations made by GAO regarding the Surface Warfare Officer (SWO) Career Path and appreciates the great effort GAO placed into the impartial external assessment. My point of contact is CAPT Matt Lehman who can be reached at (619) 437-2345 or e-mail matthew.j.lehman@navy.mil.

Sincerely,

A handwritten signature in black ink, appearing to read "R. I. Kitchener", is positioned above the printed name.

R. I. KITCHENER

Recommendation 1

The Secretary of the Navy should ensure the Commander, Naval Surface Forces, uses information gathered on Surface Warfare Officer separation rates to develop a plan with clearly defined goals; performance measures that identify specific retention rates or determine if initiatives to improve retention are working as planned; and timelines to improve Surface Warfare Officer retention rates.

Commander, Naval Surface Forces (CNSF) Response: CNSF concurs with the recommendation.

1. CNSF coordinates with the Bureau of Naval Personnel-Three (BUPERS-3) and Navy Recruiting Command to collect and evaluate Surface Warfare Officer (SWO) accession, retention, and loss data monthly. Based on this data, measurable goals and timelines are developed for improvement for attrition, retention to Department Head (first critical career milestone) to meet the first tour department head fill requirement on ships, promotion to Lieutenant Commander for indication of community health for Commander milestone selection, promotion to Commander, and promotion to Captain. Goals are informed by current and forecasted funded billet base, known and projected losses, and efficacy and utilization of current retention initiatives.
 - a. Monetary retention incentives include the SWO Department Head Retention Bonus (DHRB) and SWO Lieutenant Commander Retention Bonus (LRB), the proposed Senior Officer Retention Bonus (SORB). Monetary incentives for retention are reviewed annually and updated as necessary. For example, the SWO community increased retention bonuses over the previous two decades. The Critical Skills Retention Bonus (CSRB) amounted to \$50K for year groups 94-99. SWO CSRB plus Junior CSRB amounted to \$75K total for year groups 00-05. Revised Junior CSRB (RJCSRB) amounted to \$75K for year groups 06-11. In its third full year of execution the current bonus, DHRB, amounts to \$105K maximum for first look department head screeners, with the \$102K being the average payment.
 - b. Non-monetary incentives include graduate education opportunities (Naval Postgraduate School, Graduate Education Voucher, USNA LEAD, etc.) occurring relatively early in a SWO's career, Targeted Re-Entry Program (TRP), Career Intermission Program (CIP), the Retire/Retain program, Reserve Recall to Active Duty, Inter-Service Transfer, and Promotion Selection Board Deferment (Opt-Out). Additionally, PERS-41N is exploring the expansion of an "Opt-out" (promotion selection board deferment) for women who wish to remain ashore for family planning.
 - c. The Accession Plan is developed annually and reviewed quarterly to assess progress and efficacy. Promotion planning begins each fall for Lieutenant Commander, Commander, and Captain to influence the promotion zones and opportunity percentages for each rank, and provide Community Values and Career Path definitions to voting members at the promotion boards. Commander and Captain goals are based on Commander Command and Major Command opportunity and selectivity at administrative Boards. The SWO

Enclosure (1)

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community revised the community values slides posted on the MyNavyHR website informing the board selection process for Captain and Commander, and attained the right zone and opportunity set for the Statutory Board, which resulted in a very successful Captain selection for SWO this year. Additionally, the SWO community adjusted the SWO Program Authorization for Officer Candidate School accessions, with higher initial requirements aimed at improved retention, as well as a minor modification to Minimum Service Requirement (MSR) commitment to two DIVO tours instead of four years.

