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Research Report

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The Training Needs of the Aircrew Flight Equipment Career Field

Insights from a Survey of Airmen

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Published by the RAND Corporation, Santa Monica, Calif.

Library of Congress Cataloging-in-Publication Data is available for this publication.

ISBN: 978-1-9774-1165-5

Cover: Senior Airman Kimberly Sanchez Vega performs preflight inspections and preparations on a G-suit at the 332nd Air Expeditionary Operations Support Squadron Aircrew Flight Equipment facility at an undisclosed location, Southwest Asia, October 29, 2022. Aircrew Flight Equipment personnel perform maintenance and upkeep for all equipment that pilots and other aircrew need to perform flight missions. (U.S. Air Force photo by Tech. Sgt. Jim Bentley).

About This Report

Beginning in 2018, RAND Project AIR FORCE conducted a study to investigate proficiency concerns across the aircrew flight equipment (AFE) specialty, which was created in 2008 (Hardison et al., 2021). Because this career field plays an important role in the safety of aircrew and mistakes can affect the mission and cost lives, high proficiency among its personnel is critical. That research, which suggested that proficiency issues may be related to inadequate training and offered suggestions for improvement, was based on interviews with a wide range of AFE personnel and subject-matter experts. The research team recommended that the U.S. Air Force pursue additional analyses to further investigate those findings. This report, which follows from that recommendation, identifies improvements that the U.S. Air Force can make to AFE training to improve the proficiency of AFE personnel based on a survey of more than 1,000 AFE personnel.

The research reported here was commissioned by Air Force Global Strike Command (AFGSC) A3/6, operations and communications, and conducted within the Workforce, Development, and Health Program of RAND Project AIR FORCE as part of a fiscal year 2021 project, "Aircrew Flight Equipment (AFE) Training Program Quantitative Review and Analysis."

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This report documents work originally shared with the DAF on May 19, 2022. The draft report, dated March 2022, was reviewed by formal peer reviewers and DAF subject-matter experts.

Acknowledgments

We are grateful to the many individuals in the U.S. Air Force who offered their time, insights, and support to this project. We wish to thank our sponsors in AFGSC: Maj Gen Jason

Armagost (former AFGSC A3/6 and a brigadier general while in the position) for his support from the outset and over the course of the project, as well as his successor, Brig Gen Michael Miller (AFGSC A3/6), who provided guidance to us as we concluded our research. We appreciate our action officers, SMSgt Ryan Douglas (command manager, AFE [Headquarters, AFGSC/A3OL]), CMSgt Jeremy Walker (Headquarters, AFGSC/A3OL), SMSgt Lemuel Velazquez (AFGSC/A3OL), and CMSgt Christopher Randel (formerly AFGSC/A3OL and subsequently the AFE career field manager), who responded to numerous requests for information, helped gather initial input from each major command to help inform the survey, and helped convene a panel of subject-matter experts to review our initial findings and brainstorm additional useful analyses.

We also would like to acknowledge several individuals who contributed to the study in various ways. CMSgt Shane Sandlin (AF/A3/Aircrew Task Force) provided subject-matter expert input into the project early on as the career field manager, and the other chiefs who met with us and provided us with feedback and inputs informed the survey design, as well as the analysis and interpretation of the final results. Jeremiah T. Meek (management and program analyst, Air Force Manpower Analysis Agency [AFMAA] Operating Location) provided us with information about former and current AFMAA manpower studies on the AFE community. Jose E. Caussade's (chief, Air Power Generation Section, Air Force Occupational Analysis, Air Education and Training Command Studies and Analysis Squadron) team provided a reanalysis of the occupational analysis data that helped inform our survey sampling plan. MSgt Willie Bowen (Air Force Reserve Command 943 OSF/OSL) assisted in facilitating access to the Defense Property Accountability System and Aircrew Flight Equipment Records Management System data. We also thank the many leaders in the AFE community who helped get the word out about the importance of the survey to help boost our response rates. Finally, we owe a huge debt of gratitude to the many individuals who took time out of their workdays to participate in the survey. Without them, there would be no findings to report. Their input is invaluable in helping the career field understand what to change to help address and respond to the known proficiency concerns.

Within RAND, we would like to thank Barbara Bicksler, who worked to improve our briefings and report, and our reviewers, Sean Robson and Kirsten Keller, for their input on early drafts of this report.

Summary

Issue

Aircrew flight equipment (AFE) personnel inspect, repair, maintain, pack, and adjust aircrew flight equipment, which is vital to the safety of the aircrews. Consequently, U.S. Air Force leadership is concerned about proficiency in the career field. A RAND report, derived from interviews with AFE personnel, suggested that changes to training may be needed (Hardison et al., 2021). This report, following from that recommendation, provides a deeper review and identifies improvements.

Approach

RAND Corporation researchers conducted a survey of AFE enlisted personnel to help the career field better justify specific changes to training and personnel management policies. The survey explored six topics: (1) the workforce's level of proficiency, (2) adequacy of initial skills training (IST), (3) adequacy of follow-on training in the field, (4) maintenance of proficiency of 5-level and 7-level personnel, (5) impact of workload on ability to train, and (6) ways to improve training and proficiency.

Key Findings

- There are proficiency gaps in the workforce. For a subset of tasks, 7-levels do not consider themselves fully competent.
- Survey respondents indicate a gap for some tasks between what IST is delivering and the target competency levels and believe that IST should be changed.
- Proficiency of 5- and 7-levels is lacking in some areas due to insufficient follow-on training, insufficient maintenance of these skills, or both. Lack of qualified instructors, lack of training space and equipment, and other work demands are contributing factors.
- The career field needs additional continuation training to maintain skills. Many tasks are performed infrequently, so skills can degrade.
- Career field personnel perceive that extra workload has a direct effect on the career field's ability to train personnel and to maintain proficiency.
- AFE personnel want extra support to help them brush up on proficiency and check their work. They also believe that the use of videos to illustrate proper techniques and adjustments to technical orders (TOs),[1] particularly navigation and ensuring they are up to date, could improve training.

[1] TOs are documents that describe in detail the steps and actions required to execute a task correctly.

Recommendations

We have three recommendations for changes to IST:

- **Shred IST training.**
- **Address gaps in the proficiency of IST graduates identified in the survey.**
- **Consider other changes suggested in write-in comments—**for example, reducing IST to only the fundamentals relevant to all assignments, eliminating it, or lengthening it, especially if shredded to align with the first assignment.

Two recommendations focus on follow-on training after IST:

- **Build dedicated training units in the field and utilize mobile training teams.**
- **Establish a process of certifying currency and maintaining skill sets.**

With respect to workload and manpower requirements, we recommend the following:

- **Address concerns about AFE work demands.** The Air Force Manpower Analysis Agency should review the existing manpower requirements and make adjustments to account for any workload factors that are not already well captured. Squadron leaders should also review the demands being placed on their personnel and consider whether any can be redistributed to other Air Force Specialty Codes.

We have three recommendations for changes to training technologies and approaches:

- **Develop videos and embed them in TOs.** Video content should be incorporated in stages so that its value can be further explored and confirmed.
- **Modernize TO technology.** Improve the ability to navigate through the TOs, add video content, and incorporate links to related information to streamline access.
- **Invest in practice simulation equipment and make it accessible.** Effectiveness should be tested on a subset of personnel first to confirm that it is worth the larger investment.

We have two overarching recommendations:

- **Devise a system specifically for flagging and recording training issues that is consistent across the career field.** Although the Training Business Area database and the quality assurance databases maintained by the career field contain a lot of information, their usefulness in addressing the surveyed issues is quite limited.
- **Continue to look closely at the career field's proficiency.** Consider periodically resurveying part or all of the career field. Results shown here should be revisited after major changes to training to assess their impacts.

Last, several factors should be considered when deciding how to prioritize the recommendations:

- Focus resources on the areas in which training is most needed.
- Implement recommendations with high costs only for tasks where safety is a concern.
- Consider the size of the potential gains.
- Some recommendations may negate the need for another recommendation.
- Prioritize both long- and short-term solutions.

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Chapter 1. Introduction

Aircrew flight equipment (AFE) personnel inspect, repair, maintain, pack, and adjust aircrew flight equipment, such as helmets, oxygen masks, parachutes, flotation devices, survival kits, helmet mounted devices, night vision goggles, and anti-g garments. This equipment is vital to the safety of the aircrew; as a result, mistakes made by the personnel that maintain the equipment can affect the mission and cost lives. This potential impact on mission and safety has led high-level leadership in the U.S. Air Force (USAF) to raise concerns about proficiency in the career field.

Fueling this concern are "mishap reports, unit effectiveness inspections, and staff assistance visits [that] have highlighted declining personnel proficiency across the AFE enterprise" and have been ongoing for many years (Hardison et al., 2021, p. 1). Even though no mishap has yet been attributed directly to AFE mistakes, declining proficiency in the career field is having real impacts on the mission, including limiting flying at multiple units. For example, when a mistake in a parachute-packing procedure is observed during routine inspections, it calls into question the quality of all parachutes packed by the person who made the mistake. This, in turn, can lead to multiple aircraft being grounded until all parachutes can be reinspected and repacked. Over the past few years, a series of AFE program deficiencies have been identified that have led to these types of direct mission impacts.

A recent example occurred in 2019 during a B-1B aircraft safety stand-down.[1] Proficiency issues were uncovered during the stand-down relating to a lack of AFE qualifications on the advanced concept ejection seat (ACES) II personal recovery and drogue deceleration parachutes, which resulted in a full safety stand-down for the B-1B program. Subsequent sampling of other ACES II–equipped USAF fighter aircraft also led to the stand-down of more than one fighter wing. As a result, thousands of work hours were expended to pull each seat, repack each parachute, and reinstall the seats in more than 100 primary combat aircraft.

The safety stand-down and subsequent follow-on one-time inspection of the ACES II drogue chute uncovered major areas of concerns that can directly increase the risk aircrew face in the execution of their flying duties and affect their subsequent survival if the various ejection or bailout systems fail. Additionally, contacts in our project sponsor's office noted that evidence independent of the B-1 stand-down has been identified by the AFE career field through Headquarters Air Force (HAF) staff assistance visits and USAF Inspector General reports. The evidence suggests that AFE training deficits are not just limited to ACES II parachutes; they also affect equipment and programs across the AFE portfolio.

[1] This example has been described in conversations with our AFE points of contact in our project sponsor's office (Air Force Global Strike Command [AFGSC] A3/6).

Following the 2019 stand-down, a 2020 internal report by AFGSC reviewed the issues leading to the lack of qualifications on the ACES II. The report concluded that (among other things) changes to training of AFE personnel were needed. It also concluded that the AFE proficiency issues uncovered in the B-1B stand-down were not new and that many prior reviews, including some decades old, had reached similar conclusions about systemic problems within the AFE career field that were contributing to proficiency concerns.

The RAND Corporation completed one such study just prior to the 2019 stand-down (see Hardison et al., 2021). That study, sponsored by Air Combat Command (ACC), was intended as a first step in helping the career field address observed declines in proficiency. In that study, RAND researchers conducted qualitative interviews with the workforce and career field subject-matter experts (SMEs) to determine their views on the likely causes of proficiency problems. Interviewees identified multiple potential causes of the loss of career field proficiency, many of which were training related.

These potential causes included insufficient training after personnel arrive at their assigned units, inconsistencies in the training guidelines given by instructors, and loss of deep expertise among the trainers. Other training problems identified included a perceived lack of availability of qualified instructors in general and a lack of available time for both instructors and trainees to participate in training.[2] Lastly, added workload resulting from AFE personnel being tasked with additional duties by squadron leadership (e.g., Operational Support Squadron and flying squadron commanders) was also raised as potentially leading to constraints on the training of personnel.

Although many potential causes were identified, the researchers noted that the findings were purely qualitative in nature and that follow-on research could be useful for delving more deeply into the specific areas identified. For example, the research team suggested that USAF pursue a survey of training needs. Such quantitative analyses could be used to help drive targeted training changes and to justify additional resources needed to implement them. This report describes a follow-on study that was designed to conduct some of that recommended work.

Study Objective

More specifically, AFGSC asked RAND to conduct a survey to collect and analyze data on AFE training and proficiency to help the AFE career field better justify specific changes to training and other personnel management policies affecting AFE personnel. All AFE enlisted personnel across all components were invited to participate in the survey, which was fielded from October 2021 to March 7, 2022; 22 percent of those invited completed the survey.

[2] Reasons for lack of availability of instructors included both that not enough qualified personnel existed and that those who did exist were often tied up with other work.

The survey was designed to explore training that occurs across the AFE career lifespan. As outlined in the career field's Career Field Education and Training Plan (CFETP) (U.S. Department of the Air Force, 2015), this training starts with initial skills training (IST), which consists of a formal course completed at Sheppard Air Force Base that introduces new personnel to the career field, exposes them to the range of tasks covered by the career field, and begins to teach basic skills needed when performing some AFE tasks. After completing IST, personnel are sent to their first assignment in the field, where they receive additional training from more-experienced personnel in the tasks required at that location. They perform the tasks while supervised by more-senior personnel, and they continue receiving training until they are fully certified on a task. Once certified on a task, they are allowed to perform the task without oversight. When personnel move to a new shop or complete a permanent change of station (PCS) to a new location where different tasks are required, they receive additional training on these new tasks until certified. Personnel are also required to complete upgrade training and meet other requirements to progress skill levels to the 5-, 7-, and 9-levels. (For more on the definitions of skill levels and requirements for upgrading to each level, see Chapter 2 and Appendix C.)

The survey was designed to address the following topics requested by AFGSC, which include consideration of the full range of training experiences across the career lifespan:

- **Proficiency levels:** How proficient is the workforce?
- **IST:** Is IST delivering levels of training that are expected?
- **Follow-on training in the field:** Is follow-on training after IST adequate for bringing personnel up to the needed proficiency levels?
- **Maintaining proficiency of 5- and 7-level personnel:** Is there a need for additional training to support maintaining currency?
- **Impact of workload on ability to train:** Are day-to-day duties or a lack of personnel interfering with people's ability to train? What are the time requirements for training that should be accounted for in the official manpower requirements for the career field? What is the availability of personnel to train?
- **Ways to improve training and proficiency:** What types of changes to training would be useful for improving training and performance? Can training be improved with the use of new technologies and other approaches?

Organization of This Report

The remainder of this report presents our survey results and recommendations. In Chapter 2 we provide an overview of the survey development approach, survey participants, and analytic methodology. We begin our discussion of survey results in Chapter 3 with an examination of the proficiency levels of the workforce, both through self-rated proficiency from the survey respondents and through responses from noncommissioned officers in charge (NCOICs) who answered questions about proficiency of the personnel in their sections.

In Chapters 4 through 8, we address results related to each of the remaining topics of interest previously listed. These chapters address levels of proficiency coming out of IST (Chapter 4),

follow-on training in the field (Chapter 5), training to maintain skills (Chapter 6), the availability of personnel and the impacts of workload on the ability of personnel to accomplish the needed training (Chapter 7), and insights into ways to improve training and help support improved performance in the field (Chapter 8). The final chapter provides a recap of the implications of the survey results for training of AFE personnel, discusses additional crosscutting conclusions, and offers suggested next steps to USAF to improve training in the career field.

Four appendixes provide supporting details. Appendix A contains the detailed methodology used to prioritize tasks for inclusion in the report findings, and Appendix B provides selected write-in responses to a survey question about the use of various technologies in the AFE training environment. Appendix C presents the skill-level progression described in the CFETP, and Appendix D lists task items from the career field's occupational analysis report. Two additional appendixes (Appendixes E and F) are available at www.rand.org/t/RRA991-1. Appendix E presents the survey instrument, and Appendix F contains the CFETP proficiency code lookup table.

Chapter 2. Overview of the Survey, Participants, and Analytic Methodologies

The research presented in this report draws from results of a survey conducted by the RAND research team at the request of USAF. Before we turn to those results in the remainder of this report, this chapter provides an overview of how the survey was developed and conducted—who was invited to participate, when it was fielded, who responded, and a description of the survey components. Because the survey asked questions about the hundreds of tasks conducted by AFE personnel, it was not possible to provide results in this report about every task for which we have data. Thus, we focused results primarily on the 25 most-concerning tasks and describe the methodology used to identify these tasks in this chapter. We conclude with a discussion of caveats important to interpreting the results.

The Population We Targeted

Although AFGSC was the sponsor of this study, concerns regarding AFE proficiency extend to the entire career field, which is dispersed across multiple major commands (MAJCOMs) (see Hardison et al., 2021). In addition, some changes to improve proficiency might require changes across the AFE career field or the approval of career field or headquarters leadership and not the MAJCOMs. For that reason, we designed the survey and analysis to be enterprise-wide, and we invited all AFE enlisted personnel across all components (active duty, reserve, and guard personnel) to participate in the survey.[3]

Survey research designs often invite only a subset of the population of interest to participate (i.e., participants are sampled from the population). However, in this study we were concerned that if we invited only a sample of the population, there might not be enough responses on several key items in our survey. We were concerned about sample sizes for several reasons. First, we planned to present results separately by MAJCOM, so the number of respondents within each MAJCOM needed to be sufficiently large to produce reliable estimates.

Second, because of existing USAF occupational analysis survey data,[4] we knew that some AFE tasks were performed by only a small number of individuals across the force. In the survey,

[3] Although the AFE workforce contains some civilians and officers who serve in oversight roles alongside the AFE superintendents, we did not include them in this version of the survey. Their numbers are notably smaller than the enlisted population, and therefore subgroup analyses on these groups would likely not have been possible.

[4] USAF periodically administers occupational analysis surveys to all enlisted personnel in a career field. The last survey administered to AFE personnel was in 2017. The survey data include the proportion of AFE personnel performing each task in their current assignment and the average percentage of time they report spending on each duty area. It also includes ratings of the "degree of emphasis that should be placed on each task for initial-skills

participants were asked to respond only to questions about tasks they performed. As a result, the number of technicians who might respond to survey questions about individual tasks could be quite small—and within MAJCOMs, the numbers even smaller. Third, to shorten the length of the survey, we limited the number of task-based survey items that were seen by any single participant (see further discussion of how we limited survey items later in this chapter). However, because the number of tasks participants saw was restricted, we were even more concerned about ensuring sufficient sample sizes at the task level. As a result of these concerns, we sent the survey to all 5,031 members of the AFE career field to maximize the number of responses on the individual items.

Survey Fielding Period

We sent out the first survey invitation in two waves. The first half of the career field received its first invitation in October 2021, and the second half of the career field received its first invitation in November 2021. Follow-up invitations were sent out weekly through the end of December to everyone who had not started or completed all sections of the survey. Career field leaders in each MAJCOM sent out additional follow-up reminders in January and February 2022. The survey data presented here were downloaded as of March 7, 2022.

Survey Respondents

Of the 5,031 members who were invited, a total of 1,093 personnel (22 percent) responded and completed at least part of the survey. There are two points worth noting about the responses we received to the survey.

The first has to do with how many respondents we have from each MAJCOM and skill level. Figure 2.1 shows the relative number of respondents who come from each MAJCOM. For example, the largest number of respondents come from Air Mobility Command (AMC), followed by ACC, Pacific Air Forces (PACAF), and Air Force Reserve Command (AFRC). Figure 2.2 shows the relative number of respondents by skill level—the overwhelming number are 7-level, followed by 5-level.

training" and the "level of difficulty to learn to perform a task satisfactorily." For more details, see the 2017 AFE occupational analysis report (OAR) (Air Education and Training Command [AETC], 2017).

Figure 2.1. Distribution of Survey Respondents Across MAJCOMs

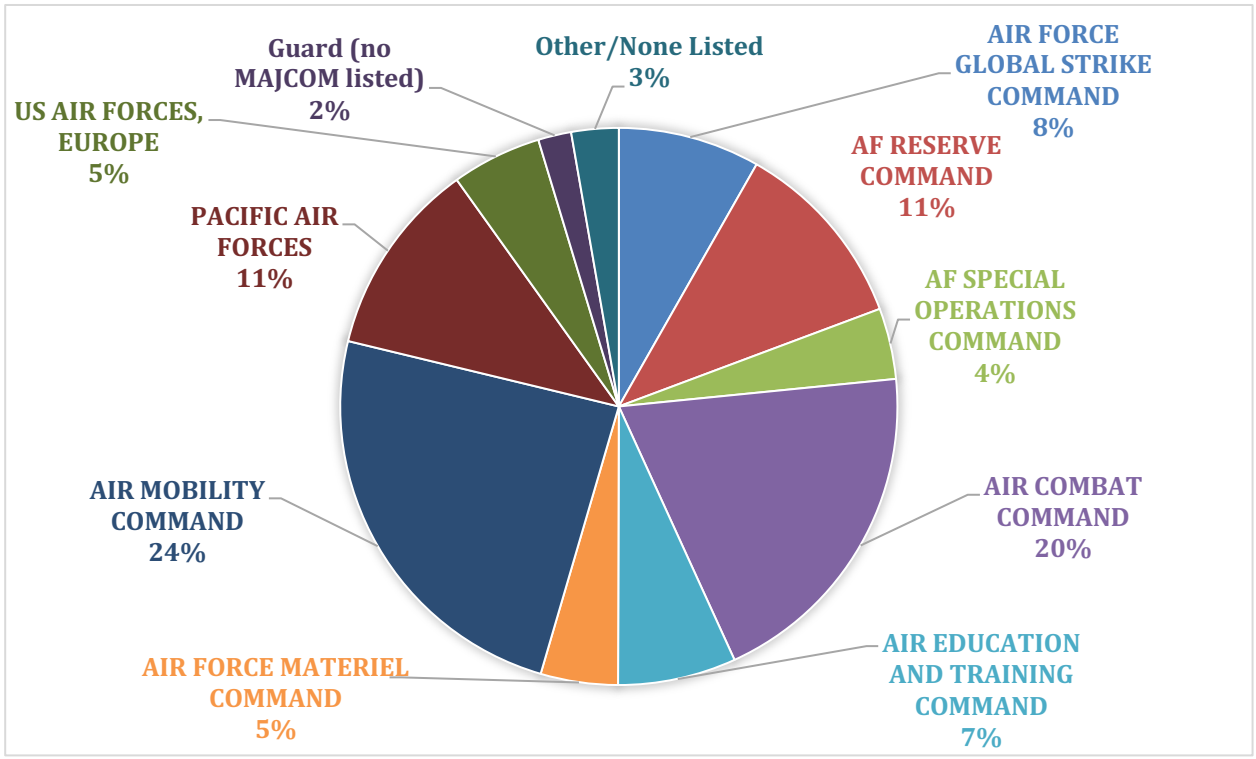
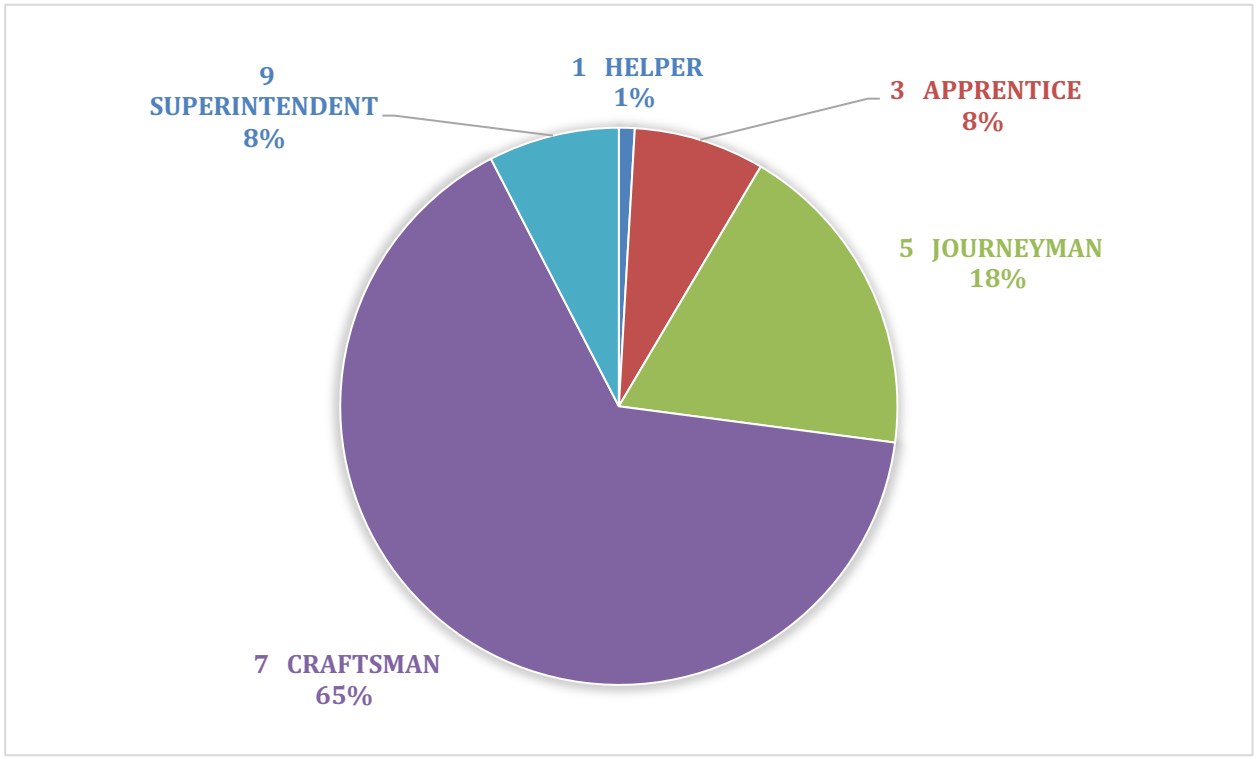