2. The Surface Warfare Working Group (SWG) will conduct an evaluation of Surface Warfare Officer (SWO) separation trends including feedback from Junior Officers to develop goals for long-term SWO inventory health. The SWG meets quarterly to review and discuss initiatives and high-level comprehensive quality of service and quality of life initiatives impacting Surface Warfare Community including strategic workforce planning. SWG reports findings to Surface Warfare Commander's Council (SWCC). The SWG is composed of senior community O-6s: CNSF Chief of Staff (Chair); CNSL Chief of Staff; Commanding Officer, Surface Warfare Schools Command; Commanding Officer, Center for Surface Combat Systems; and Director, Surface Warfare Officers Assignments. SWCC Members include: CNSF (Chair); CNSL; and Director, Surface Warfare Requirements (OPNAV N96), PERS-4, Surface and Mine Warfare Development Center (SMWDC). The SWO community is conducting a survey, currently in draft form, which will be conducted next year.
3. GAO noted: "The U.S. Navy collects and analyzes data on SWO separation rates and they have an initiative underway to change the structure of retention bonuses, but they have not targeted or determined specific retention rates, according to U.S. Navy officials. While these activities could be elements of a larger plan to improve SWO retention, by themselves they do not represent a comprehensive approach to the situation."
 - a. The SWO Officer Community Manager (OCM) is involved in a comprehensive approach to SWO retention, and manages and tracks all SWO accession, retention, promotion, education, and lateral transfer initiatives. Other factors influencing community health tracked (but not managed) by SWO OCM include actual force structure and employment, as well as distribution factors such as training pipelines, tour lengths, and travel. The OCM serves as an advisor to both PERS-41 (Surface Officer Distribution) and CNSF regarding these items. Monetary incentives are justified annually to the Assistant Secretary of the Navy for Manpower and Reserve Affairs (ASN M&RA), which include specific measures of effectiveness and goals. In addition, the annual Accession Plan considers specific retention rates and sets a Year Group (YG) retention goal for eight years into the future.
 - b. Aside from the OCM, comprehensive quality of service and quality of life initiatives are regular topics within the quarterly meeting of the Surface Warfare Working Group (SWG). The SWO OCM feeds information for the SWG via the director of PERS-41, a standing member of the panel.

Recommendation 2

The Secretary of the Navy should ensure the Commander, Naval Surface Forces, develops a plan to identify actions to increase female Surface Warfare Officer retention rates that includes clearly defined goals, performance measures, and timelines.

CNSF Response: CNSF concurs with the recommendation.

1. Female retention is extremely important to the Surface Force. Surface Warfare is a highly diverse community and places value on the diversity of thought and experience resident in our officer corps. The retention of female officers to and past the Department Head milestone ensures that this diversity of thought and experience will matriculate to the highest levels of Surface Warfare leadership. While CNSF does not explicitly identify an office or billet dedicated to female retention, the SWO OCM does track female statistics, and promotion, administrative selection, accession, and retention are all tracked by CNSF through the OCM and PERS-41. Retention initiatives are implemented to benefit all officers and include the Career Intermission Program (CIP) and a draft initiative to expand the Promotion Selection Board Deferment (Opt-Out) program for officers seeking a deferment for an in-zone look in order to remain ashore for family planning. Additionally, the senior female SWO (currently a VADM) traditionally also serves as the editor of a female SWO publication, "SWO Network News," aimed at addressing female issues within the SWO community.
 - a. Recurring retention motivators for female retention include the nature of the job in general (employment and pay, the work itself, the work environment), policy tools (sabbaticals, bonuses, educational benefit, geographic stability), and detractors hard to affect by policy (military culture, family separation).¹ Of note, the SWO community continues to implement more flexible and generous policy tools to improve retention.
 - b. The SWG will conduct further evaluation of female Surface Warfare Officer (SWO) separation trends including feedback from Junior Officers to develop goals consistent with SWO career milestones for long-term SWO inventory health.
2. As a positive leading indicator to continued female officer retention increases, as of March 2021, 38.3% of all O-5/O-6 Female SWOs were in an Executive Officer (XO) or Commanding Officer (CO) tours, an increase of 6.1% from June 2017.
3. GAO Noted: "Female representation in the U.S. Navy SWO community is large in relative terms and growing. As of March 2020, female representation in the SWO community is over three times larger than female representation in similar U.S. Navy officer communities (22 percent compared with 7 percent). In addition, the proportion of female SWOs has increased every year since 2004 from about 15 percent in 2004 to more than 23 percent in March 2020."

¹ Stoloff, Peter H. "Retention of Female Surface Warfare Officers." Center for Naval Analysis (CNA), July, 2007.

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- a. As cited in the CNA study “Identifying and Addressing Career Progression Barriers for Female Officers in the Surface Warfare and Aviation Communities” conducted in March 2021, female retention has decreased between year groups seven times and increased 11 times since year group 1994. Five of the seven times that female retention decreased, male retention also decreased. Overall, female officer retention has increased by more than 10% across that same time period, as figure 1 shows.