Figure 2.2. Distribution of Survey Respondents by Skill Level



The second point, as shown in Table 2.1, is that response rates varied somewhat across MAJCOMs, with higher response rates from PACAF, U.S. Air Forces in Europe (USAFE), and AFGSC. Response rates also varied by skill level, with the highest response rates from 9-levels and 7-levels (Table 2.1).[5]

Table 2.1. Number of Respondents from Each MAJCOM and Total in Each MAJCOM

		Respondents to Survey	Number in AFE Career Field	Response Rate
MAJCOM				
AFGSC	Air Force Global Strike Command	90	295	31%
AFRC	Air Force Reserve Command	121	603	20%
AFSOC	Air Force Special Operations Command	45	207	22%
ACC	Air Combat Command	216	875	25%
AETC	Air Education and Training Command	75	373	20%
AFMC	Air Force Materiel Command	49	222	22%
AMC	Air Mobility Command	265	988	27%
PACAF	Pacific Air Forces	124	379	33%
USAFE	U.S. Air Forces in Europe	57	181	31%
Guard (other)	Guard (no MAJCOM listed)	21	59	36%
Other	Other/none listed	30	849	4%
Skill level				
Missing		0	1	0%
1-level	Helper	10	198	5%
3-level	Apprentice	83	507	16%
5-level	Journeyman	203	1,450	14%
7-level	Craftsman	714	2,642	27%
9-level	Superintendent	83	233	36%
Grand total		**1,093**	**5,031**	**22%**

NOTE: Air National Guard (ANG) personnel numbers were allocated to their appropriate MAJCOM when a MAJCOM was on file in the personnel data. When no MAJCOM was on file, they were allocated to the *guard (other)* category.

Figures 2.3 and 2.4 provide additional information about survey respondents. Figure 2.3 shows the primary role reported by survey respondents—the proportion in aircrew support, aircraft support, and flight office roles—with nearly half of respondents in a flight office. Figure 2.4 shows how long personnel have been in their current sections. According to the survey

[5] Personnel progress through skill levels over the course of their careers. Personnel are awarded the 3-level (apprentice level) at the completion of IST. The 5-level (journeyman level) is awarded after personnel have gained experience on the job and completed additional training requirements in the field. Personnel are awarded the 7-level (craftsman level) after they have spent additional years training in the field as a 5-level and met other training and experience requirements. The 9-level (superintendent level) is awarded to senior master sergeants and requires additional coursework and education. See Appendix C for more description.

responses, about one-third of the 7- and 5-levels have been at their current sections for less than one year.

Figure 2.3. Proportion of Respondents in Aircrew Support, Aircraft Support, or Flight Office Roles

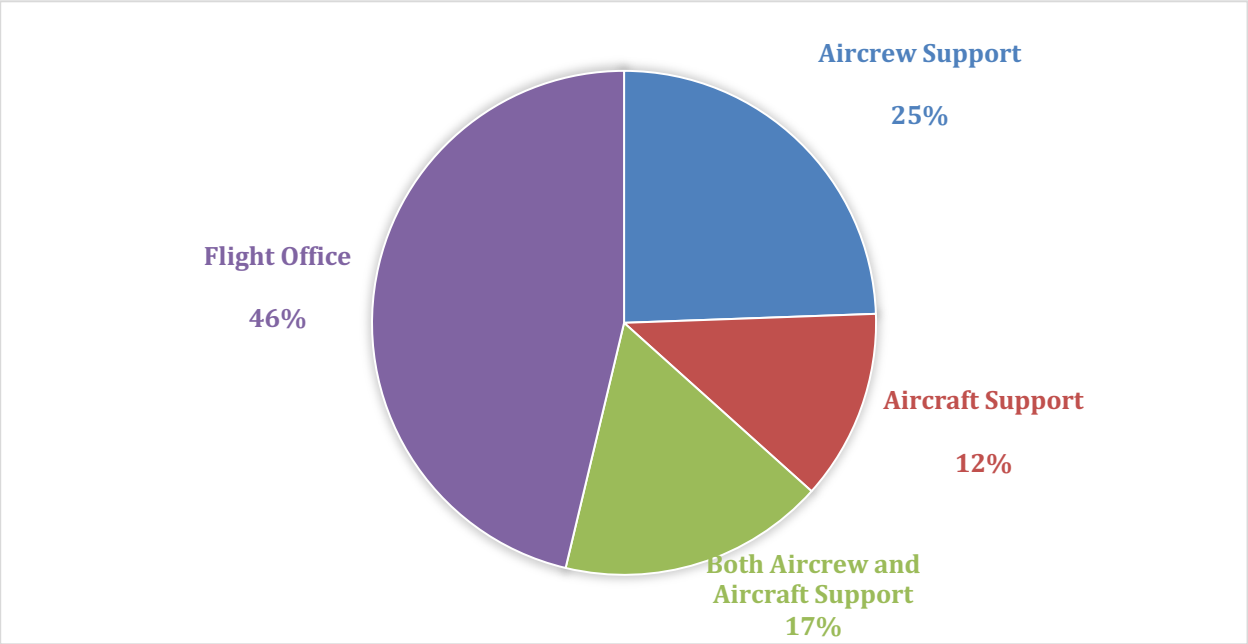
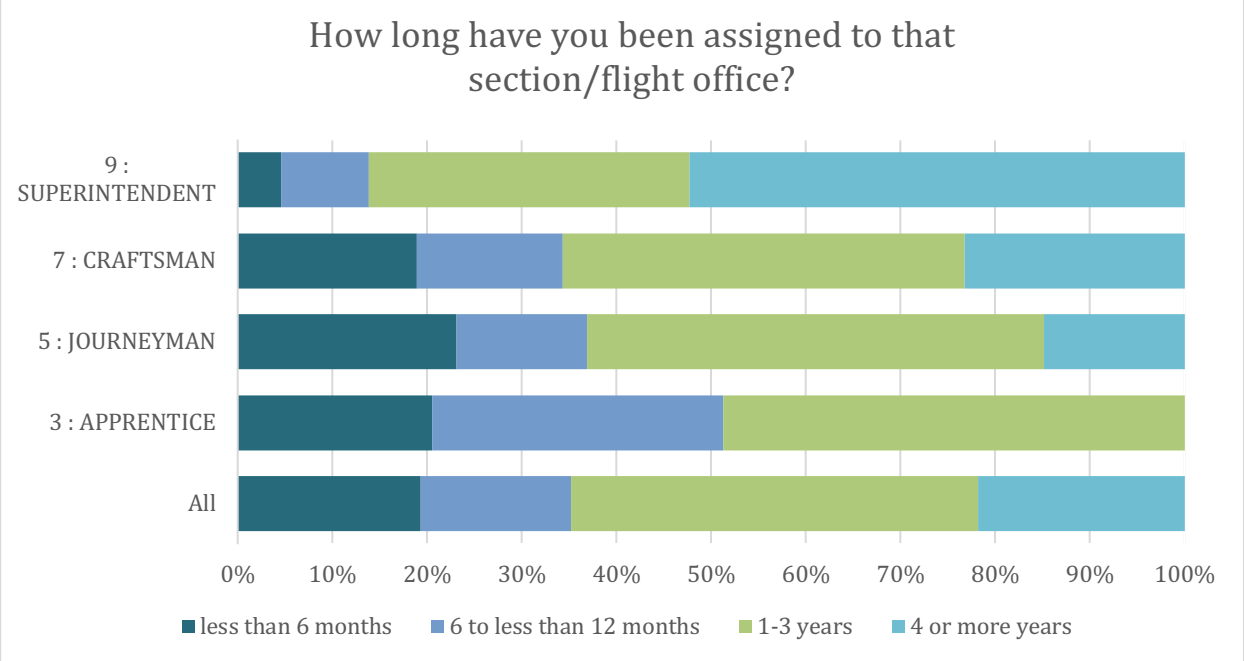


Figure 2.4. Time Respondents Have Been Working in Their Sections



Survey Design

The questions on the survey were developed by the research team to address the unique issues faced by AFE; however, the questions generally follow formats that are typical for job analysis surveys.[6] We selected the topics to focus on in the survey based on our knowledge of the issues facing AFE from RAND's prior report (Hardison et al., 2021), sponsor input, the research team's existing knowledge and expertise in personnel development over a USAF career, and our expertise in job analysis. The survey topics covered NCOICs' views on their section's performance, trainer views on training needs, lead trainer views about trainers, ideas for improving training, self-ratings of proficiency, training consistency, maintenance of training currency, workload, and training aids. The survey also included several background and routing questions.

The survey contained three groups of questions, referred to as *survey routes*, that were targeted to different participant groups: (1) all survey takers, (2) NCOICs, (3) all trainers, and (4) AFE lead trainers. Respondents who indicated that they were both an NCOIC and a trainer or lead trainer received the NCOIC route only. Table 2.2 summarizes the types of questions presented in each survey route.

Questions from each section are discussed in greater detail in the following chapters.

We based our survey task descriptions on the task list that was last produced in 2017 by AETC in its 2017 OAR.[7] That task list included a total of 420 task statements, which was an unmanageable number of tasks for our survey. Therefore, to ease the survey burden, we took several steps to reduce the number of task statements seen by each participant:

- **Using a narrowed set of task items tailored to the MAJCOM:** We knew that the type of tasks performed at each MAJCOM differed, as did the types of tasks about which they had the most proficiency concerns. We therefore asked representatives from each

[6] Although we did not base our survey items on any preexisting measures, we did include existing task statements that were already vetted by the career field. We also used the existing scale for defining proficiency as outlined in the career field's CFETP.

[7] There are two sets of tasks that are used by USAF to define job tasks in a career field. One set is outlined in the career field's CFETP, and one set is outlined in the career field's OAR. Our survey relies on tasks from the OAR. Although the two task lists are different, USAF's 2017 OAR provides a crosswalk linking nearly every task in the CFETP to one or more of the tasks in the OAR and nearly every OAR task to one or more CFETP tasks (AETC, 2017). In developing the survey, we looked closely at both lists and the linked tasks provided in the OAR's crosswalk and noted that many of the linked tasks are quite similar. That is, in many cases they were similar enough that someone's ratings of proficiency on one task could be used to understand their proficiency on the linked task in the other list. However, in a subset of cases, the tasks are not well aligned across the lists. In those cases, the career field may want to consider whether a change to the CFETP is needed to better align the tasks with those in the OAR. The OAR tasks are developed by career field SMEs through a systematic, guided process overseen by task analysis experts and designed specifically to inform training needs and curriculum development. That process is designed to create items that provide a level of specificity and important details needed to help inform training content. For that reason, we opted to include the OAR items in this survey. However, we note that in cases where there is not a clear alignment between items or the level of specificity differs across the two task lists. The crosswalk of all OAR tasks and CFETP tasks can be found in Appendix F (a supplemental document available online).

MAJCOM to identify tasks that they felt were must-haves for inclusion in the survey for that MAJCOM. Each MAJCOM received a different set of tasks in the final survey that included only the must-haves identified.[8] Tasks overlapped if more than one MAJCOM included the same task in its must-have list.

- **Limiting our questions to only tasks participants are responsible for performing in their current assignments:** We asked participants to tell us which tasks they perform and restricted the tasks they saw on the survey to only those items. On the basis of information provided to us by the occupational analysis division, we expected that this restriction would narrow the list considerably for many participants.[9] Because we limited tasks to only those that people perform, we obtained information only about training and proficiency needs for people who perform the tasks.[10]
- **Limiting each person to a maximum number of tasks:** For those who do perform many of the tasks, we set a cap on the number of tasks that they would see. We constrained the number by grouping the tasks into blocks based on the task duty area (shown in Table 2.3) and presenting a randomly assigned block of tasks until the number of tasks participants said that they performed reached at least 30 tasks. The blocks of tasks and the corresponding number of items for each MAJCOM are shown in Table 2.4.
- **Splitting the survey into weekly chunks:** We administered the survey each week over six weeks for trainers and NCOICs and over four weeks for the rest of the workforce (each week participants received a new section of the survey).

[8] We did not receive input on task priorities for AFRC or ANG. Instead, we used the 2017 occupational analysis report information to inform which items to include (AETC, 2017). We included the item only if 30 percent or more of 5- or 7-levels said that they perform the task in the Air Reserve Component or ANG. We used 30 percent as the threshold because it resulted in a number of tasks that approximated the number selected in the other MAJCOMs. Given the overall sample sizes for each group, we knew that the number of personnel that would be allocated to any items with fewer than 30 percent performing would likely be too small to include in our reported results.

[9] The occupational analysis division provided us with a breakdown of the number of tasks that most individuals perform, using its 2017 data.

[10] It would be ideal for the career field to be able to estimate proficiency for all personnel on all tasks in the career field regardless of whether someone is assigned to a section that performs that task. However, as noted elsewhere, the survey control office required that we find ways to reduce the number of items shown to each member of the career field. We were also concerned that survey fatigue would lead to participants failing to complete the survey in sufficient numbers to make the results meaningful. As a result, we narrowed the tasks to only those the tasks that people were responsible for performing, with the intent of having the largest sample possible for those individuals who are performing the work. Career field leaders are especially concerned about the people who are in a section not being able to perform that section's work properly. Focusing narrowly on the tasks one is responsible for captures exactly that information. However, it also means that our survey is blind to the level of proficiency among those who are not responsible for performing a task.

Table 2.2. Summary of Survey Routes and Associated Topics

Survey Section	Example Topics Covered	Section Recipients: Everyone in AFE	NCOICs	Trainers	AFE Lead Trainers
Background and routing questions	Current and past assignments and responsibilities	X	X	X	X
NCOIC views on section performance	Tasks performed by one of the sections NCOICs oversee:		X		
	• Which tasks are performed		X		
	• How frequently		X		
	• At what proficiency level		X		
	Current and ideal number of personnel assigned to various activities		X		
Trainer views on training needs	Which tasks they train			X	X
	• Of those: ideal training time for someone coming from IST or someone who changes assignments			X	X
	Proficiency of personnel coming out of IST			X	X
Lead trainer views about trainers	Adequacy of trainers and training time				X
	Who generally delivers training				X
	Current and ideal number of personnel to train at one time				X
	Constraints to training more people				X
Ideas for improving training	Open-ended question about what AETC, HAF, and respondent's MAJCOM could do to better support AFE training		X	X	X
Self-ratings of proficiency	Tasks performed in current job	X	X	X	X
	• Which tasks are performed	X	X	X	X
	• How frequently	X	X	X	X
	• At what proficiency and confidence level do they perform the tasks	X	X	X	X
Training consistency and maintenance	Consistency of task performance needed to maintain proficiency	X	X	X	X
	Consistency of training across locations and instructors	X	X	X	X
Workload	Time spent on various AFE activities	X	X	X	X
	Task demand variability and workload predictability	X	X	X	X
Training aids	TO usefulness, accessibility, etc.	X	X	X	X
	Potential usefulness of supplementary training materials or technologies	X	X	X	X

NOTE: *X* indicates the topics that were included for that participant group. TO = technical order.

Table 2.3. AFE Duty Area Groupings from the AFE Occupational Analysis Report

Task Duty Areas	Number of Tasks in the OAR
A. Performing parachute, drogue, deceleration, and harness maintenance activities	76
B. Performing flotation equipment maintenance activities	34
C. Performing helmet, optical accessory, and oxygen and breathing equipment maintenance activities	48
D. Performing weapon, ammunition, pyrotechnic, and explosive device maintenance activities	38
E. Performing electronic communication equipment and signaling device maintenance activities	12
F. Performing aircrew contamination control area (ACCA) and aircrew chemical defense ensemble (ACDE) activities	26
G. Performing aircraft cover, soundproofing, upholstery, thermal curtain, cargo net, and sewing machine maintenance activities	47
H. Performing aircrew flight equipment (AFE) maintenance activities	65
I. Performing training activities	27
J. Performing management and supervisory activities	47

SOURCE: AETC, 2017.

Table 2.4. Number of Tasks in the Survey by Task Duty Areas and MAJCOM

Task Duty Area		ACC	AMC	USAFE	PACAF	AFMC	AFSOC	AFGSC	AETC	AFRC
A.	Parachute, drogue, deceleration, and harness maintenance	32	8	34	48	40	21	47	47	6
B.	Flotation equipment maintenance	12	17	8	26	26	12	15	14	12
C.	Helmet, optical accessory, and oxygen and breathing equipment maintenance	17	18	10	32	1	13	22	29	11
D.	Weapon, ammunition, pyrotechnic, and explosive device maintenance	13	5	11	25	6	31	20	9	3
E.	Electronic communication equipment and signaling device maintenance	7	8	6	11	11	7	8	4	7
F.	Aircrew contamination control area (ACCA) and aircrew chemical defense ensemble (ACDE) activities	19	12	13	24	24	24	18	16	12
G.	Aircraft cover, soundproofing, upholstery, thermal curtain, cargo net, and sewing machine maintenance	7	8	3	8	8	3	9	3	7
H.	AFE maintenance activities	28	25	22	36	4	7	39	38	23
I.	Training others	23	11	20	19	25	4	17	23	8
J.	Management and supervisory activities	12	22	30	39	1	14	22	23	10
Total		**170**	**134**	**157**	**268**	**146**	**136**	**217**	**206**	**99**

Identifying Which Tasks to Include in Our Results Figures

As explained in the prior section, we limited the number of task statements given to participants to only those considered as must-haves within each MAJCOM. This resulted in the inclusion of 306 of the 420 tasks from the AFE OAR in our survey (AETC, 2017).[11] Of that subset, some had too few respondents to meet our minimum sample size requirement to protect

[11] There were 114 tasks not considered a must-have by any MAJCOM.

respondent confidentiality (a minimum of five respondents is needed to protect confidentiality). The remaining 250 tasks were far too many to focus on in this report.

To help the career field focus its attention on the tasks of greatest concern, we created a *level-of-concern* score by combining the following variables in the survey:[12]

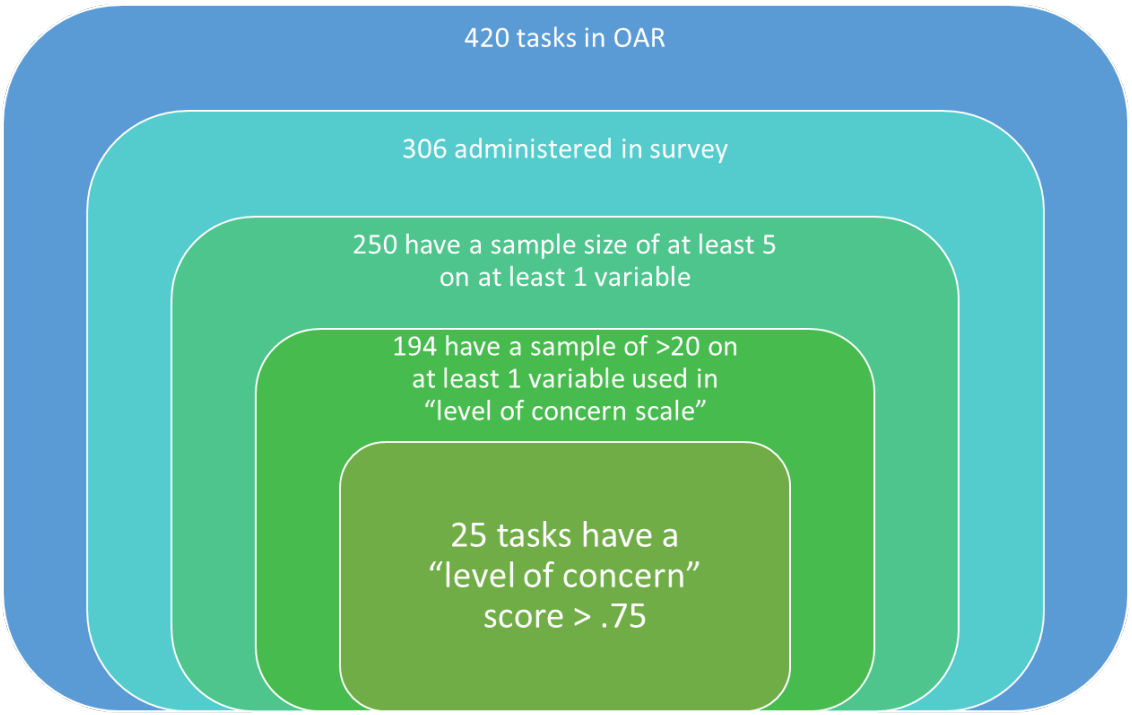
- percentage of 7-levels and 5-levels who rate their proficiency as less than *competent* (i.e., partially proficient or lower) on the CFETP scale
- average of the NCOICs' estimates of the percentage of personnel in their sections who = rate less than competent or higher according to the CFETP scale
- average self-ratings of confidence that a respondent's work would not lead to a safety incident
- percentage of respondents saying that they want a way to practice
- percentage of respondents saying that they want a way to check their work
- percentage of NCOICs who say that they are concerned about a task leading to a safety incident among those rated competent or higher.

In calculating the level of concern, we included all tasks with a sample of at least five people on one or more of the variables listed. The resulting level-of-concern scores ranged from 4.4 to −1.6, where higher scores represent greater concern about the tasks. We then further restricted the tasks to only those that had a sample of 20 or higher on at least one of the variables included in the level-of-concern scale.[13] Lastly, we grouped the tasks by level of concern into three broad categories: *most concerning* (score > 0.75), *moderately concerning* (score > 0 and ≤ 0.75), and *least concerning* (score ≤ 0). Figure 2.5 illustrates the process used to narrow from the original 420 tasks to the final 25 tasks that we discuss in Chapters 3, 5, and 7.

[12] We averaged the results across the variables listed above to compute the level-of-concern score. Because each variable is on a different scale, we standardized each variable to have a mean of 0 and a standard deviation of 1 before averaging the variables. The level-of-concern score is explained in greater detail in Appendix A.

[13] There is no single magic number that is a large-enough sample size for ensuring the stability of an estimate. In general, the larger the sample, the higher confidence that the result is not due to random chance. A sample size of 30 often is cited as a minimum sample size for ensuring stability. That said, information gathered from smaller samples can still be useful, especially when there is no other available information on which to rely.

Figure 2.5. Process Used to Identify the 25 Most-Concerning Tasks



Tables 2.5 and 2.6 show the tasks that fell into the *most-* and *moderately concerning* categories, respectively. The tables include the task number that can be used to reference the corresponding task in the USAF OAR. Tasks are grouped into duty areas and within duty areas are ordered by the level-of-concern score, with highest level of concern being tasks listed first within the duty area. Tasks for which the number of responses is less than 20 on at least one of the variables listed previously were excluded from the tables. Appendix A contains a list of tasks with small sample sizes and the list of tasks that fell into the *least concerning* category.

With respect to these level-of-concern scores, it is important to note that they are based heavily on the views of 7-levels about their own self-rated proficiency (e.g., self-ratings of confidence that a respondent's work would not lead to a safety incident; percentage of respondents saying that they want a way to practice; and percentage of respondents saying that they want a way to check their work). These ratings do include viewpoints from 3-levels and 5-levels, in addition to 7-levels; however, the percentages of survey respondents who are 3-levels (8 percent) and even 5-levels (18 percent) are small relative to that of the 7-levels (65 percent) (see Table 2.1 and Figure 2.2). With this in mind, 7-level viewpoints are the overwhelming majority of the viewpoints that are contributing to the level-of-concern scores. As noted by some of our SME reviewers, it would be most concerning if 7-levels (and in particular NCOICs or lead trainers) are not proficient or not confident in their abilities.

Table 2.5. Most-Concerning Tasks

USAF OAR Task Number	Task Description	Level-of-Concern Score
A0021	Darn or patch personnel recovery parachute system canopies	2.06
A0005	Assemble or disassemble drogue parachute systems	2.01
A0014	Assess repairability of personnel recovery parachute systems	1.84
A0012	Assess repairability of drogue parachute systems	1.81
A0020	Darn or patch personnel parachute system canopies	1.78
A0072	Rig drogue parachutes	1.31
A0043	Modify torso harnesses	1.31
A0013	Assess repairability of personnel parachute systems	1.30
A0001	Analyze parachute malfunctions	1.14
A0032	Inspect drogue parachute systems	1.09
A0051	Perform minor repairs on parachutes	1.04
A0006	Assemble or disassemble personnel parachute systems	1.03
A0033	Inspect mortar tube assemblies	0.99
A0042	Install drogue parachute system components or accessories	0.86
A0034	Inspect or repack advanced concept ejection seats (ACESs) II	0.79
A0007	Assemble or disassemble personnel recovery parachute systems	0.79
C0124	Fit or adjust JHMCS helmet visors	1.31
D0176	Maintain storage facilities for ammunition or weapons	0.79
G0280	Time sewing machines	1.46
G0281	Troubleshoot sewing machines	1.17
G0264	Perform operator maintenance on sewing machines	0.89
J0389	Draft budget requirements	2.40
J0380	Conduct mishap investigations	2.35
J0401	Investigate accidents or incidents	2.14
J0399	Initiate or coordinate deficiency, service, or status reports, such as material deficiency reports (MDRs), with other agencies	0.79

NOTE: The higher the level-of-concern score, the greater the concern. JHMCS = Joint Helmet Mounted Cueing System.

Table 2.6. Moderately Concerning Tasks

USAF OAR Task Number	Task Description	Level-of-Concern Score
A0049	Pack personnel recovery parachute systems	0.63
A0009	Assemble torso harnesses	0.53
A0038	Inspect personnel recovery parachute systems	0.52
A0047	Pack drogue parachute systems	0.50
A0036	Inspect personnel lowering devices (PLDs)	0.43
A0048	Pack personnel parachute systems	0.38
A0060	Remove, replace, or install emergency oxygen cylinders	0.28
A0063	Remove, replace, or install personnel recovery parachute system components or accessories	0.22
A0071	Rig 4-line releases	0.20
A0040	Inspect restraint devices, such as PCU-17/P or HBU-6/P	0.05
B0109	Repair life rafts	0.50
B0082	Fit or adjust life preserver units (LPUs)	0.19
C0111	Adjust or align helmet-mounted displays (HMDs)	0.71
C0130	Inspect attenuation custom communication earpiece systems (ACCESs)	0.14
D0161	Forecast munitions requirements	0.50
E0204	Register beacons, radios, or search and rescue satellite-aided tracking (SARSAT) frequencies with outside agencies	0.46
E0203	Program survival radios	0.40
E0201	Locate inadvertently activated beacon signals	0.21
E0208	Verify appropriate communications security (COMSEC) employment	0.15
F0231	Perform pallet build-up activities	0.62
F0229	Operate joint chemical agent detectors (JCADs)	0.52
F0222	Establish ACCA work and rest cycles	0.21
G0236	Assemble or disassemble sewing machine components or accessories	0.56
G0235	Adjust sewing machines	0.52
G0265	Perform preventative maintenance on sewing machines	0.49
H0286	Clean anti-exposure suits or liners	0.36
H0314	Instruct aircrew members on equipment or procedural modifications	0.28
H0344	Track TCTO or TCTD inspections	0.27
I0367	Personalize continuation training lesson plans	0.71
I0365	Evaluate training methods or techniques of instructors	0.46
I0370	Prepare job qualification standards (JQSs)	0.32
I0361	Evaluate effectiveness of continuation training materials, programs, plans, or procedures	0.26
I0362	Evaluate effectiveness of training materials, programs, plans, or procedures, other than for continuation training	0.18
I0359	Develop training materials, programs, plans, or procedures, other than for continuation training	0.02
J0383	Conduct, evaluate, or participate in continuous process improvement programs, such as green belt, action requests (ARs), and Air Force Technical Order (AFTO) 22s (Technical Manual [TM] Change Recommendation and Reply)	0.38

USAF OAR Task Number	Task Description	Level-of-Concern Score
J0385	Determine or establish logistics requirements, such as personnel, equipment, tools, parts, supplies, or workspace	0.13
J0413	Review aircraft flight or maintenance records, such as AFTO Form 781-Series	0.13
J0390	Establish organizational policies, such as operating instructions (OIs), standard operating procedures (SOPs), or support agreements	0.03

NOTE: The higher the level-of-concern score, the greater the concern. TCTD = time compliance technical directive; TCTO = technical compliance technical order.

Some Caveats in Interpreting the Survey Results

The career field should be aware of several important methodological considerations when interpreting the results presented in this report. Although each consideration may be viewed as a potential limitation to the conclusions that can be drawn from the information, we do not believe that these limitations should lead leadership to disregard the findings.

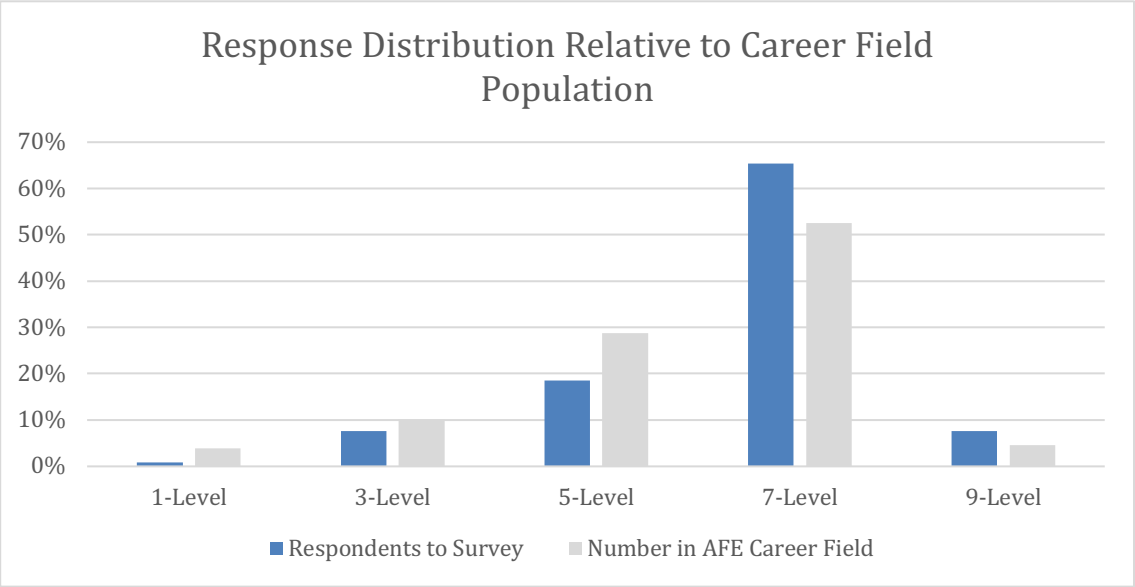
First, response rates are important to consider when evaluating the accuracy of the information presented. The overall rate of response was 22 percent. This means that the survey results reflect only a portion of the workforce's views. However, a 22 percent response rate was not unexpected in this population. Although the response rate is important to consider, the number and representativeness of those responding is in many cases more important than the response rate.[14] The rates of response among 7- and 9-level AFE personnel were notably higher than the overall rate (22 percent), at 27 and 36 percent, respectively (see Table 2.1). This means that the respondent sample overrepresents the viewpoints of 7- and 9-levels relative to their representation in the overall AFE population, which is illustrated in Figure 2.6. Although 7- and 9-levels are overrepresented, AFE career field leaders have said that 7-levels (the overwhelming majority of our respondents in terms of sheer numbers) are ultimately the SMEs they would rely on most heavily for insights into training issues and training needs. Given that, the 7-levels were the group that we most needed to complete the survey at high rates.[15] As shown in Figure 2.7, the

[14] We did consider weighting the survey responses by MAJCOM and skill level. However, because of small sample sizes, we were concerned that responses might be especially unstable in cells when broken out by MAJCOM and skill level. This is especially problematic on the task-level items, where sample sizes often ranged from only two or three respondents to 20 or 30 within a MAJCOM. In cases such as this, where many of the cell sizes are very small, weighting can potentially produce erratic and heavily biased estimates. Moreover, in cases where a cell size is zero, weights cannot mathematically be calculated. Because of these sample-size issues, we opted to not weight the responses to the survey. We did, however, examine MAJCOM differences on the items where everyone responded (i.e., the non-task-based items) and display them where the differences are worth noting.

[15] Past surveys in USAF populations have fallen within this range as well (see, for example, Hanser et al., 2021). Other sources cite much higher response rates. For example, a summary of published journal article response rates from 2005 to 2020 cites average response rates ranging from 48 to 68 percent (Holtom et al., 2022). However, that study also argues that a low response rate should not be viewed as concerning if the respondents are representative of the population of interest. They state (p. 1576):

distribution of responses by MAJCOM was similar to the MAJCOM representation across the career field.

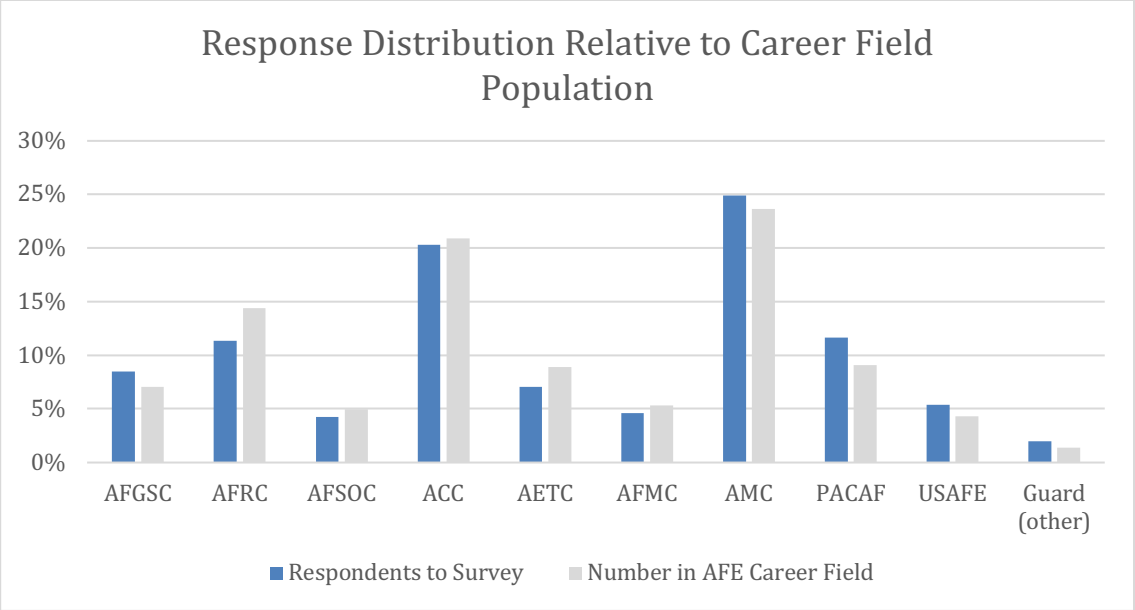
Figure 2.6. Response Distribution by Skill Level Compared with the Career Field Population



> a particular RR [response rate] per se is NOT good or bad, it is a matter of degree in terms of the validity and types of inferences that can be drawn from the sample that was collected. The more evidence we are able to gather pertaining to the conclusion that the sample is appropriate, the more confidence we have about the resulting RR—regardless of a study's particular RR.

They also emphasize the importance of considering *response quality* instead of simply considering the response rate. They offer several factors as important to consider when determining response quality. One is *researcher-participant relationship* (e.g., whether the participant was coerced, whether the participant feels comfortable responding freely). Another is *respondent qualifications* (e.g., whether the respondents are qualified to respond about the topic and whether they are the right people to be answering the questions). Another is *participant motivation* (whether participants were motivated to invest the time needed to respond carefully and thoughtfully). In this study, we took special care to address these types of features in our survey design, in advance of fielding it, to help support the conclusion that the responses we did receive (even if the response rates or sample sizes were small) would be considered high quality.

Figure 2.7. Response Distribution by MAJCOM Compared with the Career Field Population



Second, the data in this report are based on the judgments of AFE personnel in response to survey questions. Although the survey data are judgment based, that is not a reason to dismiss the results, and it should not deter leaders from accepting what respondents had to say as meaningful or useful. In this survey, many of the most-senior personnel in AFE responded at high rates (36 percent of 9-levels and 27 percent of 7-levels). These respondents are likely many of the same personnel who have been and continue to be part of the ongoing decision processes for training AFE personnel. As experts in the career field, their views and insights should be taken at face value as legitimate and accurate, unless there is a clear reason to call it into question. In line with this thinking, it is important to note that every career field in USAF uses a judgment-based survey process (the OARs) to determine the tasks to be trained. SME judgments are also viewed as vital and trusted inputs into the career field's manpower analysis process conducted by the Air Force Manpower Analysis Agency (AFMAA).

Third, some elements of the survey have a relatively small number of respondents. For most of the task-specific results we present throughout this report, the numbers of respondents are quite small. When sample sizes are small, it limits our ability to draw firm conclusions about any differences that are observed. For example, small differences in self-rated proficiency across MAJCOMs could reflect meaningful differences in proficiency across the MAJCOMs, or they could just be due to chance alone and might not reflect real meaningful differences.

As noted at the outset of this section, although it is important to keep these limitations in mind when interpreting the findings we present throughout this report, it is also important to

keep in mind that the results still contain a wealth of information that can be extremely valuable for the career field.

Chapter 3. How Proficient Is the Workforce?

Career-field SMEs have described many AFE tasks as having known proficiency concerns (e.g., packing parachute tasks), and those proficiency concerns are believed to be widespread across the force (Hardison et al., 2021). Thus, a starting assumption of this project was that proficiency gaps within the workforce need to be addressed with training or other approaches. However, the extent of the proficiency concerns has not been documented in a way that the number of personnel in need of additional training can be estimated. One goal of our survey was therefore to provide a baseline assessment of the level of proficiency within the workforce.

This baseline information provides important insights on three of the questions that AFGSC wanted to address: whether the existing IST training, follow-on training, and maintenance training provided by the units and MAJCOMs are meeting the needs of the AFE career field.

Proficiency on Current Job Tasks

We asked participants to rate their own proficiency on tasks that they are responsible for performing in their current assignment using a rating scale adapted from the Task Performance Levels scale defined in the AFE career field's CFETP (U.S. Department of the Air Force, 2015).[16] The rating scale shown in the AFE CFETP is not unique to the AFE career field. It is used widely in USAF CFETPs to designate levels of proficiency expected by 3-levels, 5-levels, and 7-levels on the range of tasks determined to be relevant in each career field. The adapted version of the scale used in our survey included all four levels specified in the CFETP (from

[16] Using supervisor ratings of subordinates' task performance is a common practice to understand the task proficiency of an aggregate group of people. We therefore originally planned to assess proficiency using supervisor ratings of subordinates. However, when we submitted our research for approval through USAF's survey control office, we were unable to get signoff on the approach. Staff explained that the survey control office does not permit the display and linking of the names of subordinates with their supervisors in a survey environment. Because of this restriction, we revised our approach and used self-ratings of task proficiency instead.

Although self-ratings of performance may sometimes be less accurate than supervisor reports because some individuals might be motivated to inflate their performance, we had few concerns about that in this case for a few reasons. First, in the prior RAND study (Hardison et al., 2021), participants noted that proficiency issues were well-known across the force, with many members of the community not hesitating to state publicly that they lacked the proficiency to perform many key tasks. We also promised confidentiality to respondents to encourage participants to respond honestly. Although admitting that they are not competent in their work tasks might seem bad in most work settings, the participants in our prior study repeatedly did not hesitate to say that they were not competent. They said this in a group setting in front of their peers. Supervisors also did not hesitate to say that it is a well-known fact that many of their personnel are proficient on paper but not in reality. It is essentially treated as common knowledge and not something to be punished or that is the fault of the individuals who lacked the proficiency. However, to counter the possibility that some self-reports still might not be accurate, we also asked NCOICs questions about the proficiency of various members within their sections. Responses to that question are discussed later in this chapter.

extremely limited to *highly proficient*), plus one additional level of performance (*no proficiency*) to capture people who were not yet at the first level in the CFETP.[17]

The complete scale used in the survey was as follows:[18]

- **No proficiency (0):** Cannot perform the task.
- **Extremely limited (1):** Can do simple parts. Needs to be told or shown how to do most of the task.
- **Partially proficient (2):** Can do most parts. Needs help only on hardest parts.
- **Competent (3):** Can do all parts. Needs only a spot check of completed work.
- **Highly proficient (4):** Can do the complete task quickly and accurately. Can tell or show others how to do the task.

In Figure 3.1, we show the self-rated proficiency ratings of 7-levels on the tasks identified as *most concerning* (see Chapter 2 and Appendix A for an explanation of how we identified these 25 tasks). We focus on 7-levels for two reasons. First, they are expected to be able to perform work independently without oversight, and they are expected to be proficient enough to train and evaluate the work of more junior personnel. As a result, lack of proficiency of personnel at this higher skill level would be especially concerning. Second, the 7-levels represent the bulk of the responses to our survey—responding at higher rates than the 3- and 5-levels. The 7-levels also make up the majority of the AFE workforce (53 percent). The figure only includes responses from 7-levels who said the task was one that was required of them in their current assignment.

The proportion of 7-levels who view themselves as competent is between 50 to 75 percent on most of the tasks shown in Figure 3.1. Tasks for which only about half are proficient are especially concerning, given that the 7-levels should be considered experts in the tasks that they are expected to perform in their current assignments.

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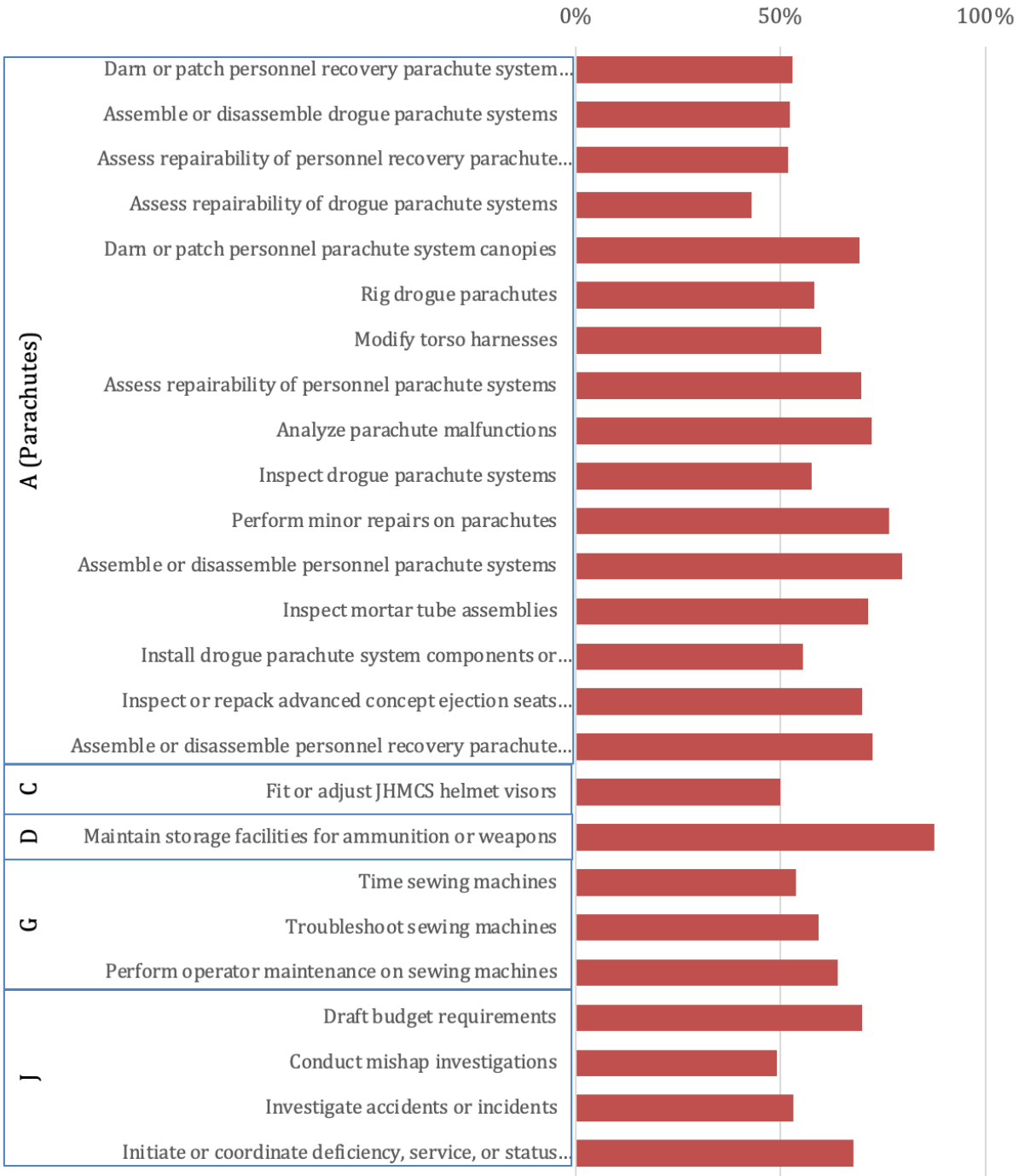
[17] In the CFETP, some tasks are identified as having a specified proficiency level that personnel need to achieve to become a 3-level, 5-level, 7-level, or 9-level. Some tasks have a proficiency level for some but not all skill levels (e.g., some have a level specified for 5-levels only), and some tasks have no proficiency level specified for any skill level. Proficiency levels identified for 3-levels mean that the task should be being taught to that level in IST.