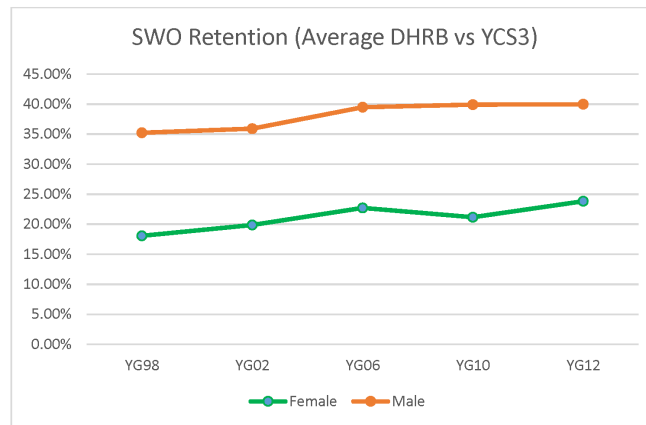


Figure 1

- b. Retention for this model is defined as the number of officers committing to their Department Head milestone tours by signing for the Department Head Retention Bonus (DHRB) versus the total number of SWOs at their third year of commissioned service (YCS3) mark. While female retention is lower than male retention, the gap is narrowing. Year Group 2010 (YG10), YG11, and YG 12 – the three year groups currently as sitting Department Heads (DH) – the difference in male and female retention was an average of 14.27%. The difference in male and female retention for YGs 07, 08, and 09 was 19.4%.
- c. Illustrated in the study, “the quantitative analysis also indicated that exposure to high-performing female XO and COs is correlated with significantly higher retention rates for both female and male JOs and that, in some cases, the positive effects are greater for female JOs.”² The SWG intends to evaluate further the effects of leadership on the female retention in the future as well as separation trends including feedback from Junior Officers to develop goals for long-term SWO inventory health.

² Kraus, Amanda; Wolters, Heather; Smirnov, Mikhail; with Reese, Dave. “Identifying and Addressing Career Progression Barriers for Female Officers in the Surface Warfare and Aviation Communities.” Center for Naval Analysis (CNA), March 2021.

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4. GAO Noted: "After 10 years of service, around the first major career milestone, 12 percent of female SWOs remain in their community, compared with 39 percent of male SWOs."
 - a. This assessment is based on retention data dating back to 2004, and is considering measured retention from accession year group (YG) 94 through YG10 in the calculation of female retention. In that time, SWO has made improvement in female retention, such that the most recent 5-year average of retention of female SWO to YCS10 is 18.9% of accessions. Historical inventory for YG94-YG11 female SWO at YCS10 as compared to accessions is 16.7%. SWO measures retention in terms of DH contracts as compared to the YCS3 inventory when SWO inventory generally stabilizes after initial training losses and Option lateral transfers. SWO has shown improvement, where the YG94-11 average is 21.2% as compared to the most recent 5-year (YG10-14) average of 23.7%. The comparison is even more pronounced when looking at a 5-year averages from the late-90s as compared to today (YCS10 retention for YG95-99 was 14.1% and DH contract/YCS3 retention was 19.6%).
 - b. Note, GAO uses data from FY 2004-2020 to measure female retention, which does not reflect current SWO conditions with regard to 10-year longevity. The SWO OCM uses rolling 5-year averages for relevant retention measures, comparing them to 10-year averages, longer historical averages, and previous 5-year averages to analyze trends. In this manner, the most relevant data is in use, providing a better indicator of the efficacy of current initiatives.
5. GAO Noted: "U.S. Navy SWOs separate from their community earlier and at higher rates compared with officers in similar U.S. Navy communities, and female U.S. Navy SWOs separate from their community at higher rates than their male counterparts. SWOs had average shorter careers and higher separation rates compared with officers in similar U.S. Navy communities, despite the U.S. Navy's investments in SWO training."
 - a. Minor differences in mean career length across designators are due in large part to significant differences in accession and minimum service obligation policies between the communities. GAO correctly points out that SWO is far more gender and racially diverse than the rest of the URL, and that women have lower retention as compared to men, but discounts this effect in considering career longevity.
 - 1) Submarines (SUB) accesses to a maximum of 25% females, while SWO female accessions are unlimited and routinely exceed 30% of the annual total. In addition, SUB offers an accession bonus, which requires officers to commit to Nuclear Power School and a full utilization tour afterwards, effectively committing most officers beyond the 5-year minimum service requirement (MSR). Actual retention of accessions to DH is better within SWO than for SUB.
 - 2) Both female and aggregate retention to YCS10 for Aviation (AVN) is affected by an MSR adjustment of six years after warfare qualification (wings) for Naval Flight Officers (NFO) and eight years for Pilots. This amounts to an effective MSR of YCS8 for NFOs and YCS10 for Pilots, far longer than SWO MSR (mostly 5 years).

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SWO is therefore a designator of choice for female officers who wish to redesignate out of the URL but who attend a commissioning program which defaults to URL commissions (USNA and NROTC).