In our survey, we asked participants to rate their proficiency on tasks from the OAR, not from the CFETP. The OAR tasks in many cases are similar, but it is a different task list than the one specified in the CFETP. USAF's 2017 OAR provides a crosswalk linking nearly every task in the CFETP to one or more of the tasks in the OAR and nearly every OAR task to one or more CFETP task. In the process of developing the survey, we looked closely at the linked tasks and noted that many are similar enough that someone's ratings of proficiency on one task could be used to understand their proficiency on the linked task in the other list. However, in a subset of cases, we noted that the tasks are not likely well aligned across the lists and that ratings on the OAR task might not provide clear insights into proficiency on the linked CFETP tasks. The crosswalk of all OAR tasks and CFETP tasks can be found in Appendix F (see our supplemental online document that contains that appendix).

[18] Scale values of 1 through 4 and the corresponding definitions are based on the definitions provided in the AFE career field's CFETP Task Performance Levels scale (see U.S. Department of the Air Force, 2015, p. 21). No scale value or definition exists in the CFETP for no proficiency. We added a scale value of zero and created a definition for this survey.

Figure 3.1. Proportion of 7-Levels Who Rated Themselves as Competent or Higher on the Most-Concerning Tasks



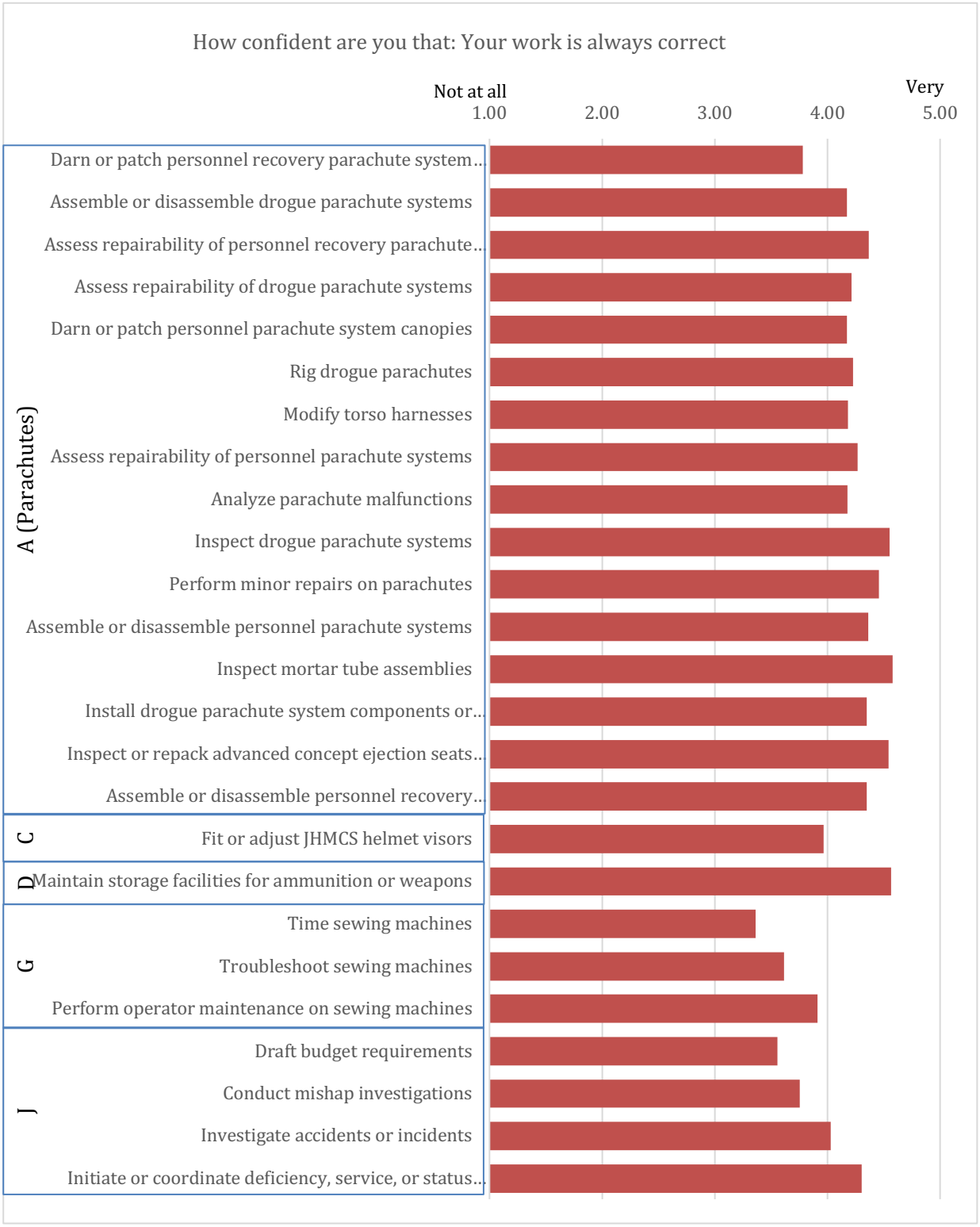
NOTE: The number of respondents ranged from 13 to 52. The lettered categories refer to task groupings.

Workforce's Confidence in Its Performance

We also asked participants how confident they were that their *work was always correct* and that it will *not lead to a safety incident*. The response scale ranged from *not at all* = 1 to *very confident* = 5. The level of confidence for the *most-concerning tasks* is shown in Figure 3.2 and Figure 3.3.[19] Overall, we found that participants are fairly confident in the correctness of their work (averaging 4.48 across all tasks) and less confident that their work will not lead to a safety issue (averaging 3.94 across all tasks). This suggests that people who are confident in their work still have concerns about safety incidents on some of these tasks. Although these views may seem incompatible, it is plausible that even the slightest concern about the correctness of one's work could evoke concerns about safety incidents. Because lives are potentially at stake on several of these tasks (e.g., parachutes), the threshold for evoking concern about safety may be very low. Other explanations are possible as well. For example, it could be that the work is correct, but there still may be safety concerns due to external factors (e.g., aging equipment, outdated procedures). The result also may reflect a strong safety climate (i.e., norms for being concerned about safety).

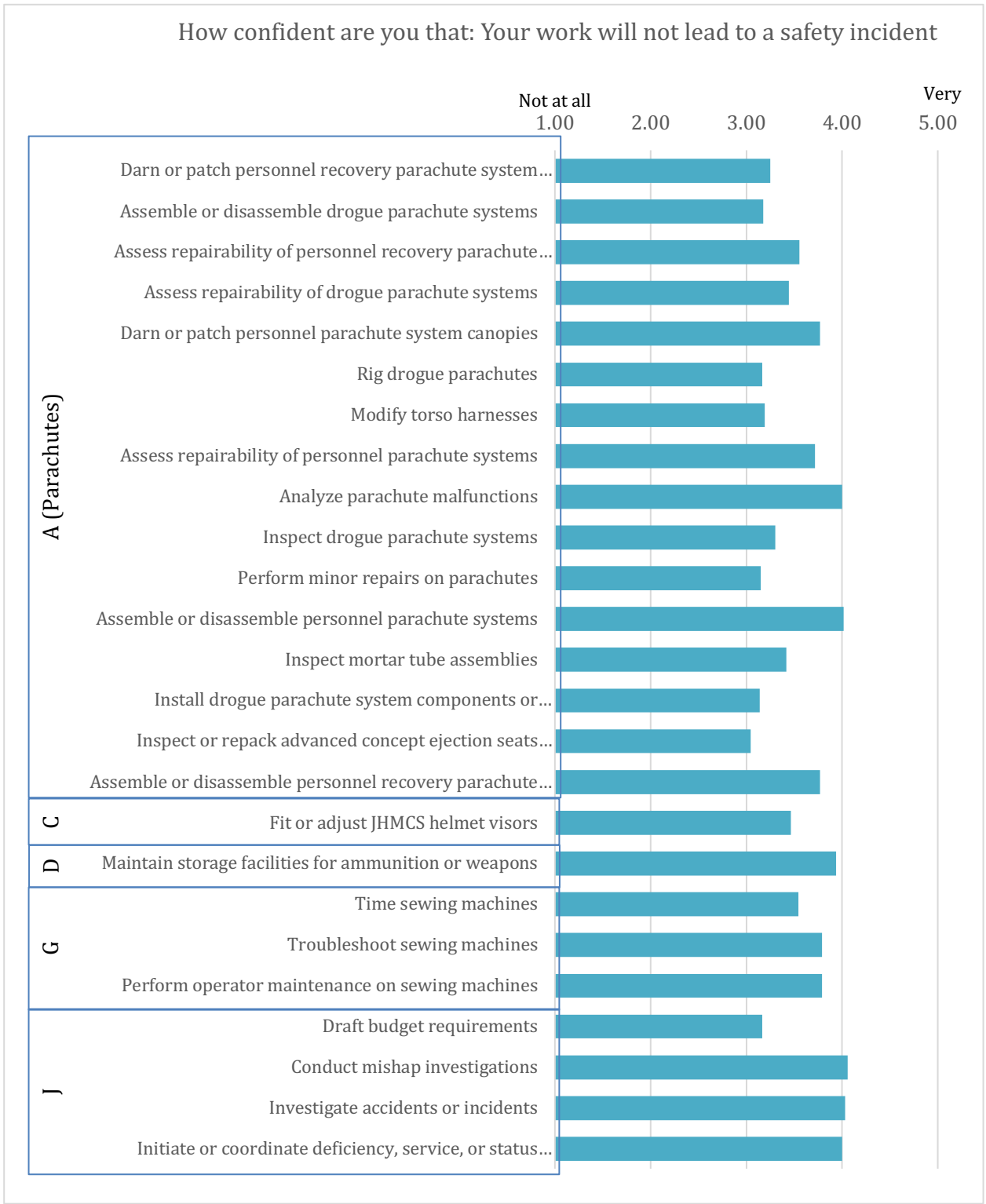
[19] The tasks in Figures 3.1, 3.2, and 3.3 are listed in the same order for ease of tracking across the figures.

Figure 3.2. Respondents' Confidence That Their Work Is Always Correct on the Most-Concerning Tasks



NOTE: The number of respondents ranged from 16 to 58.

Figure 3.3. Respondents' Confidence That Their Work Will Not Lead to a Safety Incident on the Most-Concerning Tasks



NOTE: Number of respondents ranged from 16 to 57.

NCOIC Views on Proficiency in Their Sections

As explained in Chapter 2, because of USAF and U.S. Department of Defense restrictions designed to protect the confidentiality of research participants, we could not ask supervisors to rate specific individuals in their workforce. However, we could ask NCOICs to estimate the number of personnel in their sections who were at each level of proficiency on each task performed.[20] This information provides a useful complement to the self-report of proficiency of 7-levels shown in Figure 3.1. More specifically, the information gives us insights into what proportion of the workforce is available to execute the work and to train others in the work that is being performed. It also gives insights into what proportion of the workforce needs training and oversight relative to the proportion that is capable of performing work independently, without assistance or oversight.

Figure 3.4 shows the average percentage of personnel that NCOICs reported having in their sections who are rated competent or higher on the most-concerning tasks. As noted in the figure, to reduce the number of tasks seen by NCOICs, J duty areas were excluded from all NCOIC survey questions.[21] As a result, no data are available for those items.

The NCOICs estimated that between 65 and 75 percent of their workforce is competent for most of these tasks. Conversely, this means that they estimated that between 25 and 35 percent of the workforce requires oversight and training. These results mean that, at any given time, the section is relying on only 65 to 75 percent of the workforce to execute the daily workload (or to assist or double-check the other 25 to 35 percent). In addition, if the 25 to 35 percent who are not yet competent are being trained or monitored by others in the section, the work across the section may be executed more slowly than it would if the competent 65 to 75 percent turned their attention to performing the work themselves.

Although for most tasks NCOICs estimated that between 65 and 75 percent are competent, on a few parachute tasks and all three sewing tasks, NCOICs estimated the proportion that is competent to be lower, between 50 and 60 percent. For these tasks, both the workload and the training burden on those who are competent are even higher.

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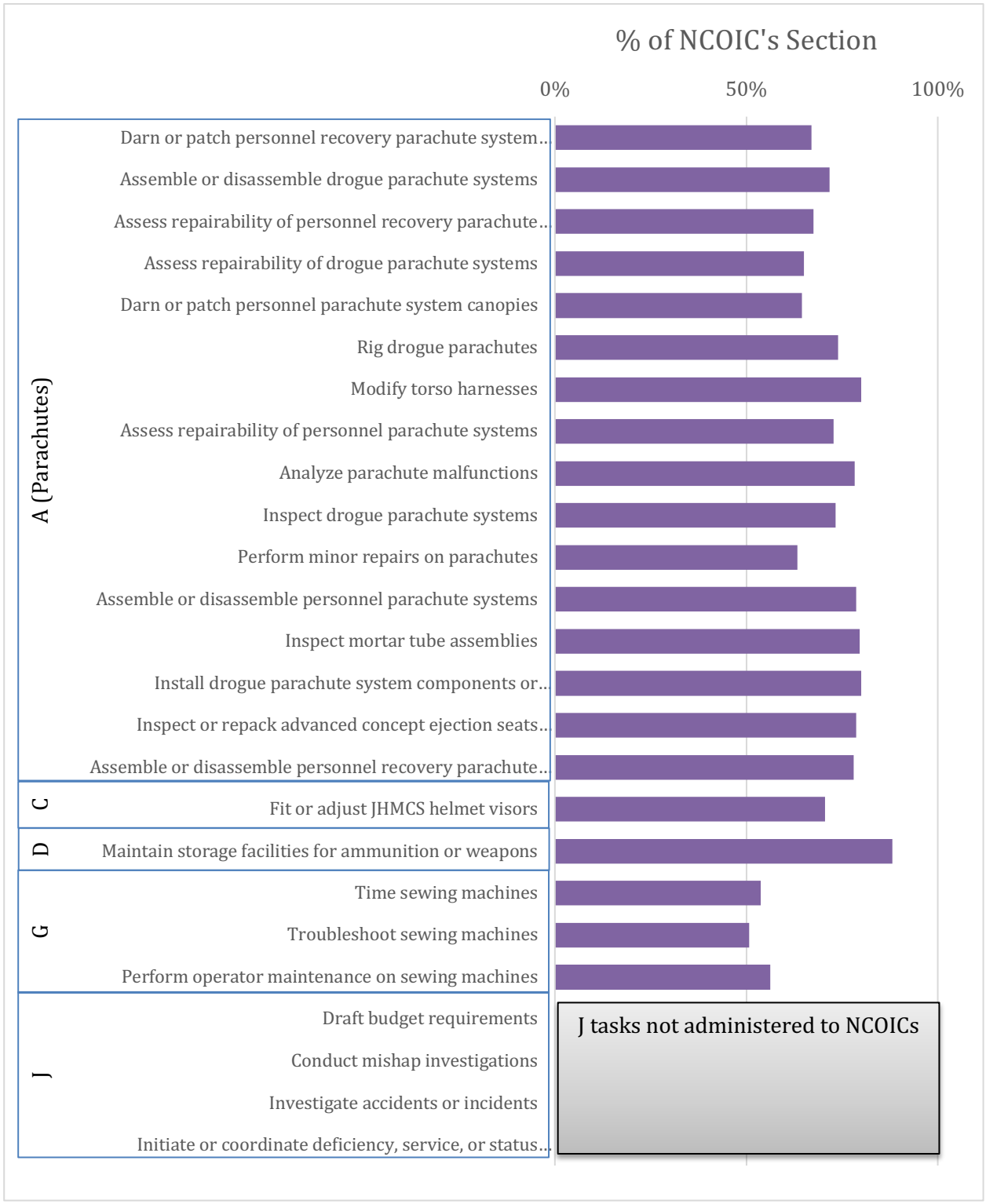
[20] As a reminder, we think that the ideal way to address this question would be to have specific individuals rated by their NCOICs, supervisors, or lead trainers and for us to be able to report results separately for those individuals who were supposed to be proficient versus those who were not supposed to be proficient. Unfortunately, USAF's survey control office did not approve our request to gather this type of information.

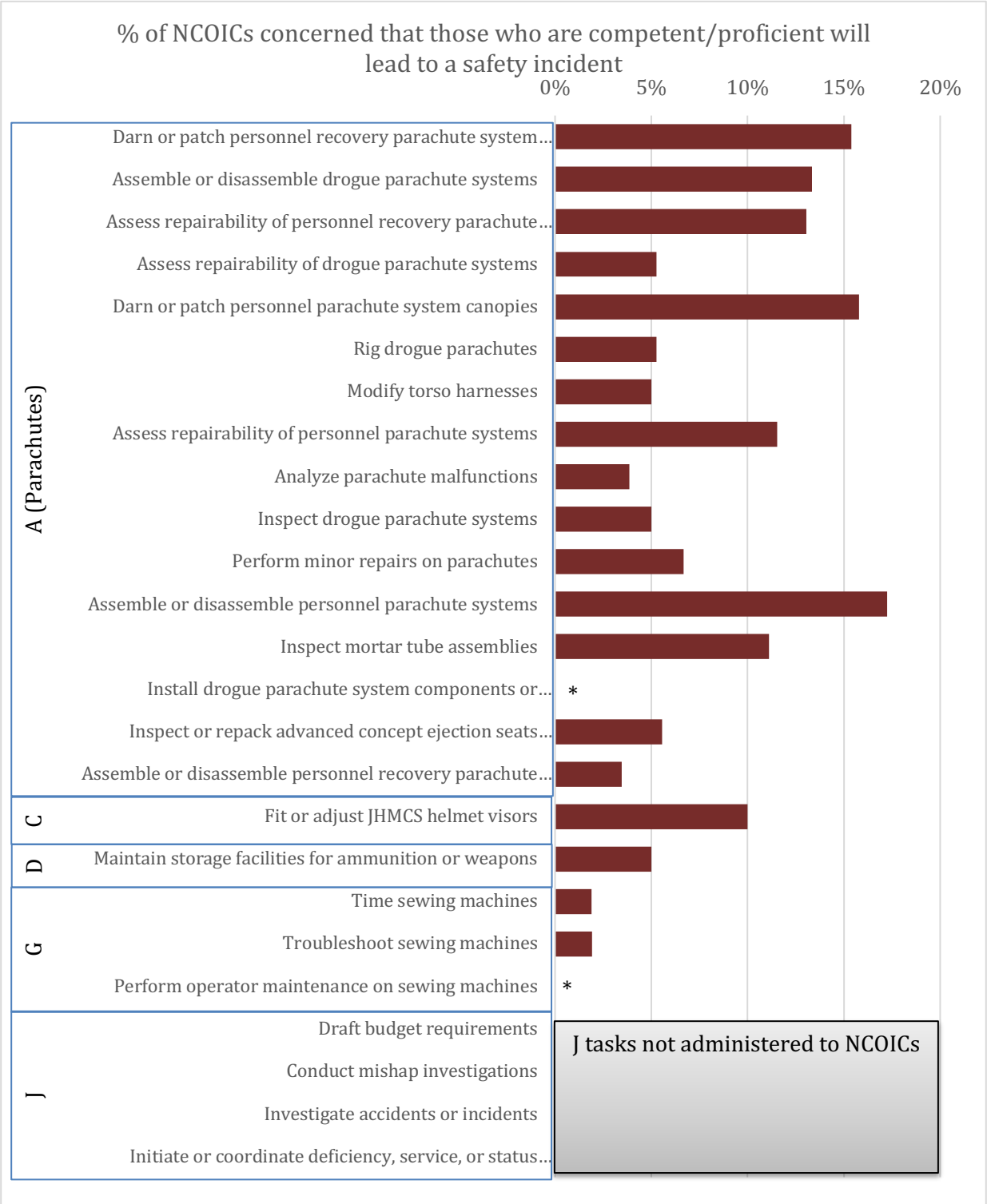
[21] The J duty area consists of management and supervisory activities. The I duty area (which focuses on training activities) was excluded as well. However, none of the I duty area tasks was identified as most concerning, and therefore they are not shown in the figures in this chapter. We felt that the information from trainers about both areas' focus would be less informative. We therefore opted to exclude these two duty areas to reduce the survey burden on the trainers.

Figure 3.4. Percentage of Personnel NCOICs Estimate as Competent or Higher on Each Task



NOTE: Number of respondents ranged from 13 to 53.

Figure 3.5. Percentage of NCOICs Expressing Concerns About Potential Safety Incidents on the Most-Concerning Tasks



NOTE: Number of respondents ranged from 13 to 53. An asterisk indicates that 0 percent of NCOICs marked a task as a safety concern.

We also asked NCOICs whether they were concerned about safety incidents occurring even when people were competent or highly proficient. Figure 3.5 shows the proportion concerned about safety incidents among those who are competent or highly proficient.[22]

Implications

Most notable among the survey responses presented in this chapter is the proportion of 7-levels who did not believe that they were at the competent level on the most-concerning tasks for which they were responsible (this ranged from 25 to 50 percent for most tasks, as shown in Figure 3.1) and the proportion of individuals who were concerned that their work may lead to a safety incident (self-ratings of confidence on several tasks were only around 50 percent; see Figure 3.3). These results are consistent with the sentiments that were expressed at length in AFE focus groups described in the previous RAND report (Hardison et al., 2021).

In addition, self-rated proficiency levels varied across the most-concerning tasks, with some job tasks being of greater concern than others. This finding also echoes the feedback from the AFE workforce in the prior RAND report. Although the high-level conclusion is the same, the data presented here help identify exactly which tasks are of greatest concern and how much below the ideal proficiency levels the workforce appears to be on a specific task. This ability to identify which tasks are most in need of targeted training and performance improvement is critical for focusing the career field's training efforts.

We recommend that career field leaders use the information presented in this chapter about the most-concerning tasks as a guide for where to shape changes to the career field's approach to training and development of the workforce.[23]

[22] The tasks in Figures 3.4 and 3.5 are listed in the same order for ease of tracking between the figures.

[23] Although these most-concerning tasks should be among the top tasks considered by the career field for training intervention, career field leaders should still be relied on to use their discretion and expertise about which tasks represent an urgent safety concern and require additional attention, even if they are not on the most-concerning list identified here. Leaders should, for example, consider whether any additional tasks, particularly those from the moderately concerning task list, should be considered as important first tasks to target. In addition, some of the tasks we identified as our most concerning might not present an urgent safety risk. Career field leaders should also use their discretion about whether to eliminate those tasks from the list of tasks on which to focus.

Chapter 4. Is Initial Skills Training Delivering the Levels of Training Expected?

The next topic explored through our survey was whether IST is delivering the level of training that is expected based on requirements detailed in the career field's CFETP (U.S. Department of the Air Force, 2015).[24] The survey included one question aimed at directly assessing this topic, which we discuss in this chapter. In the previous chapter, we focused on the 25 most-concerning tasks and will return to that list of tasks in the next chapter. However, in this chapter, we divert from that approach to focus on tasks associated with 3-level requirements in the CFETP, many of which do not fall into the most-concerning tasks.

Proficiency of 3-Levels Graduating from IST

As noted in the previous chapter, the CFETP assigns proficiency-level ratings from 1 to 4 to AFE tasks that are to be taught during IST. Awarding of the apprentice skill level (3-level) occurs at the completion of IST. Any tasks that have proficiency levels designated for 3-levels in the CFETP are expected to be taught to that proficiency level during specialized training. Students awarded a 3-level should have achieved the proficiency level specified on those tasks by the time they leave training.

To explore whether people are in fact leaving IST with the expected levels, we asked any participant who said that they provide training to others to give their assessment of the typical proficiency level of people fresh out of IST on the tasks that are specified in the USAF's AFE OAR. On this question, we only listed tasks that the OAR shows are linked to a task with an IST requirement in the CFETP. The question asked the trainers to rate the level of proficiency of people coming out of IST on each of these tasks, in their opinion (i.e., regardless of the level required by the CFETP).

In our survey, many respondents indicated that they provide training on some of the AFE tasks. This included the bulk of our 7-level respondents, whose views are generally considered by the career field as the most appropriate for defining the proficiency issues across the workforce. Figures 4.1 and 4.2 show all tasks for which 7-level trainers on average rated IST graduates as having proficiency levels that were below the stated CFETP requirement associated with the linked task or the level that our SME reviewers indicated was actually expected in IST

[24] At the initiation of this study, a new CFETP was being reviewed that included revised proficiency expectations for IST graduates; however, that CFETP had not yet been approved or implemented. We therefore relied on the existing CFETP requirements for the purposes of the survey analyses presented here.

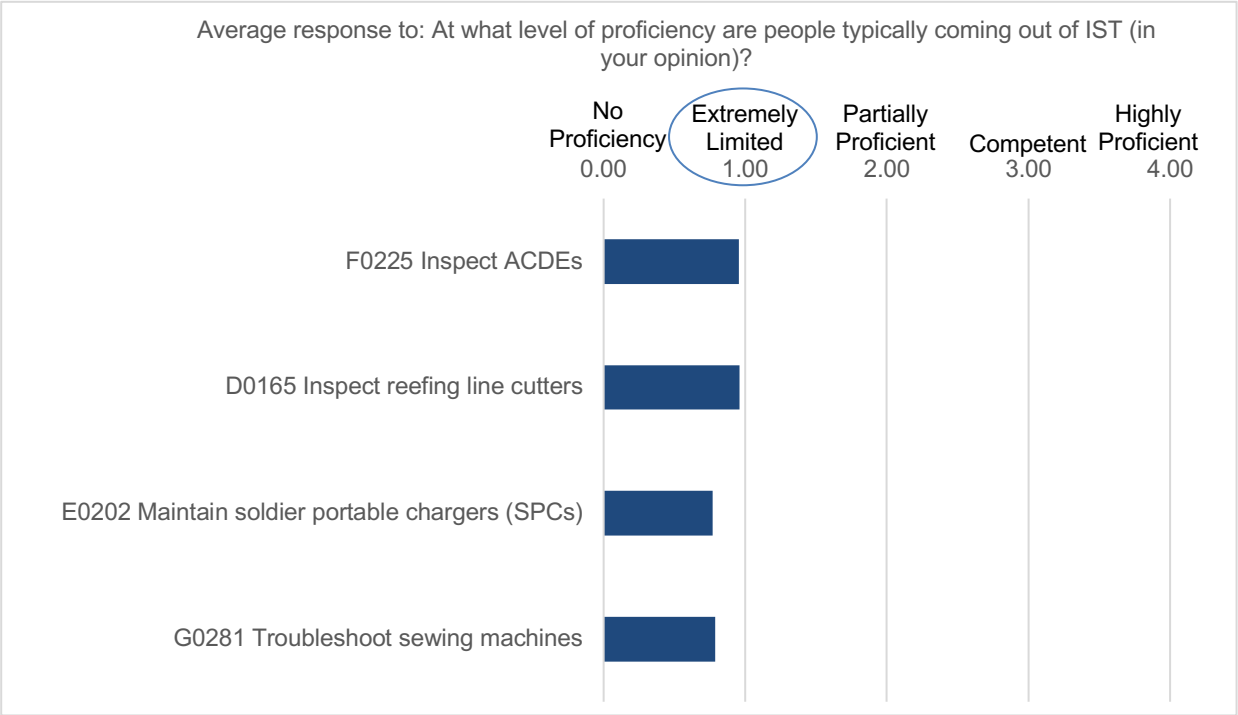
for that task.[25] In Figure 4.1, we display the four tasks rated below 1 out of the total of 34 tasks that had an associated CFETP task with a requirement level of 1 (*extremely limited proficiency*). In Figure 4.2, we show the 30 tasks rated below 2 out of the 75 tasks that had an associated CFETP task with a requirement level of 2 (*partially proficient*),[26] which is 40 percent of these tasks.

[25] When we consulted SMEs from the career field about preliminary versions of these figures, they identified several task items as either not being aligned correctly with an IST proficiency requirement or as being associated with a different IST proficiency level. Specifically, they recommended eliminating task items G0272, G0244, G0256, G0243, G0249, G0252, G0250, G0248, G0253, G0246, G0263, G0247, and G0245 (which were all sewing-related items) from the figures entirely. (See Appendix D for the full text of these items and Appendix F for the CFETP proficiency code lookup table.) The SMEs explained that they did not actually line up well with an associated requirement in the CFETP and that they are not actually instructed in IST. The SMEs also recommended that we change the associated proficiency requirement from a 2 to a 1 for items G0242, G0281, D0165, and E0202. We therefore shifted these items in our results to the group of items that have an IST proficiency requirement of 1 (shown in Figure 4.1). Because the average participant rating for item G0242 was 1.02, it was not included in Figure 4.1.

Although we made adjustments to the items indicated by our SME reviewers as being grossly misaligned, it is possible that some other items shown in the figures may also be misaligned, to varying degrees. We therefore discuss this issue of potential misalignment between the CFETP-task IST requirements and the OAR-task linkages further at the end of this section as an important caveat in interpreting the information in the figures.

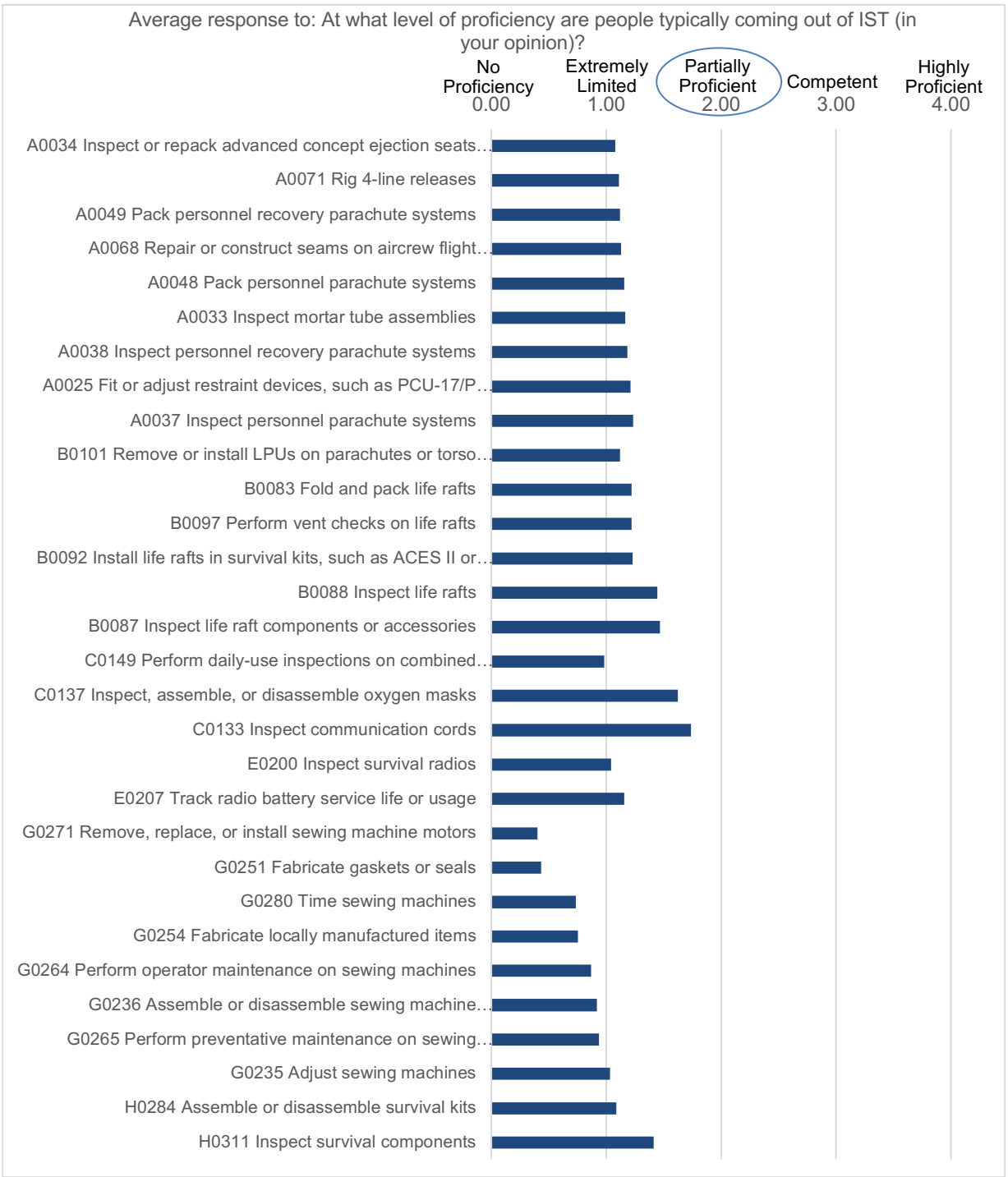
[26] In USAF's OAR, there are a total of 88 tasks linked to a level-2 proficiency requirement for IST in the CFETP. Of these 88, nine were eliminated from the IST requirement list entirely, and four more were shifted to a proficiency requirement of 1 by our SME reviewers. That left a total of 75 tasks remaining with a level-2 proficiency requirement for IST. Of those 75 tasks, 30 were rated by our participants as being below level 2.

Figure 4.1. Tasks for Which 7-Level Trainers Viewed IST Graduates to Be Less Proficient Than the Expected Level in the CFETP: Rating of 1, Extremely Limited Proficiency



NOTE: The figure includes only tasks for which 7-levels rated recent IST graduates' proficiency below the CFETP required proficiency level for the IST schoolhouse. Tasks that 7-levels rated an average of 1 or higher were excluded from the figure. Participants were given the option to select "don't know." After excluding the "don't know" responses, the number of responses ranged from 102 to 134.

Figure 4.2. Tasks for Which 7-Level Trainers Viewed IST Graduates to Be Less Proficient Than the Expected Level in the CFETP: Rating of 2, Partially Proficient

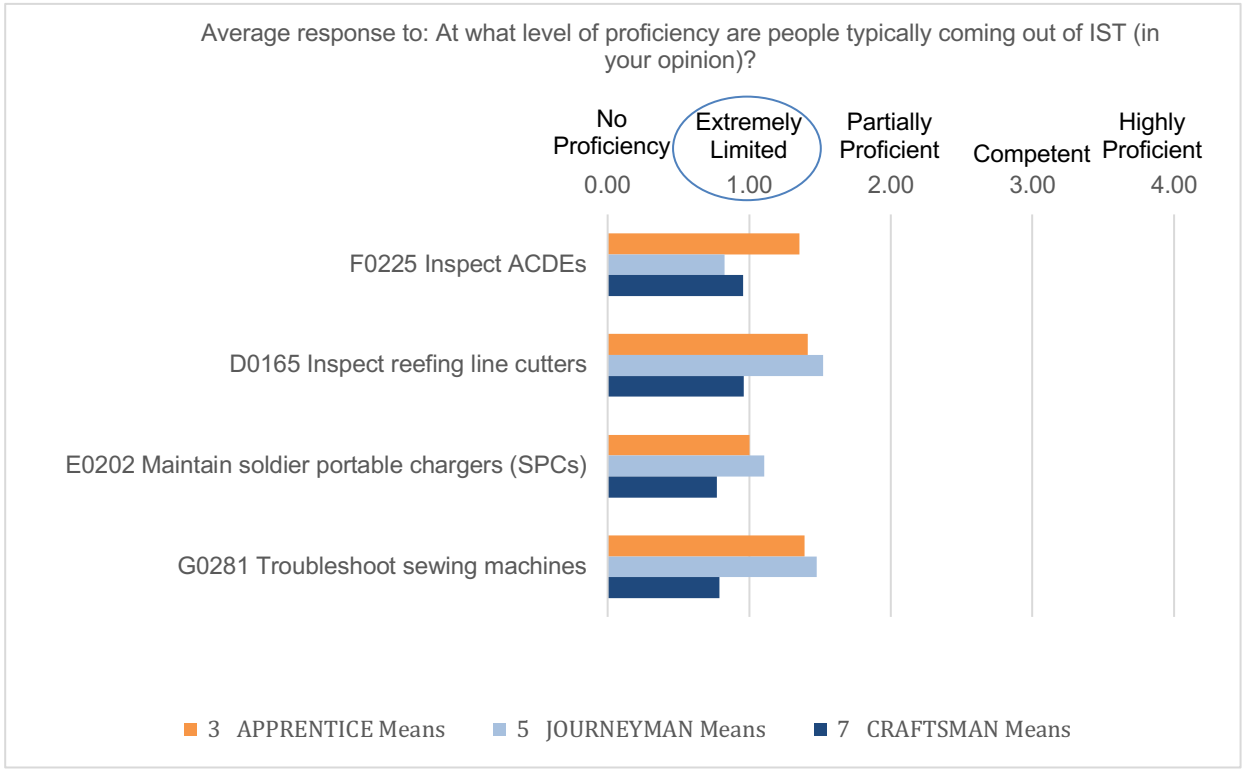


NOTE: The figure includes only tasks for which 7-levels rated recent IST graduates' proficiency below the CFETP required proficiency level for the IST schoolhouse. Tasks that 7-levels rated at an average of 2 or higher were excluded from the figure. Participants were given the option to select "don't know." After excluding the "don't know" responses, the number of responses ranged from 97 to 155. The full text of the tasks that are not fully displayed above can be found in Appendix D. LPU = life preserver unit.

Although most of our trainer respondents were 7-levels, there were also 5-levels and even some 3-levels who said that they provide training to other members of the workforce on some of these tasks. The fact that we had trainer respondents who were 5- and even 3-levels was not unexpected. Career field representatives explained that many people provide training in some form to other personnel in the career field. It is sometimes the case, for example, that an experienced 5-level would be responsible for training a 7-level who arrives from a different section or from a different Mission Design Series (MDS). In addition, even 3-levels can gain enough proficiency after some period on the job to provide training to less experienced 3-levels.

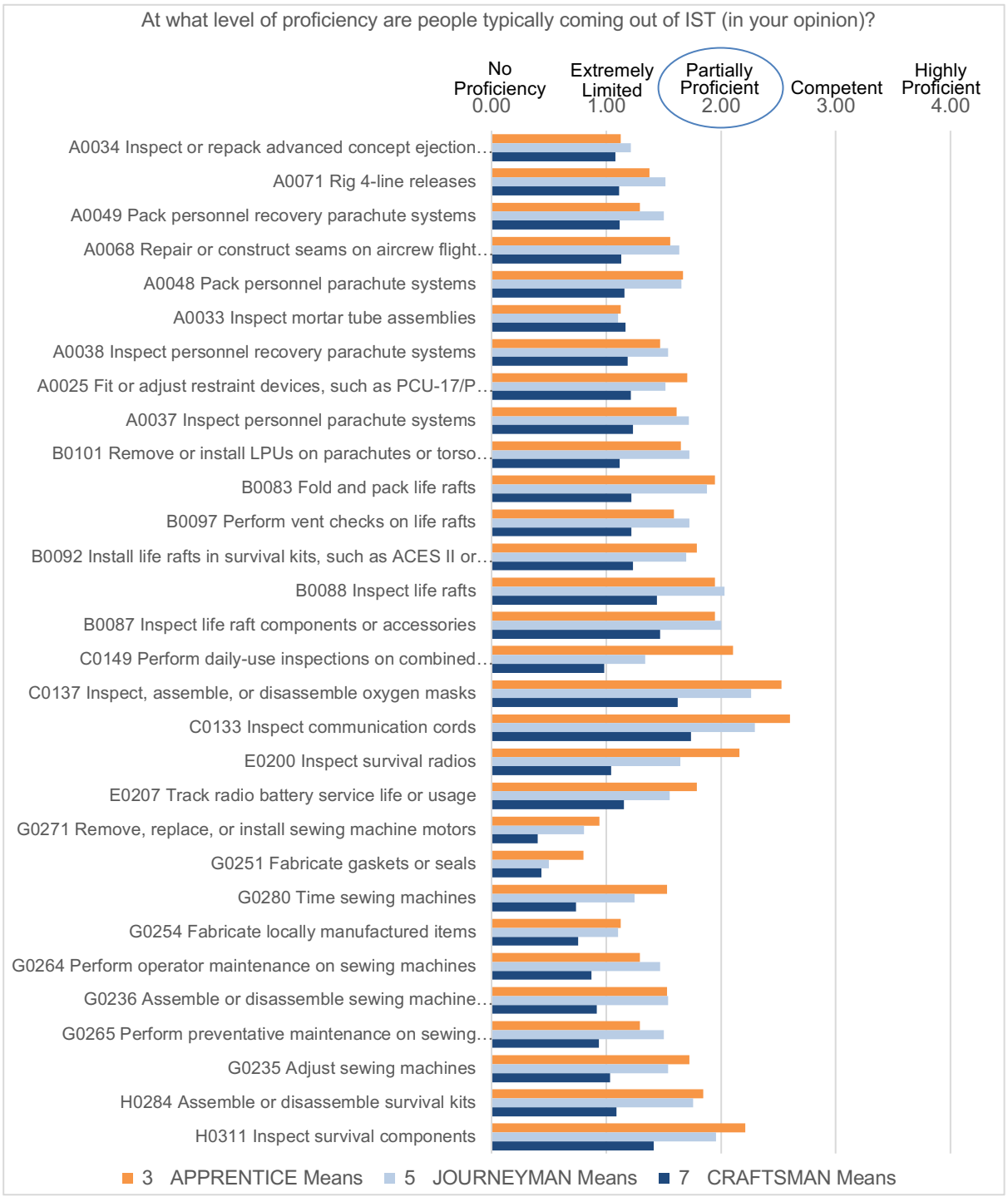
We therefore also examined 5- and 3-level responses on the same set of tasks, along with the 7-level responses (as shown in the earlier figures) for comparison. Figures 4.3 and 4.4 show the results. Interestingly, trainers who were 5-levels and 3-levels tended to rate the proficiency of the people coming out of IST higher than the 7-levels did.

Figure 4.3. Comparing 7-Level Trainers' Views with Those of 5- and 3-Level Trainers



NOTE: The figure includes only tasks for which 7-levels rated recent IST graduates' proficiency below the CFETP required proficiency level for the IST schoolhouse. Tasks that 7-levels rated at an average of 2 or higher were excluded from the figure. Participants were given the option to select "don't know." After excluding the "don't know" responses, the number of responses range from 47 to 57 for the 5-levels, 15 to 17 for the 3-levels, and 102 to 134 for the 7-levels.

Figure 4.4. Tasks for Which Trainers View IST Graduates to Be Less Proficient Than the Expected Level in the CFETP: Rating of 2, Partially Proficient



NOTE: The figure includes only tasks for which 7-levels rated recent IST graduates' proficiency below the CFETP required proficiency level for the IST schoolhouse. Tasks that 7-levels rated at an average of 2 or higher were excluded from the figure. Participants were given the option to select "don't know." After excluding the "don't know" responses, the number of responses ranged from 14 to 20 for the 3-levels, 46 to 69 for the 5-levels, and 97 to 155 for the 7-levels. The full text of the tasks that are not fully displayed above can be found in Appendix D.

We did not have data that can directly answer the question of why 3-levels view the proficiency of people graduating from IST more positively. However, leaders in the career field have expressed the view that 7-levels are much better judges of workforce proficiency and training needs than 3-levels.[27] This assumption is reasonable, since 7-levels are expected to have developed significantly more expertise over their careers and therefore would be in a better position to judge where on the full spectrum of expertise someone falls. These results are also consistent with how SMEs in jobs are typically viewed: Those with high levels of expertise are generally relied on to provide assessments of performance levels of more junior and less experienced personnel. However, it is also possible that 3-levels, who have recently graduated from IST, have a different view of the skills that they acquired from that of their recent peers. In this way, the information may reflect a legitimate difference in the information that 3-, 5-, and 7-levels are considering in making judgments of proficiency level. Although 3- and 5-level respondents did consistently rate IST graduates at a higher proficiency level than the 7 level respondents did, it is also worth noting that rank ordering of the proficiency levels is consistent across all levels. In other words, the tasks for which proficiency is rated the lowest and highest tend to be the same tasks.

In interpreting the 3-level results, it is also important to remember that the results shown in Figure 4.4 are limited to only those 3-, 5-, or 7-levels who said that they provide training to other members of the workforce. The proportion of 3-levels who report that they train others is much smaller (as would be expected, since most 3-levels are not yet fully competent on most tasks) than it is for 5- and 7-levels.

Lastly, as a reminder, in Chapter 2 we noted that many of the OAR tasks are phrased in ways that are similar to the linked tasks in the CFETP—but not all of them. In cases where the phrasing is not similar (and especially where it is not even close), the comparison of judgments about IST graduate proficiency to the CFETP requirement might not lead to interpretable results. We are not in the best position to judge whether the phrasing of any specific OAR item is too different from the CFETP for the IST ratings to be meaningful.[28] Instead, we advise that leaders

[27] This view that 7-levels are the SMEs best positioned to judge proficiency of the workforce has been expressed to us by our career field MAJCOM working group representatives and by participants in the prior RAND study (Hardison et al., 2021).