6. GAO Noted: “While Naval Surface Forces Command gathers information on separation rates for all SWOs and for SWOs by gender, it has not used this to develop a plan to improve either overall SWO retention or female SWO retention.”
 - a. CNSF implements plans to improve both female and overall SWO retention. This function resides within the SWO Officer Community Manager (OCM), BUPERS-311. The OCM compiles retention data, including demographic analysis, and recommends monetary and non-monetary incentives via the CNSF Chain of Command as well as within the OPNAV N1 (Deputy CNO for Manpower, Training, and Education) Chain of Command. Specific retention goals are set based on forecasted DH requirements corresponding to YCS8 for each YG, and promotion targets for LCDR, CDR, and CAPT are developed from the existing and forecasted billet bases, taking the projected promotion zones and opportunity into account. The SWO OCM addresses accessions formally each quarter, with a new plan developed annually, submits a formal justification for monetary bonuses annually, to include retention targets, and participates in non-monetary retention initiatives throughout the year, to include lateral transfers, Strategic Education Allocation planning (for graduate education opportunities), Promotion Selection Board Deferment (Opt-Out) requests, Career Intermission Program, Retire/Retain, and Targeted Re-entry Program (TRP), among others.

Recommendation 3

The Secretary of the Navy should ensure the Commander, Naval Surface Forces, analyzes relevant logbook data for trends between the number of Surface Warfare Officers aboard ships and competition for limited training opportunities, and evaluate the extent to which its commissioning practices are affecting training opportunities for Surface Warfare Officers.

CNSF Response: CNSF concurs with the recommendation.

1. The Surface Force has implemented a program to collect mariner skills performance data across an officer's career, as well as to collect statistical data (number of hours of bridge watch standing, number of evolutions, etc.) through the Mariner Skills Logbook (MSLB). Efforts are underway to comprehensively evaluate performance data relative to MSLB data in order to refine mariner skills milestone performance and proficiency criteria. The initial evaluation of this data drove the proficiency requirements of SWOs at specific watch stations, based on a number of watches required per a set amount on time. CNSF will continue to evaluate requirements as a function of the mariner skills data and update them as necessary. The MSLB program has been running since the fall of 2018 starting with hard-bound physical logbooks and requires more run time to produce actionable and quality data. Analysis of MSLB data is on-going and producing initial findings. As the program matures, via the SWG, CNSF will evaluate the use of the MSLB data to influence policy and distribution, including assessing trends in competition for training opportunities among Surface Warfare Officers when a full set of aggregated data from NAEs commissioned in 2021 is available in July 2024. Furthermore, the SWG will evaluate the current division officer training and sequencing model and its effects on training opportunities.
 - a. Currently, MSLB data is collected by the SWO Detailer, PERS-41, in the form of the End of Tour Letter, required for all departing SWOs upon transferring from a ship. Data attained from the MSLB is part of the billeting process, with those heading to Navigator billets, being asked for their number of watch-standing hours prior to assignment to that important billet. Initial pilot electronic data collection for the MSLB commenced this year, and comprehensive collection of all MSLB data will be fully implemented by the end of 2021. To do a complete performance comparison to validate and quantify the effectiveness of recent career changes, a minimum of 30 months (a full first tour division officer tour length) of aggregated data is required to determine mean Officer of the Deck (OOD), Junior Officer of the Deck (JOOD), and Conning Officer (CONN) watch hours as well as special evolutions by ship class, Optimized Fleet Response Plan (OFRP) cycle, and average tour length. SWSC intends to record and assess the first wave of Junior officers completing the New 30-month Tour when they arrive at the new OOD Phase 2 course on 04 Oct 21 for the Mariner Skills Assessment #3 Go / No Go assessment.
 - b. In Oct 2018, the Surface Warfare Officer Schools Command (SWSC) published the "Surface Warfare Junior Officer Proficiency Analysis Plan," outlining through an examination of logbook data, the proficiency demonstrated in the Officer of the Deck Competency Checks, and completion of an experience and demographic survey, SWSC

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and the TYCOMs will be able to evaluate the net effect of improvements in training made since Jan 2018, as well as identify those factors that are the largest contributors of proficiency, such as time underway, number and type of special evolutions completed, or time spent in the simulator practicing mariner skills.