[28] As an example, in Figure 4.2, the second task in the figure is OAR task "A0071 Rig 4-line releases." In the lookup tables, we see that the task is linked to requirement 2a in the CFETP under task 2.23.6.5.8 (p. 65), which is worded as "Rig 4 Line Release" in the CFETP (U.S. Department of the Air Force, 2015). This task is located under the main heading of "2.23 Parachute Systems, Torso Harnesses, and Restraint Devices" and then under "2.23.6 Personnel" and "2.23.6.5 BA-Series." However, the phrase "Rig 4 Line Release" is listed in the CFETP not only under the "BA-Series" heading but also be under three other headings: "2.23.6.6 Low Profile Parachute," "2.23.6.7 Chest Style (Reserve)," and "2.23.6.1 ACES II Personnel Recovery Assembly" (pp. 65 and 66). In these additional instances, there is no IST proficiency requirement specified. Given that the OAR does not clarify the parachute type trainers are responding to in the survey, it is not clear whether they believe that the requirement for the BA-Series is not being adequately met or whether their responses reflect the fact that there is no requirement on the other types of equipment referenced in the CFETP. Note that we did ask our sponsor's office to identify any task that it thought

rely on the career field SMEs who are knowledgeable about the individual tasks and to take this caveat into consideration when interpreting the results presented here. For interested readers, we provide a lookup table that shows the wording of the linked CFETP and OAR tasks for comparison in Appendix F (a supplemental document available online).

Write-In Comments Related to IST

Although we did not include an open-ended question that directly asked people about the relevance of IST, many respondents provided comments and suggestions about how to improve IST when given the opportunity to provide additional comments elsewhere in the survey. For example, 367 NCOICs and trainers provided write-in comments about improvements that AETC, HAF, or the MAJCOMs could do to improve training. Of those, 172 offered specific suggestions for changes to IST.[29] We binned these comments into four main themes.[30]

The first theme involved suggestions to change IST to train only tasks that will be used in an individual's first assignment. For example, someone headed for a Guardian Angel unit would be trained only on Guardian Angel–relevant tasks. This is essentially akin to instituting shreds or special-experience identifiers that were also mentioned in various write-in comments.[31] This comment was raised in more than half of the 172 comments. The following are some examples:

> AETC should train to weapons systems (fighters, heavies, etc.). When we receive airmen they have never seen or heard of some of the equipment we have.
>
> ***
>
> AETC School house should be broken down into different phases dependent on where the 1st assignment is for the Airmen. Many airman go into a fighter base only knowing heavy specific equipment or very little to no knowledge on parachutes and packing. More training should be placed on tasks like building up

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was not expected to be trained in IST or for which the level specified was incorrect. The recommended changes are noted earlier in this chapter.

[29] For comments about HAF and MAJCOM changes, see Chapter 8.

[30] We used a systematic coding process to identify the major comment themes. Two researchers first reviewed the comments and identified a starting list of themes. One researcher then coded (i.e., binned) a subset of the comments into the themes and added additional themes to capture new ideas identified while coding. The second researcher then spot-checked the coding and identified areas where there were discrepancies or areas of disagreement. The researchers then worked together to further refine the themes and clarify them and prevent additional disagreement. The first researcher then coded the entire sample of comments using the refined list of themes.

[31] Air Force Specialty Codes (AFSCs) in USAF

> can be *shredded* to create two separate specialties within a single AFSC, with each focusing on a different set of skills and tasks. Typically, there is some common or similar training provided to both groups, but each group also receives separate training in their shred-specific tasks and skills. Each then serves only in duty assignments that are specific to their shred. A shred is an official AFSC designator shown as an additional letter (A, B, C, etc.) added to the end of an AFSC (so AFE could have an A shred, a B shred, a C shred, etc., with each focused on a different core set of tasks and skills). IST could still be split into separate tracks using someone's anticipated first duty assignment, even if no official AFSC shred was created. (Hardison et al., 2021, p. 30)

> a JHMCS Helmet and fitting/filing down a JHMCS visor. These tasks take [an] extremely large amount of time when training in a fighter shop with normal equipment being inspected while supporting random fittings for aircrew.
>
> ***
>
> AETC be more specific on training in AFE to the gaining unit the AFE troop will go to.
>
> ***
>
> AETC should try to condense the training down to specific MDS for guard member. Waste of time and money to train ANG on all AFE equipment and they will never see half of this equipment again in their career.

The remaining three themes were mentioned by between ten and 20 respondents. The second theme involved increasing the depth and length of training. Some of these comments overlapped with ones about shredding the career field. The following are some examples:

> AETC needs to actually take the time to show relevant equipment that is used in the field and do more than have students touch it for a day. When they arrive, they know nothing of how to inspect or operate the equipment. I get that there is a lot of equipment in AFE, at this rate tech school is pointless since once a new Airman arrives it starting from scratch anyway with OJT [on-the-job training]. They get more familiarization just showing up the first day than 6 weeks at tech school. It's not even the fact that its "how it's done in the real world," they just have no concept of the equipment.
>
> ***
>
> AETC should ensure an individual is competent and able to learn before allowing them to move on from tech school. We have received a few members who should have never passed tech school, and quite frankly, should have been discharged from the Air Force.
>
> ***
>
> AETC should extend training time for Tech School to 6 months so the new incoming personnel don't brain-dump the materiel before showing up at their first base. Normally, when new personnel arrive at their first base, they get caught up with the new location or in-processing and tend to forget most of the instruction which results in having to retrain a lot of them. This causes the more experienced personnel to take time out of an already busy schedule and direct their attention away from tasks that would prevent them from going home at a proper time.
>
> ***
>
> AETC should make technical school slightly longer so the new airman can have a better foundation of the equipment. The number one complaint I always hear is that new airman sometimes only remember that they've seen a piece of equipment but know nothing about it.
>
> ***
>
> AETC should provide better trained Airmen. All of my sections have at least 3 new Airmen from tech school and none of them got to this base competent on

any tasks. This includes CTK [composite tool kit], AFERMS [Aircrew Flight Equipment Records Management System], and equipment. We waste a lot of time training people on the basics that it is almost 2–3 months before you can get them functional enough to inspect [their] first piece of equipment. They should at least learn how to do documentation, check [their] training records and know how to navigate a T.O. I have never seen [an] Airmen that can do any of those simple tasks and by time I get them to where I need them it has been years and they have orders to a new base.

***

AETC: Should conduct all allocated training to where they send a fully qualified 5-lvl to the Unit such as pipeline training. Also, they should extend their tech school to approx. 3–6 months for newer airman to really get to understand their Job.

***

Yes, I wish there was better training in tech school to cover all the aircraft equipment not just fighter and some heavy equipment. I also wish we were not so low manned all the time which makes training difficult because we are constantly inspecting and moving equipment and fitting ppl. It's hard to set aside time when everything we do is a time crunch.

***

Extend tech school to allow more time in each block for more repetition AND extend 3 level upgrading time a few months for bases that have heavier task saturation.

***

I wish AETC would produce qualified technicians after they have graduated technical training. All new technicians that leave technical training still require 100% training and hold no qualifications upon arrival to duty station.

***

Be a 5 level when they leave tech school.

***

I would like to see AETC train members to 5 level qualification before entering units.

***

Take more time in classes for the airmen to really grasp the concept of what they are doing.

The third theme involved the elimination of IST altogether or a significant reduction in its role in the training pipeline. Several respondents commented that IST for a career field like AFE was wasteful and not helpful. Some explained that it was impossible to develop depth of knowledge in any of the tasks because there were too many to learn and only a subset would be used in the first assignment. Some suggested retaining a few key topics for IST that would be fundamental regardless of the task type (such as how to read and follow the guidance in a TO). The following are examples:

> Tech school is largely irrelevant to our career field.
>
> ***
>
> My flight keeps discussing what is the use of training airmen on parachute, life raft, and similar equipment is at tech school when we just train them like they have never seen the equipment before. Seems like we could cut down on schoolhouse time and focus on things every unit will do like sewing machine MX [maintenance] and how to read/navigate a TO.
>
> ***
>
> AETC needs to either train the new technicians to some level of actual proficiency or just stand down the technical training for 3 levels on equipment and send them directly to units for on-the-job training.
>
> ***
>
> AETC: AFE tech school should be either cancelled or revamped to properly teach tech by shredding out by MDS, i.e., C130 tech should learn heavies related tasks not fighters and vice versa [an] F shred shouldn't care about heavies tasks, this way the tech will have a working knowledge on what to expect when assigned to duty station and tasks are similar to his/her tech school. Wasting time training/re-training individuals fresh out of tech school on tasks they should have already [known] or know nothing about hinders readiness and manning overall when it comes to TDY [temporary duty]/Deployments potentially leading to burn-out of qualified individuals (highly likely in small shops/overseas) because you can't afford a trainee to go to TDY/Contingency Ops.

The fourth theme involved specific suggestions for content that should be emphasized or deemphasized in IST. The above comment in which the respondent suggests including sewing and reading a TO and deemphasizing everything else is an example. The following are some additional examples:

> AETC should conduct its own parachute rigger course separate from the Army and a sewing course attached.
>
> ***
>
> AETC should begin with training on the staples of AFE and not trying to fit so much into our short technical school. If the focus was more on the Life support side of things such as helmets, Masks, harnesses, and G-garments then trainees will come to their first base with more proficiency in the items that are used by all aircrew. Then if there are aircraft specific items such as ACES II or floatation items, those can be taught at the base AFE level.
>
> ***
>
> AETC should dial back on the equipment training and leave that to the Wings/MAJCOMs. Every airman I have ever got from Tech School has never retained the equipment part of the training at Tech School. AETC should train our airmen on AFERMS and admin only. Also, once a person has joined a MAJCOM that should be their MAJCOM for their career.
>
> ***

AETC should provide DPAS [Defense Property Accountability System] training, AFI [Air Force instruction] introduction, and improved T.O./CTK [composite tool kit] knowledge to tech school students; the MAJCOM should allow units more autonomy with MTP [Master Training Plan]/ITP [Individual Transition Plan] decisions.

***

Begin AFERMS accounts in tech training and provide baseline training. Consider removing all sewing tasks from career field and contract all sewing out. Sewing was important when apart of 2A7X1 but since the merge sewing has become a lost trait. As a SNCO [senior noncommissioned officer], I am one of the few who has the abilities to sew, and it has been like that for the past 7 years. All sewing that has come through the flight has always been completed by prior 2A7's.

***

Complete DPAS training at AETC. Set a class up at the schoolhouse or even the 436th. I would like for it to set it up with setting up the scanners and adding equipment and so forth.

***

DPAS/AFERMS accounts established and provide baseline training.

***

Due to such a broad amount of equipment covered in AFE, the amount of aircraft we support, and each base or MAJCOM having different standards for equipment, I believe it would be better to have a shorter, smaller Tech School at the AETC level. In this, trainees would be introduced to the concept of what AFE covers, shown types of equipment that we handle, and focus more on the aspects that affect each piece of equipment. This includes how to read and navigate Technical Orders and COTS [commercial off-the-shelf] manuals, which is an issue that I consistently see from individuals coming from Tech School. Having individuals struggle to navigate a table of contents and needing to re-learn how to read a T.O. is very frustrating.

***

Go more in depth about aircraft specific equipment. Perhaps make the tech school a couple weeks longer.

***

HAF [should] 2-tier the Technical School. Heavies/Fighters, with a follow on of Parachutes if the students require it. Tech school is too long and affecting recruiting of Guard and Reserve. Would like to see Tech school be more focused on equipment and kept to 8 weeks. OJT is not effective for ANG and AFRC as 90 days seasoning is not enough to certify to proficient levels.

***

Have individuals returning from tech school have TBA [Training Business Area] and AFERMS already established.

***

I believe AETC could make tech school more hands on than test oriented. Or, add basic T.O. usage into academics. It is in my experience when a troop comes from Tech School they are not proficient with the T.O. Tech School seems to imply new troops memorize the equipment, when in fact, they should be understanding the T.O. I believe more task evaluations should be accomplished in Tech School as well. Many troops get to their duty stations more capable for a written test. They should get here with more practical hands-on knowledge.

***

I think that personnel should get basic information at Technical School like Technical order navigation and different series of what the letters stands for in the name.

***

I think training starts in the Flights. Time needs to be allocated to ensure training is getting done. Small groups or one on one, not mass training. For AETC, ensuring we have instructors who can actually perform the task or have some AFE knowledge prior to training brand new Airmen would help. Another option is to teach basic AFE Fundamentals, i.e. TO's, AFERMs, Forms[,] general items that you will see at every base, and leave the equipment training to the base were the member is getting stationed.

***

I wish we could have 3 level graduates learn more about GA/STS [Guardian Angel/Special Tactics Squadron] in tech school.

***

I would like AETC train to train Airmen so that when they get to their base [they are] proficient on all aspects of helmets, harness, survival components and parachutes. This would help the field out immensely as we wouldn't have to restart training. As most members finish a block and then forget what they learned. And we get to start from scratch.

***

I would like them to train new Airman on the basics before going to their first assignment. Get them DPAS access, a GTC [Government Travel Charge] Card, accomplish CBTs [computer-based trainings], how to use a T.O., all the basic stuff that wastes our time. Additionally, only train them on CSELs [Combat Survivor Evader Locators] and sewing machines. Once they get assigned to their unit, the unit can train them on the specific equipment that is required for the airframe.

***

I would like to see more students coming out with some basic knowledge in tools, specifically PMEL [Precision Measurement Equipment Laboratory]. Setting a torque wrench to the lowest setting, for example. Possibly have AETC start an Airman's TBA, this used to happen years ago when it was the pen and paper.

***

> I would want to see AFE tech school training restructured to only teach the basics, but teach them extremely well. As it stands, AFE pipeline training covers a tiny bit about everything; multiple helmet types, multiple parachute types, multiple rafts, etc. The problem is that I have NEVER in 22+ years of AFE seen a graduate show up that knew anything beyond a couple of cursory concepts or ideas from what they learned in tech school. At EVERY SINGLE BASE we must conduct all of their training from scratch, because they either dumped everything they learned in tech school or else had so much information overload (or both) that they only retain the most basic bit of information of the most recently taught block of instruction. I would have the AFE schoolhouse restructured so that technicians learn an in-depth understanding of how to use Technical orders; how to read them, how to locate pertinent information, how to use the illustrated parts breakdown to identify parts, etc. Teach them the basics of safety, handling chemicals, working around aircraft and hazards, using hand tools, and other basic tasks that apply in every AFE shop. Then when they get to their base, they do not have a bunch of unnecessary information to dump, but instead have built a solid foundation that they use every day.
>
> ***
>
> Have the new trainees built up in training tools like TBA, AFERMS, etc. so when they get to their unit, they are ready to be trained and don't need an additional 2 weeks before they can actually be trained.
>
> ***
>
> I think getting CDC [career development course] done during tech school and actually doing the equipment in the field would train people faster and make people more proficient.

Implications

The findings presented here suggest that 34 out of 109 tasks showed gaps between the proficiency level stated in the CFETP and the perceived performance capability of personnel who are leaving formal IST training. These gaps may reflect a meaningful difference between how the training establishment views what constitutes *partially proficient* or *extremely limited proficiency* and how the workforce views proficiency. With this in mind, career field leadership should at a minimum review the curriculum being offered during IST that relates to each of the tasks shown here and discuss what changes might be needed to raise the exposure or experience level of graduates to more closely align with the level of exposure or experience that leadership in the field is expecting coming out of IST.

Career field leaders could also consider whether some tasks should be eliminated entirely from the CFETP requirements and consequently from IST, as was suggested in some of the write-in comments. If this approach is taken, however, the career field should have a clear plan in place for how to replace any learning that occurred in IST with similar, if not improved, training in the field, assuming that training is actually needed. That said, there are many other factors to consider in deciding whether IST is the right location for some or all of the existing training, such as training resources, trainee motivation, and whether training will transfer to the

job. In addition, if the ultimate objective is to ensure that airmen are proficient at tasks required by their jobs, the training could potentially be needed, and it could be designed to occur at multiple points over the course of one's career. Those points may or may not be immediately after someone leaves IST and arrives at their first assignment.

Chapter 5. Is the Existing Follow-On Training After Initial Skills Training Adequate?

A second topic explored in the survey was whether the follow-on training that occurs at the units after airmen have completed IST is meeting the career field's needs. By *follow-on training*, we mean any training, practice, or process for developing skills or expertise that occurs over the course of one's career. An example is continuation or upgrade training, which is designed to move personnel from a 3-level to a 5-level and then to a 7-level designation. Follow-on training also can include formal classroom training and informal on-the-job training or development that occurs at any point in someone's career—such as when moving to a new section or a new MDS type, when new equipment is acquired, or when specializing on a particular task.

The results discussed in Chapter 3 speak directly to the adequacy of follow-on training. They show that there are several most-concerning tasks for which self-rated proficiency is not at the level that should be expected for 7-levels. In theory, all 7-levels should be at a level of competent or higher in the tasks they are required to perform in their current assignments.[32] This alone suggests that follow-on training and on-the-job experience in its current state is not adequate to meet the training needs of the career field.[33] However, we also asked several additional questions on the survey that can provide further insights into this question, which we discuss in the remainder of this chapter. In presenting these results, we again turn our focus back to the 25 most-concerning tasks.

Training Time Required After IST

We asked trainers to estimate the amount of training time that would be ideal for someone fresh out of IST on each task for which they provide training. We also asked whether they are able to provide that ideal level of training within their units.

To help clarify how we wanted participants to interpret these questions, we presented the following additional text before the question: "Some tasks may be trained to some extent in your unit now, but the time spent on training them may not be as much as you think would be ideal. In the follow[ing] sections we ask you questions to estimate how much training time you think

[32] Appendix A contains additional results showing self-rated proficiency and NCOICs' percentage-proficient estimates on the moderately concerning tasks.

[33] Our broad definition of *follow-on training* is meant to include the multitude of ways in which people acquire or maintain proficiency over their careers. For example, some people may once have been proficient, but if there are not enough opportunities to practice on the job, skills may degrade over time. Or people may not have ever received sufficient training initially to get them up to the proficient level. Or they may develop greater proficiency with greater exposure to the tasks such that proficiency may simply grow with experience.

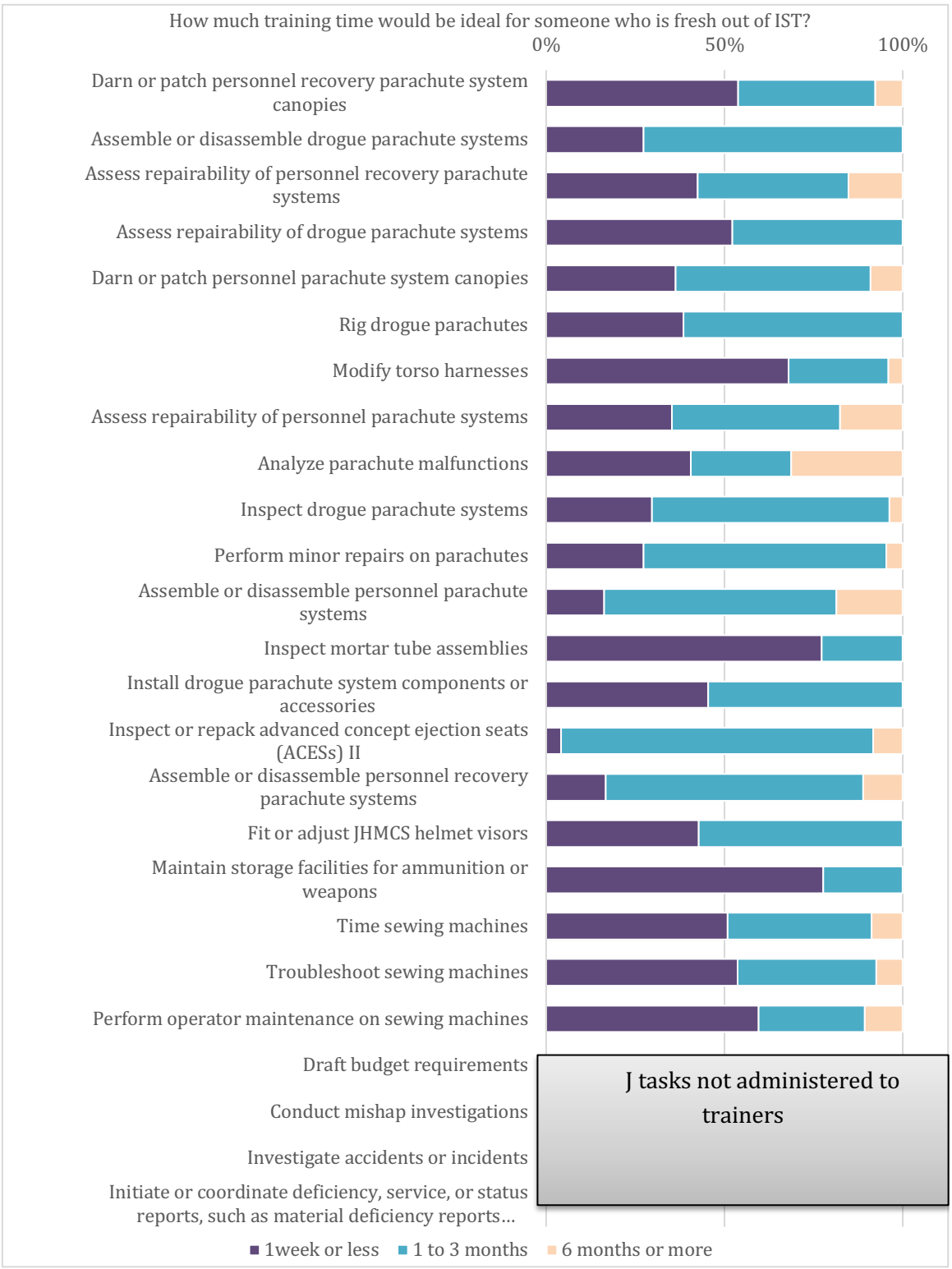
should be dedicated to this in an ideal world, if there were no constraints." We included this additional prompt specifically because we wanted participants to focus on describing the time that was really needed to perform this task at a competent level, even if there were constraints that might make that time impossible. As a result, the responses should be viewed as an aspirational estimate on the time that the career field needs to set aside for training on the tasks.

Figure 5.1 shows the total time that trainers estimated would be ideal for each of the most-concerning tasks. As shown in the figure, there were considerable differences across the trainer responses about the total time that would be considered ideal. These differences may reflect differences in how participants interpreted the word *ideal* and the level of performance they expect trainees to achieve, or they may reflect real differences in the levels of training needed within each section.

Figure 5.2 shows the percentage of trainers who responded that they could not provide that ideal amount of training in their units for each of the most-concerning tasks. The item asked, "For someone fresh out of IST, are you able to dedicate this ideal amount of time training them?" and participants checked off any items for which their answer was no. As shown in the figure, for some tasks, the proportion selecting no exceeded 30 percent of trainers.

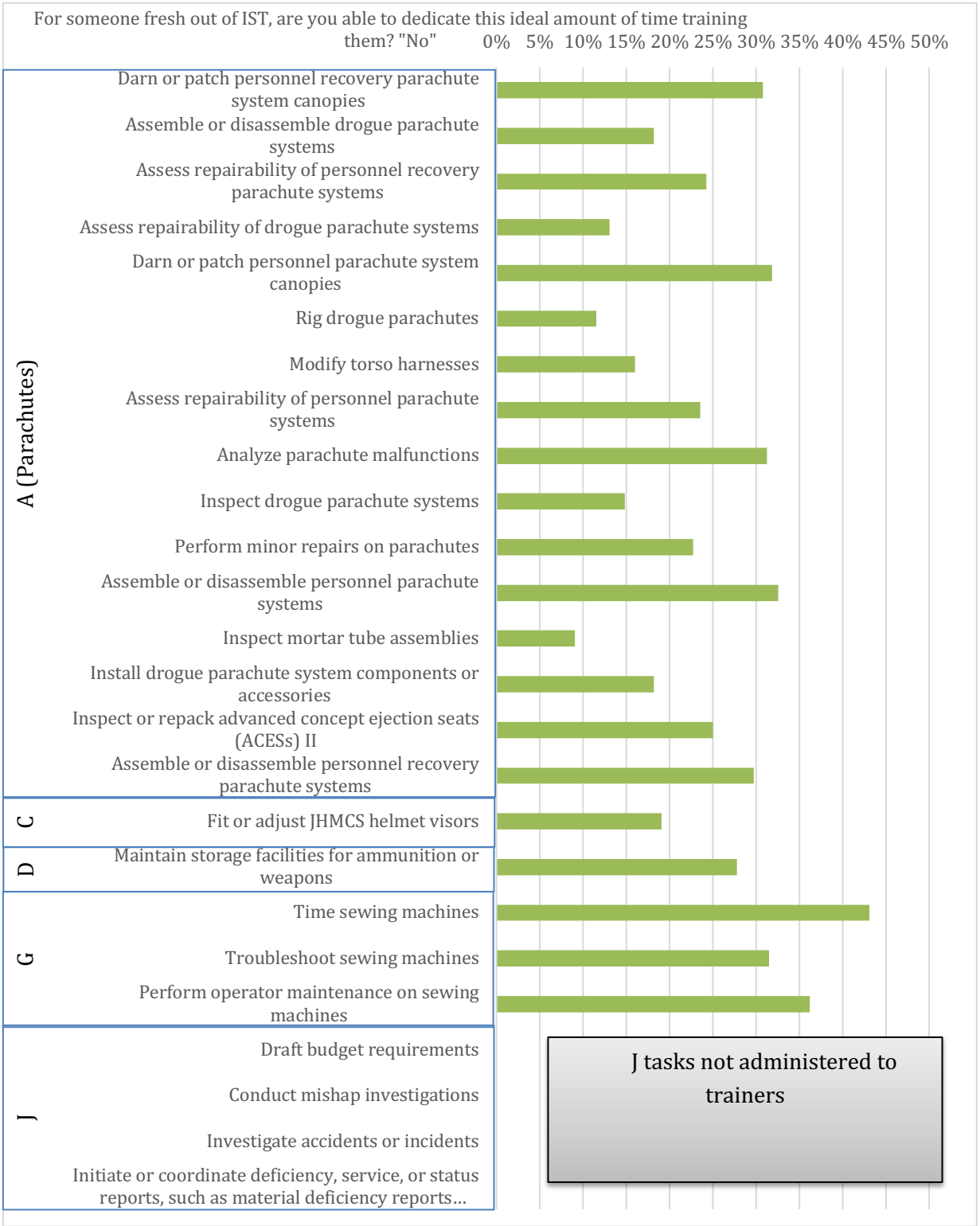
Estimates of less than a week to train a task may seem like an insignificant training burden for the sections receiving new personnel. However, there may be multiple tasks on which that new person needs to be trained. In combination, the resulting training time would then be notably more per person. We did not ask about which tasks personnel tend to need training in simultaneously; however, in knowing which tasks are performed at a section, the career field can use the information presented here to estimate the training burden that would occur across all of those tasks for someone with no prior experience in any of them.

Figure 5.1. Percentage of Trainers on the Ideal Amount of Training Time on the Most-Concerning Tasks After IST



NOTE: The number of responses ranged from 13 to 58. J tasks are one task grouping.

Figure 5.2. Percentage of Trainers Who Responded That the Ideal Amount of Training Time for Someone Out of IST Is Not Possible in Their Section on the Most-Concerning Tasks



NOTE: The number of responses ranged from 13 to 58. The lettered categories refer to task groupings.

Training for People Moving Sections and MDS Types

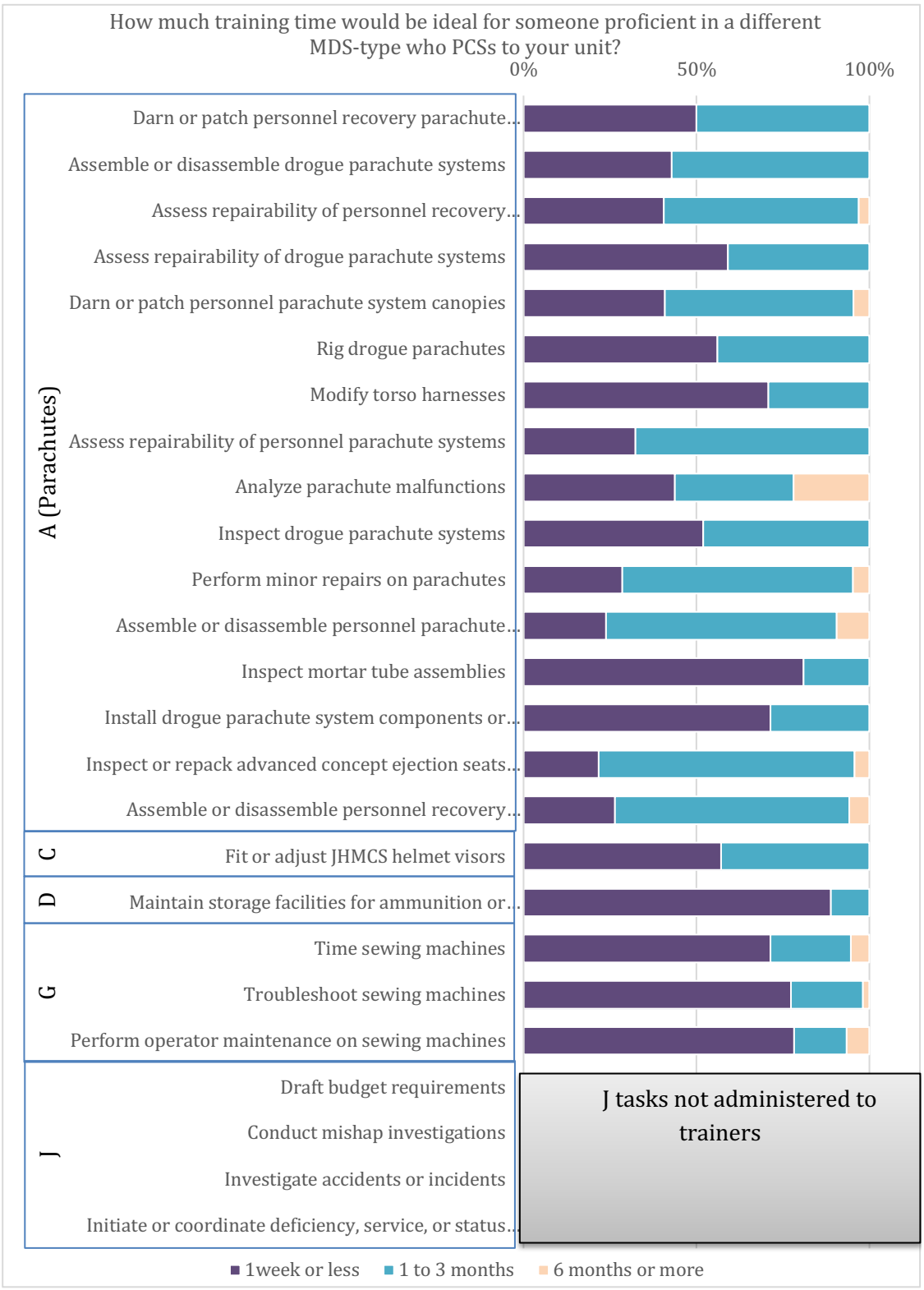
Many participants in the prior RAND study expressed concern about the need for additional training of 5- and 7-levels who move from a different section or MDS type (Hardison et al., 2021). Participants explained that the equipment and procedures differ notably across MDS groupings and aircrew types (e.g., bombers, fighters, helicopters, Guardian Angel units). In addition, within an MDS type, personnel serve in assignments in an aircrew section or an aircraft section, each with different types of tasks. Personnel might have learned to perform the tasks in their section well; however, when they move to a different section or MDS type, they may have little generalizable experience to the new section or MDS. As a result, 5- and 7-levels typically need to be trained in the new section or MDS-type tasks.

To explore this further, we asked trainers to estimate, on specific tasks that they train, the ideal amount of training needed by people moving to new sections or MDS types. We also asked them to indicate whether they have sufficient time to provide that ideal level of training. Figure 5.3 shows the ideal training time estimated by the trainers on the same tasks. Again, we see notable differences in the ideal amount of training estimated across trainers. Figure 5.4 shows the proportion of trainers who believe that they do not have the ideal training time available on the most-concerning tasks.

The same prompt was given before the questions: "Some tasks may be trained to some extent in your unit now, but the time spent on training them may not be as much as you think would be ideal. In the follow[ing] sections we ask you questions to estimate how much training time you think should be dedicated to this in an ideal world, if there were no constraints." Therefore, these estimates should also be viewed as aspirational estimates of what the career field needs.

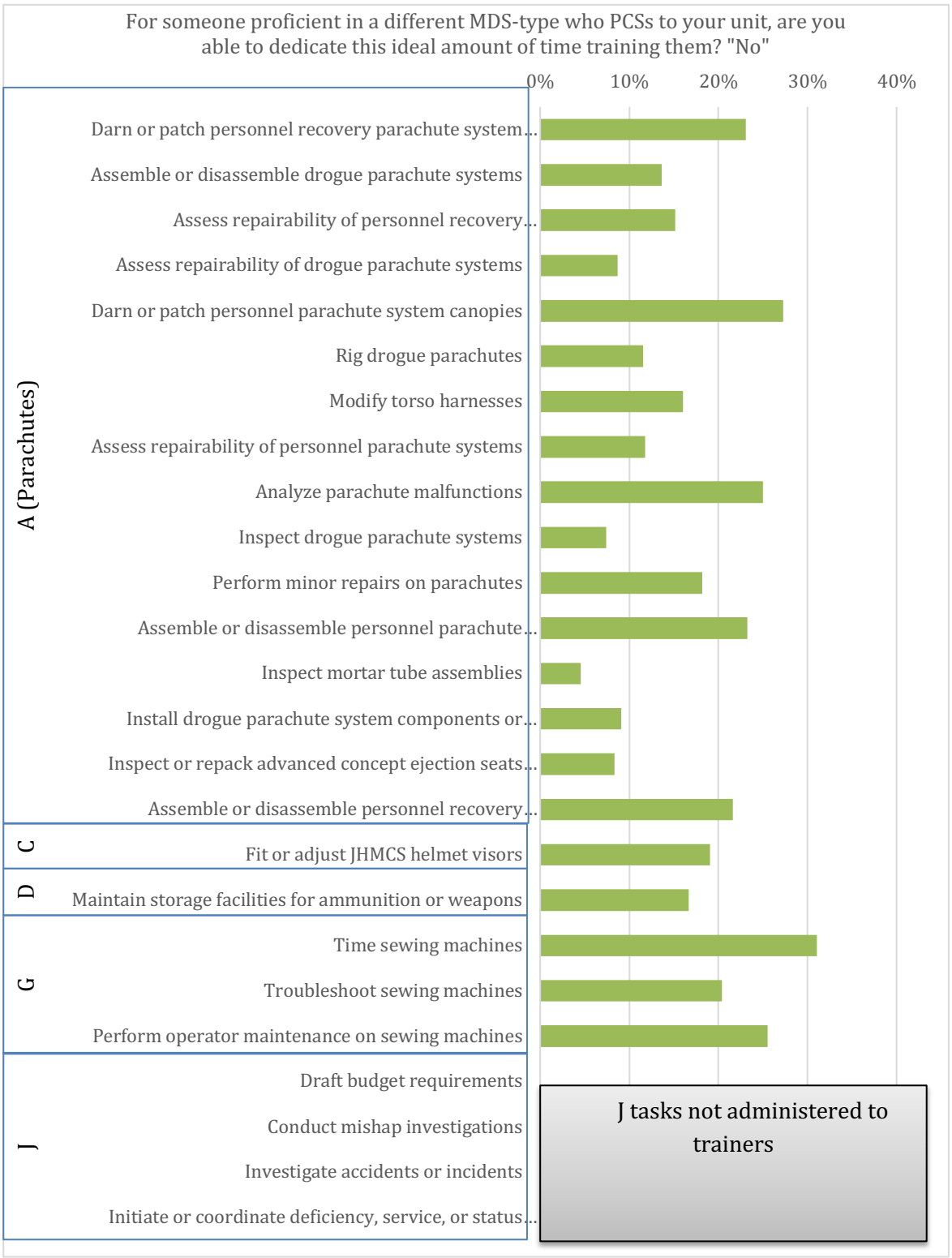
When comparing these estimates with those provided about people fresh out of IST, trainers view that 5- and 7-levels transferring in from other locations require much less time to train, overall. That said, 5- and 7-levels are expected to be performing the work at a competent level. As a result, any time spent addressing training gaps for these personnel is time that senior-level personnel are unavailable to execute the work. This point about potential lack of 5- and 7-levels to perform the work is not intended to suggest that 5- or 7-levels should not require training. Instead, training time for 5- and 7-levels *should* be expected, planned for, and protected from taking a backburner to the work. But if that training time does affect their ability to execute the mission, leaders may need to take steps to reduce the workload expectations for the career field to ensure that the workforce can maintain this needed training.

Figure 5.3. Percentage of Trainers on the Amount of Training Time That Is Ideal on the Most-Concerning Tasks After Moving



NOTE: The number of responses ranged from 13 to 58. The lettered categories refer to task groupings.

Figure 5.4. Percentage of Trainers Saying the Ideal Amount of Training Time for Someone Who Recently Moved Is Not Possible on the Most-Concerning Tasks



NOTE: The number of respondents ranged from 13 to 58. The lettered categories refer to task groupings.

Obstacles to Training in the Field

We asked trainers (for each of the tasks that they train) which of the following factors constrain their ability to train personnel on that task:

- equipment availability
- workspace availability
- too many students per instructor to teach effectively
- trainee scheduling problems
- instructor scheduling problems
- too much other work to execute in the unit.

Participants were asked to check all that apply. Table 5.1 shows the results for the most-concerning tasks. In the table we highlighted in pink all cells when the constraint was selected by more than 20 percent of the respondents. As shown in the table, the sample sizes for most of these tasks were smaller than five and were therefore omitted from the table.

Table 5.2 shows a list of all other tasks (i.e., tasks that were not on the top 25 most-concerning list) for which at least ten respondents provided an answer. As can be seen in the table, for nearly all tasks, "too much other work to execute" was selected by 30 percent or more of the respondents. "Trainee scheduling problems" also was selected as an obstacle by more than 20 percent of respondents on about half of the tasks shown in the table. In addition, there are a few tasks for which some trainers viewed workspace availability and equipment availability to be constraints.

Following this question, participants were asked whether there were any other obstacles that prevented training that were not already reflected in that prior list, and 195 participants wrote in a response. We categorized their comments according to the type of obstacle that was mentioned or the type of comment that was offered—which in some cases were not a new obstacle but an elaboration on one of the obstacles already listed.[34]

The first two obstacle categories were the most frequently cited; both relate to demands on people's time:

- There are too many distractions, interruptions, or other duties to perform training.
- The workload or operational tempo (OPTEMPO) is too high, and there are not enough people (most viewed this as an obstacle, but a few commented that high OPTEMPO was helpful).

[34] We used a systematic coding process to identify the major comment themes. Two researchers first reviewed the comments and identified a starting list of themes. One researcher then coded (i.e., binned) a subset of the comments into the themes and added additional themes to capture new ideas identified while coding. The second researcher then spot-checked the coding and identified areas where there were discrepancies or areas of disagreement. The researchers then worked together to further refine the themes and clarify them and prevent additional disagreement. The first researcher then coded the entire sample of comments using the refined list of themes.

The next set of categories, also mentioned by multiple respondents, offered a range of criticisms of the training content or availability:

- The right training (or a specific type of training) is not available.
- The training is poor (or the trainers are not skilled enough).
- Trainers are not available to provide the training (there are not enough people with the right expertise, or there are not enough trainers).

Table 5.1. Percentage Selecting Each Obstacle as Interfering with Training on the Most-Concerning Tasks

Task	Description	*n*	Equipment Availability	Workspace Availability	Too Many Students per Instructor	Trainee Scheduling Problems	Instructor Scheduling Problems	Too Much Other Work to Execute
A0021	Darn or patch personnel recovery parachute system canopies							
A0005	Assemble or disassemble drogue parachute systems	1						
A0014	Assess repairability of personnel recovery parachute systems	3						
A0012	Assess repairability of drogue parachute systems	1						
A0020	Darn or patch personnel parachute system canopies	3						
A0072	Rig drogue parachutes	1						
A0043	Modify torso harnesses	1						
A0013	Assess repairability of personnel parachute systems	4						
A0001	Analyze parachute malfunctions							
A0032	Inspect drogue parachute systems	2						
A0051	Perform minor repairs on parachutes	4						
A0006	Assemble or disassemble personnel parachute systems	4						
A0033	Inspect mortar tube assemblies	1						
A0042	Install drogue parachute system components or accessories	1						
A0034	Inspect or repack advanced concept ejection seats (ACESs) II	1						
A0007	Assemble or disassemble personnel recovery parachute systems	2						
C0124	Fit or adjust JHMCS helmet visors	2						
D0176	Maintain storage facilities for ammunition or weapons	1						
G0280	Time sewing machines	9	33%	33%	33%	44%	44%	44%
G0281	Troubleshoot sewing machines	7	29%	29%	43%	57%	29%	43%
G0264	Perform operator maintenance on sewing machines	7	29%	29%	14%	29%	29%	57%
J0389	Draft budget requirements							
J0380	Conduct mishap investigations							
J0401	Investigate accidents or incidents							
J0399	Initiate or coordinate deficiency, service, or status reports, such as material deficiency reports (MDRs), with other agencies				J tasks not administered to trainers			

NOTE: When the obstacle was selected by more than 20 percent of the respondents, the cells are highlighted in pink. Results for which the number of trainers was fewer than five are omitted.

Table 5.2. Obstacles That Interfere with Training on All Tasks Noted by Ten or More Respondents

Task	Description	*n*	Equipment Availability	Workspace Availability	Too many Students per Instructor	Trainee Scheduling Problems	Instructor Scheduling Problems	Too Much Other Work to Execute
A0037	Inspect personnel parachute systems	11	18%	27%	18%	9%	0%	45%
B0083	Fold and pack life rafts	12	8%	17%	17%	17%	8%	42%
B0088	Inspect life rafts	12	8%	17%	17%	17%	8%	42%
B0089	Inspect LPU components or accessories	14	7%	21%	14%	14%	7%	43%
B0090	Inspect LPUs	14	7%	21%	14%	14%	7%	43%
B0093	Install LPU components or accessories	11	9%	18%	18%	9%	0%	45%
B0096	Pack LPUs	15	7%	20%	20%	13%	7%	47%
C0113	Build-up helmets	15	20%	20%	20%	7%	0%	33%
C0120	Fit or adjust eye protection devices	16	13%	19%	19%	19%	0%	25%
C0121	Fit or adjust helmets, other than joint helmet-mounted cueing system (JHMCS) helmet display units (HDUs)	13	31%	23%	15%	8%	0%	38%
C0123	Fit or adjust integrated chin and nape straps (ICNSs) or nape straps	16	19%	19%	13%	13%	0%	31%
C0126	Fit or adjust NVDs	13	8%	15%	23%	8%	0%	23%
C0128	Fit or adjust oxygen masks	17	12%	18%	24%	18%	6%	35%
C0137	Inspect, assemble, or disassemble oxygen masks	16	13%	19%	19%	13%	0%	31%
C0142	Maintain protective helmets	15	7%	13%	13%	13%	0%	27%
C0145	Mount boom microphones on helmets	12	0%	8%	17%	17%	0%	17%
C0148	Patch, repair, or replace helmet custom edge rolls	11	18%	27%	18%	9%	0%	18%
E0198	Inspect electronic communications equipment or signaling devices	11	9%	18%	9%	9%	0%	18%
E0200	Inspect survival radios	19	11%	16%	21%	21%	21%	37%

Task	Description	*n*	Equipment Availability	Workspace Availability	Too many Students per Instructor	Trainee Scheduling Problems	Instructor Scheduling Problems	Too Much Other Work to Execute
E0203	Program survival radios	13	31%	23%	15%	15%	8%	31%
E0204	Register beacons, radios, or search and rescue satellite-aided tracking (SARSAT) frequencies with outside agencies	13	8%	15%	15%	15%	8%	31%
F0210	Assemble or disassemble ACCAs	19	21%	16%	21%	37%	21%	37%
F0211	Assemble or disassemble ACDE components or accessories, such as building D-bags or D-1 bags	17	18%	24%	18%	35%	12%	41%
F0212	Conduct ACCA team training	16	19%	19%	19%	44%	25%	38%
F0213	Conduct ACDE don or doff procedures	14	29%	14%	21%	29%	7%	43%
F0214	Conduct aircrew decontamination procedures	19	21%	11%	16%	37%	21%	37%
F0219	Decontaminate or mitigate ACCA work areas	15	27%	13%	20%	33%	13%	33%
F0224	Fit or adjust ACDEs	16	19%	19%	19%	44%	13%	44%
F0225	Inspect ACDEs	16	13%	19%	19%	38%	13%	38%
F0226	Inventory ACDEs	16	13%	19%	19%	38%	13%	38%
F0227	Issue ACDEs	16	13%	13%	19%	44%	13%	38%
H0284	Assemble or disassemble survival kits	14	14%	14%	21%	29%	7%	43%
H0285	Assemble or disassemble survival vests	12	17%	17%	17%	25%	0%	42%
H0300	Demonstrate use of flight equipment	12	17%	8%	8%	33%	8%	42%
H0305	Inspect AFE continuation training equipment	17	12%	18%	24%	29%	12%	29%
H0306	Inspect aircraft installed flight equipment	17	12%	12%	18%	29%	6%	41%
H0307	Inspect anti-exposure suits or liners	13	8%	15%	23%	23%	8%	46%
H0311	Inspect survival components	17	18%	18%	24%	29%	12%	41%

Task	Description	*n*	Equipment Availability	Workspace Availability	Too many Students per Instructor	Trainee Scheduling Problems	Instructor Scheduling Problems	Too Much Other Work to Execute
H0312	Inspect survival vests	12	17%	25%	25%	33%	8%	33%
H0315	Inventory aircraft installed equipment	16	13%	13%	19%	31%	6%	44%
H0316	Inventory flight equipment, other than aircraft installed equipment, ammunition, weapons, pyrotechnics, or ACDEs	14	7%	14%	14%	29%	0%	36%
H0322	Maintain safety data sheets (SDSs)	11	9%	9%	9%	27%	9%	55%
H0327	Perform quality assurance (QA) checks on flight equipment	14	14%	14%	29%	36%	29%	43%
H0330	Remove or install flight equipment onto aircraft	15	7%	13%	20%	40%	7%	40%
H0331	Remove or install hardware, such as grommets or snaps	14	21%	21%	29%	29%	7%	50%
H0332	Remove or install survival components or accessories	16	13%	19%	25%	38%	13%	44%
H0333	Remove or install survival kits	14	7%	14%	21%	21%	0%	43%
H0340	Schedule equipment for inspection, repair, or maintenance	14	14%	14%	14%	21%	0%	50%
H0343	Track misplaced or lost equipment	14	7%	7%	14%	29%	7%	43%
H0344	Track TCTO or TCTD inspections	14	21%	14%	21%	21%	0%	50%
H0345	Transport personnel or equipment on flightlines	11	9%	9%	18%	36%	9%	36%

NOTE: When the obstacle was selected by more than 20 percent of the respondents, the cells are highlighted in pink. Task number for linking to the occupational analysis report are shown in the leftmost column. Tasks where the number of trainers responding was fewer than 10 are omitted. NVD = night-vision device.