2. GAO Noted: “Without analyzing relevant logbook data for links between excess junior SWOs aboard ships and competition for limited training opportunities, and evaluating the effect of over-commissioning SWOs, the U.S. Navy may be missing an opportunity to ensure that SWOs have sufficient and appropriate opportunities to become qualified and proficient officers, particularly in ship-driving, and better understanding the effect of over-commissioning on SWO retention.”
 - a. Efforts are underway to increase the efficiency and ease by which MSLB data is collected, analyzed, and utilized. CNSF is exploring an electronic logbook option to improve the fidelity and usability of the data both for individual officers and commands such as Surface Warfare Schools Command (SWSC), Navy Personnel Command (NPC), BUPERS, and CNSF.
 - b. Further ensuring SWOs have sufficient and appropriate opportunities to become qualified and proficient officers, recent changes were instituted to afford SWOs more training opportunities than in the past:
 - 1) Additional opportunities for improved proficiency (more watch standing and quality training opportunity afloat) include implementation of circadian rhythm watches, increased requirements for bridge watch teams (Afloat Bridge Resource Management), reduced reliance on limited duty officers filling roles traditionally filled by SWOs (removal of SWO qualification for LDOs/RL officers), removed opportunity for SWOs to serve their second division officer and department head tours on squadron staffs, increasing SWO time spent on actual ships in their careers.
 - 2) PERS-41 takes care to “level load” division officers to ships for their first tours, such that they attempt to evenly distribute them across ship types based on the sizes of the vessel and berthing capacity. As a result, an LCS will get a maximum of three first-tour division officers, while a cruiser or destroyer may have a total of twenty. A ship will generally get about eight new ensigns per year, or one every six weeks.
 - 3) During their first eighteen months, ensigns need to complete several qualifications, and must specifically execute several special evolutions as a Conning Officer, Junior Officer of the Deck, and CIC Watch Officer under instruction. This means each ship must complete approximately twelve of each of these evolutions (getting underway, underway replenishment, flight operations, returning to port) annually in order to ensure all officers are able to qualify. Generally, ships will complete more than this number, and if the ship is for some reason unable to conduct one or more of these evolutions live, shiphandling simulators are specifically designed to include training scenarios for each of these evolutions to make up for lost live opportunities.

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Simulators are available at every fleet concentration area, and ships have a significant budget of available training hours to ensure they send officers to them.

Recommendation 4

The Secretary of the Navy should ensure the Commander, Naval Surface Forces, in coordination with other U.S. Navy communities, evaluates the extent to which the requirement to train junior officers who will not remain in the Surface Warfare Officer community limits training opportunities for those who will remain in the Surface Warfare Officer community and make any related adjustments to their respective career path.

CNSF response: CNSF concurs with the recommendation.

1. The Restricted Line (RL) and staff communities (Information Professional, Intelligence, Oceanography, Engineering Duty, etc.) rely upon SWO to produce approximately 160 officers per year group (YG) as these communities' accession source.³ These officers are provided SWO accession training and serve onboard a CNSF ship as a first tour Division Officer. Following their first Division Officer tour (or their second Division Officer tour in the case of Engineering Duty Option Officers), these officers transition to their RL or Staff communities, never serving in SWO DH milestone tours or beyond. These individuals, known as "Option," utilize opportunities in SWO accession training and underway watchstanding which would otherwise be reserved for non-option SWOs. The Surface community takes care to train these officers because some may not choose to exercise their option, or in certain instances these officers transfer into support communities where a SWO background is invaluable, such as the Engineering Duty Officer community.
2. Via the SWG, CNSF will evaluate trends for competition for limited training opportunities across New Accession Ensign (NAE) training between SWO "Option" officers versus traditional SWO trainees.
3. GAO Noted: "The U.S. Navy also commissions junior officers expected to transfer to other U.S. Navy communities" and "found that the U.S. Navy has not evaluated the effect its commissioning practices for SWOs have on training opportunities aboard ships."
 - a. CNSF attempted to eliminate the "option" commissioning path in the past. The most recent effort occurred in 2015, but was strongly opposed by RL and staff recipient communities. The issue is set to be reviewed again in the FY-22 Accession Plan.
 - b. Initial analysis by SWO OCM on the effect on retention among SWOs if option officers were removed from the Surface Force has determined the SWO community could safely

³ This is the full amount of Option + Lateral Transfer out. SWO loses about 55/year to Options, and has previously allocated ~100 lateral out quotas annually, which have been reduced to ~75 in the last two years to control flow. While not specifically counted, SWO also re-designates officers via POCR (Probationary Officer Continuation and Re-designation) when they either fail to qualify SWO or have three Failure of Selections (FOS) 3 for Department Head. This used to be a path out of the Navy, but in the last two years, we have seen 75% or more of our POCR candidates successfully change designators, yielding ~35 re-designations/year, and bringing SWO back to the 150-160 mark in total laterals.

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offset about 45 ENS accessions per year group, which also reduces the SWSC training bill and reduces OOE by approximately 100 first tour division officers. Net retention of accessions to Department Head would increase by approximately 1.4% based on current trends. However, as mentioned prior, RL and Staff communities draw many of their new accessions from SWO. Any change to SWO “option” accessions will upset accessions to RL and Staff communities.

- c. CNSF will continue to analyze the effect on retention among SWOs if these option officers were removed from the Surface Force. The reduced requirement on the accession training and decreased number of first tour Division Officers onboard a ship initially appear to increase Junior Officer job satisfaction and could impact retention within the Surface Force.

Recommendation 5

The Secretary of the Navy should ensure the Commander, Naval Surface Forces, reevaluates the need for nuclear-trained Surface Warfare Officers, assesses the effects of the current training approach, and makes any related adjustments to their respective career path.

CNSF Response: CNSF concurs with the recommendation.

1. CNSF will reevaluate the need for nuclear-trained Surface Warfare Officer, SWO(N)s, assess the effects of the current training approach, and make any related adjustments to their respective career path. This reevaluation will be coordinated with the Director, Naval Nuclear Propulsion Program, who has responsibility for training and qualification of personnel who supervise, operate, or maintain naval nuclear propulsion plants, including SWO(N)s who serve on nuclear-powered aircraft carriers.

Recommendation 6

The Secretary of the Navy should ensure the Commander, Naval Surface Forces, establishes and implements regular evaluations of the effectiveness of the current SWO career path, training, and policies in successfully developing and retaining proficient SWOs. The initial evaluation should include at a minimum: (a) an evaluation of the Navy's approach against other career path and proficiency models of other navies and maritime communities, such as specialized career tracks and ship command requirements, identified in our review and (b) input from SWOs at all levels.

CNSF Response: CNSF concurs with the recommendation.

1. The Surface Warfare Officer career path ensures that the training and experience gained through four at-sea milestone tours (two Division officer and two Department Head) adequately prepares Executive officers and Commanding Officers to lead warships at sea with expertise in seamanship, ship handling, and navigation; combat systems and maritime warfighting; engineering, material readiness, and program management and administration; and command and leadership. The SWO community trains to a standard at key points in SWO development (Career Mariner Skills Milestone Assessments), provides officers experience through a career path of at sea milestones, continuously improves trainers for effectiveness (Naval Seamanship Shiphandling Trainers, Combined Integrated Air and Anti-Submarine Warfare Trainers), and adjusts policy as result of metrics-based analysis reviewed by community leadership, with the SWSC Board of Visitors as the vehicle for policy change. CNSF measures and evaluates training, career path, and policies through community health metrics which include for example retention under the current career path, time to qualify SWO and Officer of the Deck by year-group, non-attain POCR boards for first tour division officers which amount to less than 6%, as well as Career Mariner Skills Milestone Assessments. Additionally, the SWO community intends to utilize new analytics tools to conduct further evaluation of the effectiveness of the SWO career path.
2. CNSF will consider evaluating career path approaches to design pilot program(s) to examine possible benefits of more specialized career path models with increased focus on shipboard departmental disciplines and / or hull / platform specialty.
 - a. The Surface Warfare Officer community traditionally uses PERS-41 (Surface Officer Distribution) as a built-in working group to analyze various changes to the career path. Past studies included the introduction and possible dissolution of the XO/CO Fleet-up programs, detailing officers by ship class/type only, splitting DH tours with a shore tour in between, changes to DIVO sequencing, establishment of the Warfare Tactics Instructor program, etc. Other changes affecting the SWO career path have been instituted directly through CNSF action, to include the Sea Swap program, in which six DDGs were manned by rotational crews in the 2003-2006 timeframe in attempt to improve operational availability, as well as a test run in which CNSF removed all DIVOs from a

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DDG in San Diego to determine if the same work could be accomplished by the Chief Petty Officer's (CPO) Mess in 2004.

3. GAO Notes: "Selected foreign navies and other U.S. navy and maritime communities specialize their officers in a specific ship department discipline or to serve on a certain ship type. Of these, the navies of Japan and the Republic of South Korea, and U.S. Submarine Officers have a generalist career path for junior officers similar to that of U.S. Navy SWOs before specializing these officer in more advanced ranks."
 - a. It is important to note that while SWOs do not strictly specialize into specific at-sea departmental disciplines, upon pre-milestone training for their Department Head tours, SWOs receive Billet Specialization Training (BST) and platform specific training which provides specific training to their assigned Department Head role (e.g. Chief Engineer, Operations Officer, Weapons Officers, First Lieutenant, etc.). Additionally, except in rare circumstances, the first Department Head tour influences what second Department Head tours officers are assigned (e.g. a first tour Chief Engineer on board a destroyer is likely to serve for a second tour as a Chief Engineer on board a Cruiser or Amphibious ship).
 - b. SWO very closely matches the career paths of Japan, the Republic of Korea, and the Submarine force. The primary differences between U.S. SWOs and these other communities is more related to tour lengths and force structure considerations. All of these communities embrace a generalist junior officer experience (prior to DH). While the other communities claim to specialize at DH, U.S. SWOs are not required to do so. In reality, however, the vast majority of SWOs remain within the same department (or at least will remain topside for non-engineers) during DH tours. Likewise, many DDG/CG officers remain within the CRUDES community, and some amphibious ship officers remain with the amphibious community throughout their entire careers. This is due to the large inventory of DDG and CG platforms as compared to the rest of the Surface inventory. The same consideration is not always available in other ship types, however, as the billet base does not support a full career progression only within the amphibious or littoral combat ship communities. The table, therefore, only truly identifies three distinct models for manning. Two are surface force models, the U.S. Navy generalist model and Royal Navy specialist model separating engineering officers and deck, or "Principal Warfare Officers," while the third is an aviation model.
4. GAO Notes: "The Republic of Korea Navy, U.S. Navy, and U.S. Coast Guard use a certification standard specific to their own navy, since warship officers are not required to receive international commercial shipping certification. According to U.S. Navy officials, they use a navy-specific approach due to lower training costs and less time spent training on civilian proficiencies that may not fully apply to naval activities, such as cargo container load distribution principles."

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- a. The USCG has certified U.S. Navy Bridge Resource Management (BRM) courses as fully equivalent to the commercial version, and SWOs are subject to Rules of the Road periodic examinations from the same USCG database used in commercial certification. Additional IMO-equivalent training will be provided to all SWOs starting in July of 2021 with the implementation of Standards of Training Certification and Watchkeeping (STCW) certified Radar Observer, Automated Radar Plotting Aid (ARPA), and Electronic Chart Display and Information System (ECDIS) training as part of the SWO pipeline training. Further, shipboard watch teams are evaluated throughout the Basic Training phase of the Optimized Fleet Response Plan, as well as prior to commencing the Basic Training phase (Bridge Resource Management Workshop, Immediate Superior in Command watch team BRM evaluation, and Ready For Sea Assessment, along with a Crew Certification conducted by the Afloat Training Group). The SWO qualification process is distinct from a USCG 3rd Mate's license or 2nd Assistant Engineer certification due to significant differences in ship operation between military and commercial maritime organizations. SWO qualification requires prior qualification as a Small Boat Officer, Combat Information Center Watch Officer, and various inport and tactical watches in addition to completing a required basic competency in the associated engineering plant for the ship. Qualification as Officer of the Deck also involves satisfactory completion of several "routine" special evolutions under qualified instruction, whereas a 3rd Mate or 2nd Assistant Engineer is not required to have performed every task prior to sitting for the exam.
5. GAO Notes: "We found a range of perceived advantages and disadvantages to specialized and generalist career paths identified by the foreign navies and U.S. maritime communities we selected. However, the U.S. Navy has not regularly evaluated its current approaches or alternative career path and proficiency models for SWOs."
 - a. CNSF has initiated a series of alternative career path investigations, though not every study resulted in changes to SWO career paths. Process improvement is always desired, and the community has, as indicated by GAO, made incremental changes to the process over time, to include extending shore periods between DH and command tours, which improves quality of life for SWOs in addition to providing greater continuity of leadership for ships and reducing training costs.
6. GAO Notes: The Navy has not "regularly evaluated the effectiveness of the current SWO career path, and policies in successfully developing and retaining proficient SWOs—including evaluating the Navy's approach against other career path and proficiency models and soliciting and incorporating the views of all levels of the SWO community."
 - a. CNSF has adjusted training and career path models on multiple occasions, adjusting DIVO tour lengths, billet assignments, sequencing between DIVO tours, initial training, inter-tour training, and billet specialty training (among other changes) on several occasions.

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7. GAO noted: “The U.S. Navy has not made fundamental changes to its SWO career path for more than a century. Nearly every other community we reviewed—five foreign navies, the U.S. Navy’s own submarine and aviation community, and the U.S. Coast Guard—train their officers in a specific discipline, citing the benefits associated with specialization, including greater experience and expertise.”
- a. SWOs are trained to specific disciplines depending on the type of job and platform they are assigned. SWO DHs all attend a core DH course in Newport, RI, as well as a core combat systems curriculum in Dahlgren, VA. Officers en route to Aegis and SSDS warships receive additional instruction in their specific combat systems baseline, and those going to ships with ballistic missile defense capability also attend specific training in this discipline. Officers headed to “topside” billets such as Operations Department or Combat Systems attend a tailored curriculum at DH school at the conclusion of the core course, while officers headed to the Engineering Department attend a separate tailored course for their specific engineering plants. If shifting ship classes (even simply changing baselines of the Aegis Weapons System) or departmental assignment between DH tours, officers are sent through a tailored training “pipeline” to ensure they are properly prepared for the new position. Similar tailored training happens for DIVO and command assignments in a process known as Billet Specialty Training (BST). The Navy has BST for tactical billets such as Fire Control Officers, Anti-Submarine Warfare Officers, and training officers, technical billets such as Damage Control Assistant and Auxiliaries Officers, and for operations/ship handling, such as Surface Navigators. At all levels (DIVO, DH, and command), officers receive shiphandling training in simulators that match the appearance and hydrodynamic properties of the ship they are headed to, with instruction and evaluation geared specifically to that ship type. This is to ensure familiarity with the specific class of ship rather than a strictly generalist approach to operating at sea. Likewise, evaluations of proficiency (Go/No-Go assessments for officers) are conducted for the class of ship an officer is headed to or is currently serving aboard. While less expensive and shorter in duration than training given within Aviation, therefore, the intent and scope of this type of training is not substantially different.

Recommendation 7

The Secretary of the Navy should ensure Commander, Naval Surface Forces, implements workforce strategies—changes to SWO career path, training, and policies as well as the implementation of pilot programs to evaluate potential changes—that address the results of the Navy’s initial evaluation.

CNSF response: CNSF concurs with the recommendation.

1. As stated in the response to recommendation one, CNSF, via SWG and SWCC, will evaluate the cost and benefit to SWO retention and critical skills proficiency (as defined as expertise in seamanship, ship handling, and navigation; combat systems and maritime warfighting; engineering, material readiness, and program management and administration; and command and leadership) of changes to the SWO career path, training, and the implementation of pilot programs.
2. GAO Notes: “We asked U.S. Navy SWOs at the O-1 to O-3 grades how likely they would be to remain in the U.S. Navy if placed in the generalist career path, a specialized career path that leads to command, or a specialized career path that does not lead to command. Junior SWOs reported higher overall likelihood of retention with specialized career paths, including in a path that does not provide the opportunity to command a ship.”
 - a. The Surface Force has in the past attempted such pilot programs and will look to evaluate new programs as well as reevaluate the conclusions from past programs, updated to the current SWO career path. A program executed by CNSF in 2004 removed divisional leadership responsibilities from all first tour Division Officers to allow focus specifically on seamanship, ship handling, and navigation training and expertise but was discontinued due to overall dissatisfaction amongst junior officers with only 15% “excited about the program” and 89% responding that the program would “cut critical leadership training for DIVOs” on a 2005 SWO JO Survey. Recent articles have advocated for this to be re-evaluated and expanded to include the Department Head level where their focus would be on the tactical employment of the ship. In such a possible model, the CO and XO would rely upon the Limited Duty Officers / Chief Warrant Officers and Chief Petty Officers on board to execute the Department Head and Division Officer’s managerial functions. The possible negative impact to the experience level of Executive and Commanding Officers produced by these models must be considered against any increase in junior officer retention and/or satisfaction.
3. CNSF will evaluate career path options to design pilot program(s) to examine possible benefits of more specialized career path models with increased focus on ship board departmental disciplines and / or hull / platform specialty. Additionally, it is important for

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the SWO community to carefully implement such pilots programs and avoid adversely affecting an officer's career, particularly if a pilot program is not adopted.

Appendix VII: GAO Contact and Staff Acknowledgments

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Staff Acknowledgments

In addition to the contact named above, Chris Watson (Assistant Director), Tobin McMurdie (Analyst-in-Charge), Jim Ashley, David Beardwood, Alexandra Gonzalez, Chad Hinsch, Kaitlyn Hunter, David Jones, Dae Park, John Pendleton, Clarice Ransom, Michael Silver, and Brandon Voss made key contributions to this report.

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