Other topics mentioned by multiple participants included:

- moving sections or PCSing
- not enough funding or resources

- reserve- or guard-specific training constraints (e.g., not enough mission-essential skills training [MEST] days to get people proficient, seasonal training, one weekend a month).

Topics that were mentioned by a few participants included:

- poor leadership or leadership issues (e.g., poor planning, last-minute scheduling, lack of accountability)
- morale, attitude, stress, and burnout (most viewed this as a problem, but a few commented that people's morale or attitude was good)
- AFERMS or DPAS taking up excessive amounts of time (both while training people to use either system and in efforts spent on maintaining DPAS information)
- examples of training logistics issues (e.g., scheduling)
- focusing on being a jack-of-all-trades, master of none prevents development of depth
- issues with TOs.

Implications

On several of the most-concerning tasks, sizable proportions of the trainers (more than 30 percent on the post IST training question and more than 20 percent on the recent 5- and 7-level transfers question) indicated that they are not able to spend this ideal amount of time on training. Lastly, the types of obstacles that trainers believe are preventing training from occurring in their sections vary by task type, but workload is the obstacle identified most consistently across all tasks.

In addition, as noted at the outset of this chapter, the results in Chapter 3 speak directly to the issue of need for improved follow-on training. Chapter 2 does as well. In Chapter 2 we identified the most-concerning and moderately concerning tasks. In Chapter 3 we illustrated some of the proficiency findings on the survey that support those tasks being of concern for the career field. In particular, a sizable proportion of 7-levels who are responsible for performing the tasks believe that they lack full proficiency on the task. When asked how much training time is ideal after someone new leaves IST and after a 5- or 7-level arrives from a different MDS type or a different section, 7-level trainers differed in their answers; however, on several of the most-concerning tasks, more than half of them estimated between one and three months.

Taken as a whole, this information suggests that greater emphasis needs to be placed on protecting training time of personnel after they leave IST and after they move from a different section or MDS type. It also suggests that, without a way to reduce the workload or infuse more trainers and trained personnel to accomplish the work, the career field may perpetually be unable to provide the amount of training viewed as ideal. Ensuring that the workforce manpower analysis accounts for the ideal amount of training would be helpful in the long term, but in the short term, the career field will need to find alternative strategies to bridge the gap between the ideal training time and the training time that it is currently able to dedicate.

Improving technology for training could be one way that the career field might bridge that gap if it can effectively help reduce the burden on trainers and make training more efficient.

Chapter 8 discusses the workforce's views on the use of technology to help support training. Moving training out of the sections and into a protected environment (e.g., having training units in the field, where trainers and trainees can exclusively focus on training without simultaneously having to balance accomplishing the mission) could be another approach. Such a protected environment could help address some of the trainee scheduling issues that were reported by some participants. This approach of establishing protected field training is discussed further in Chapter 7.[36]

Lastly, there were some most-concerning tasks for which access to equipment and space was viewed as a constraint to training (all were related to sewing). Addressing this constraint would be important if the career field believes that sewing skills are critical to accomplishing the mission. Other tasks (not on the most-concerning list) identified as having equipment and space constraints are also areas in which the career field may want to invest resources to support improving proficiency among the force.

[36] Note that this suggestion to have field training units whose training time is protected is not in conflict with participants' recommendations to eliminate or reduce IST. The aim of the field training unit would be to provide training to personnel in the areas needed most in each particular field location but doing so in a way that still protects instructor and student training time. This is complimentary to the suggestions to reduce or eliminate IST and to shred training.

Chapter 6. What Is Needed for Maintaining Currency?

In RAND's prior research (Hardison et al., 2021), participants frequently discussed the fact that skills degrade when they go unused for long periods. Although personnel might at one point in their careers have been competent in the tasks needed for a particular MDS type or in a specific section type (e.g., aircrew or aircraft support), spending extended time away from that task meant that they required retraining when they encounter those tasks again. Participants described this need for retraining to bring personnel back up to competent levels to be of concern when 5- and 7-levels moved across different MDS types or sections, as explained in the prior chapter. However, participants also described the need as being of concern when personnel perform a task infrequently in their current assignments. Participants also noted that there were many tasks in the career field that personnel perform infrequently, suggesting that retraining (or taking other steps to address skill degradation) may be especially important in addressing the career field's proficiency issues.

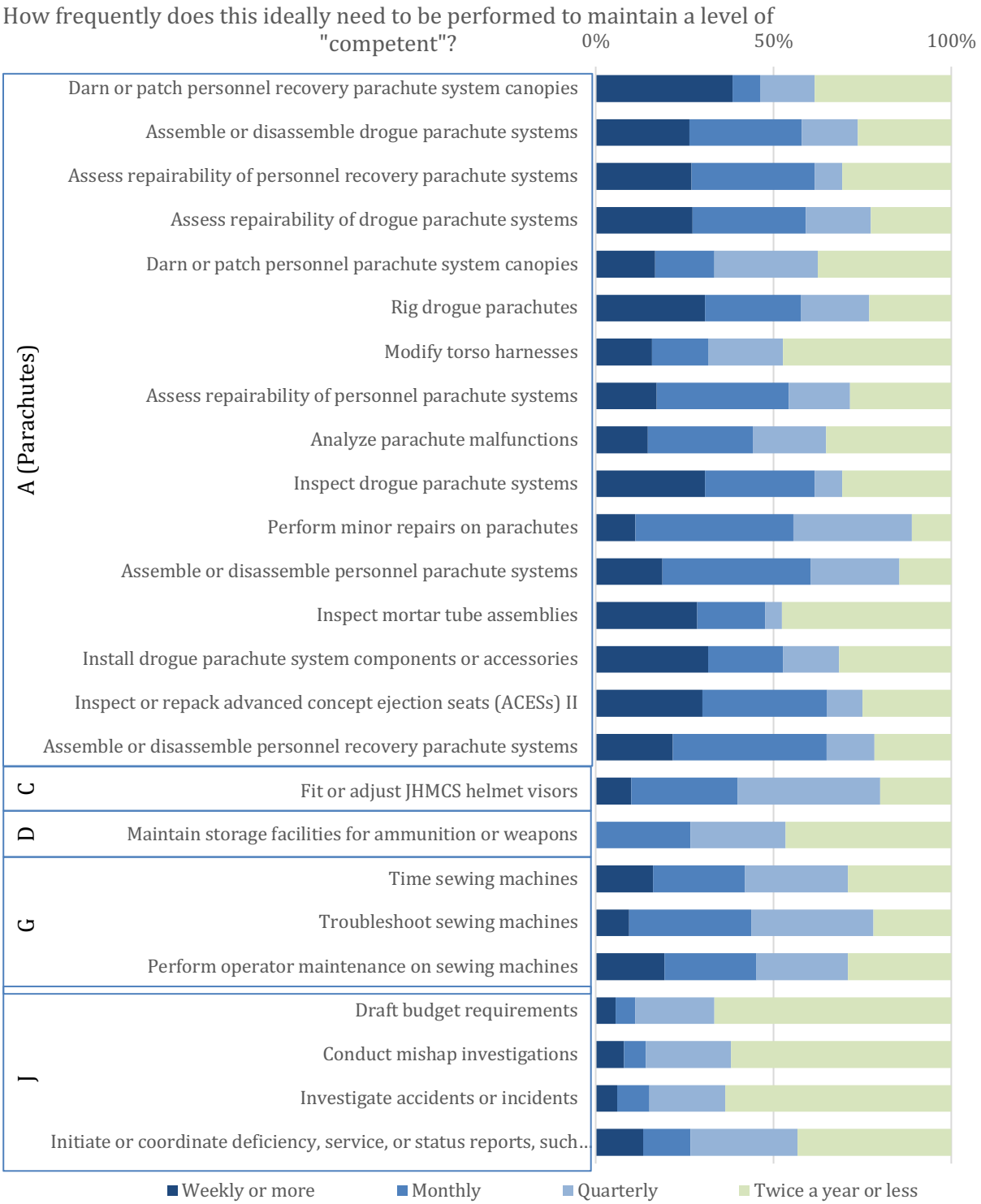
To explore how much training is needed to maintain proficiency over the course of one's career, we asked participants about how frequently they perform the tasks they are responsible for in their current section. We also asked questions to gauge how degradable the skill sets are if not performed frequently, about how often the tasks are typically performed, and how much retraining is needed if someone does not perform the task frequently. In this chapter, we again focus our findings on the 25 most-concerning tasks.

Frequency of Performance of Tasks

Figure 6.1 shows trainers' views on how often the most-concerning tasks need to be performed to maintain a proficiency level of competent. The proportion of trainers who believe that a task needs to be performed weekly is shown in the darkest blue bar, monthly is shown in the next darkest bar, and quarterly is shown in the lightest blue bar. In the green bars we show the proportion of trainers who believe that performing the task every six months or less is sufficient to maintain the skill. As shown in the figure, there are differences in the views of trainers. There are also differences across tasks. For the J duty area tasks, trainers tend to believe that once every six months or less is fine. For the rest of the tasks shown, however, more than half of the trainers believe that a task needs to be performed more frequently.

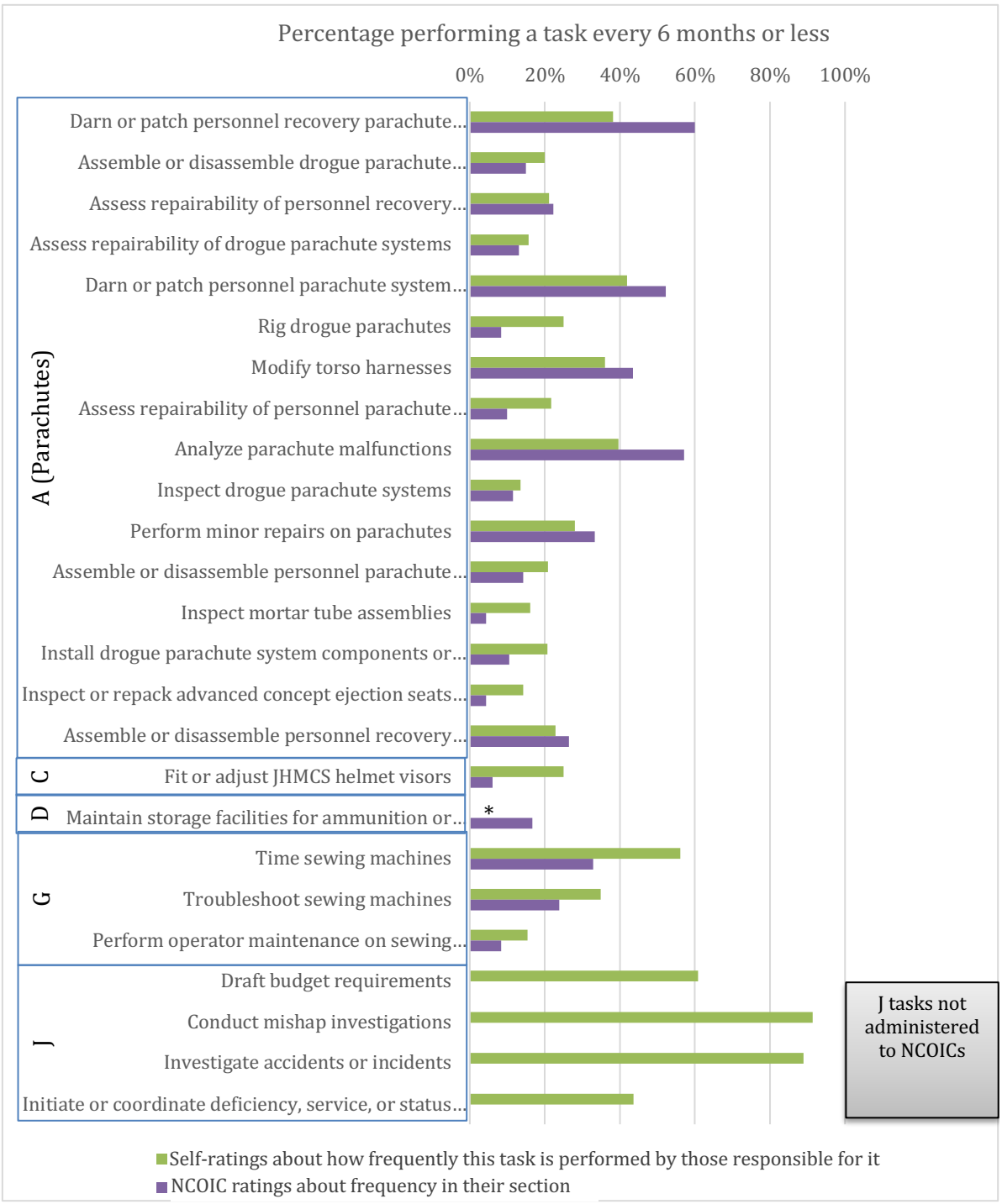
Figure 6.2 shows (of the people who are responsible for that task) the proportion of our respondents saying that they perform each of the most-concerning tasks very infrequently (every six months or less). The figure also shows the proportion of NCOICs saying that the frequency of performing those tasks is less than once every six months in their sections. Only NCOICs who said that the task is performed in their sections provided estimates of frequency.

Figure 6.1. Percentage of Trainers Saying That Skills on the Most-Concerning Tasks Will Degrade If Not Performed Weekly, Monthly, Quarterly, or Twice a Year or Less



NOTE: The number of respondents ranged from 13 to 50.

Figure 6.2. Proportion of Respondents Saying That They Perform a Most-Concerning Task Every Six Months or Less



NOTE: Self-ratings includes all respondents not just trainers. An asterisk indicates the *n* for self-ratings was <5, and the results were omitted. For all other items, the number of responses ranged from 14 to 70 for NCOICs and from 17 to 69 for self-ratings.

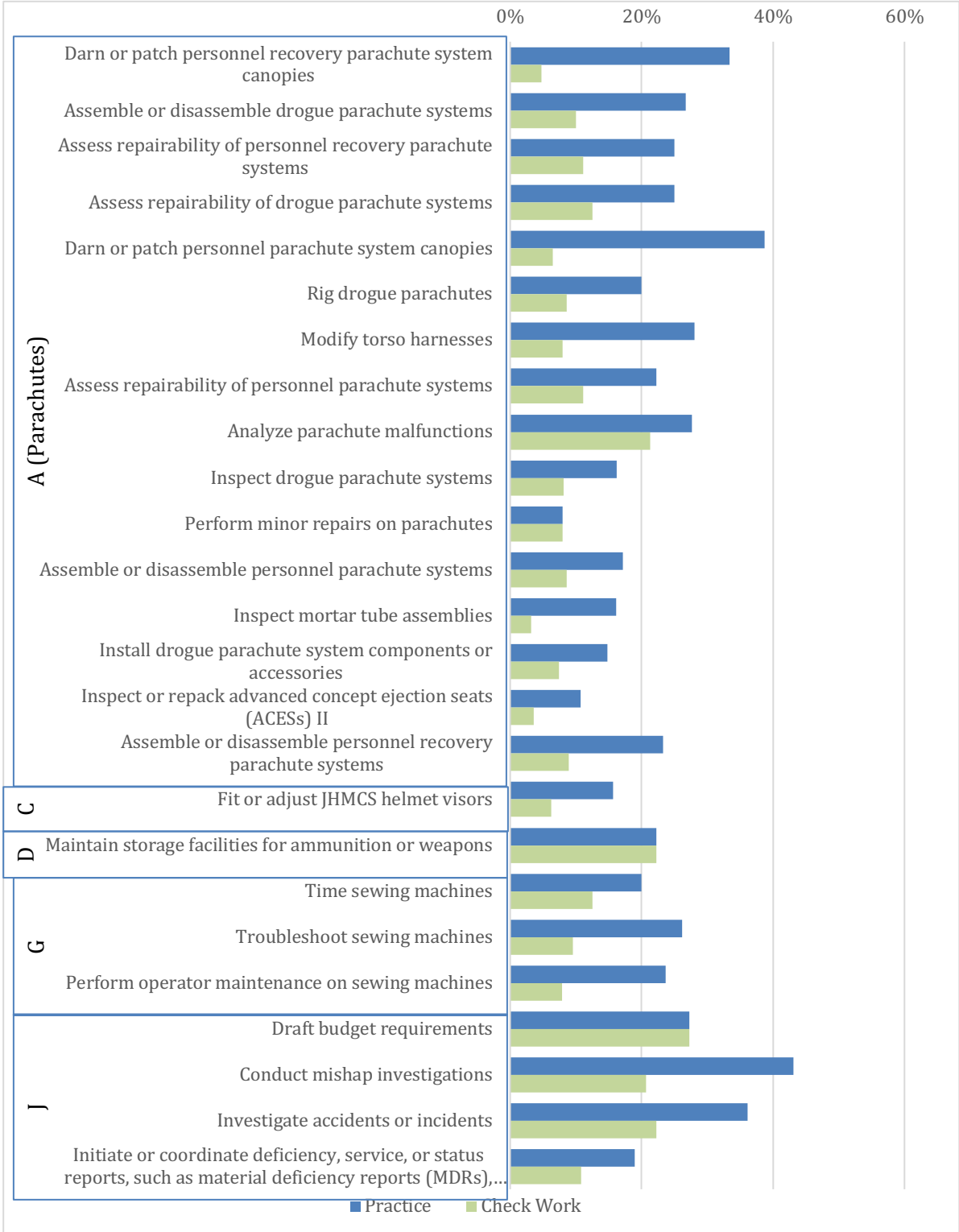
When comparing Figures 6.1 and 6.2, we see that some tasks have high proportions of members of the workforce and NCOICs saying the task is performed once every six months or less, even though the task is one they are responsible for performing in their current assignment. For some of those same tasks, large proportions of trainers believe that the task needs to be performed more frequently than that. One example is "Analyze parachute malfunctions" listed in the middle of both figures. Figure 6.1 shows that about 65 percent of trainers believe that the task needs to be performed at least quarterly (the sum across all three blue bars is 66 percent). In Figure 6.2, the proportion of respondents saying they perform the task once every six months or less is around 40 percent (of those who say they are responsible for the task in their current assignment). Similarly, of the NCOICs who say that their section is responsible for the task, the proportion saying that it is performed infrequently is also high (57 percent). This example is one where the career field may need to establish ways to practice the task periodically (and policies that enforce that practice), for those who perform the task infrequently.

Need for Practice, Checking Work, and Retraining

We asked participants about whether they wanted more opportunities to practice or check their work on the tasks that they are responsible for in their current assignments. As shown in Figure 6.3, respondents reported wanting opportunities to practice more than ways to check their work. The proportion saying that they wanted a way to practice was more than 20 percent on several of the most-concerning tasks. On a few tasks, the proportion exceeded 30 percent.

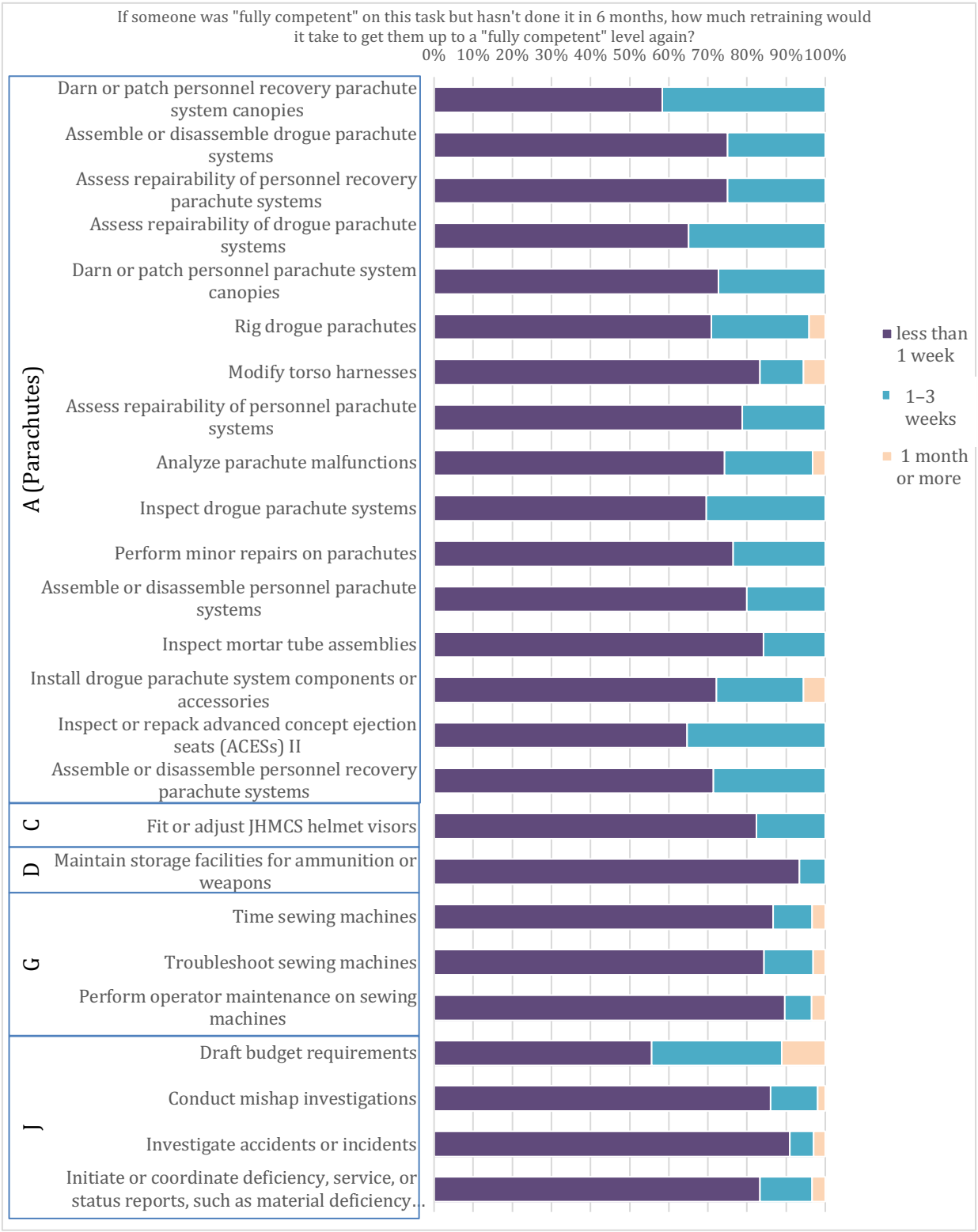
We also asked trainers to estimate how long it would take to retrain someone who was away from a task for six months or more. Figure 6.4 shows the results. As shown in the figure, many said that one week or less of retraining would be required. However, on most of the tasks, a sizable proportion (20 to 30 percent) said that it would take between one and three weeks of retraining. This level of retraining needs to be accounted for in the manning requirements, as it means that the trainee is not ready to perform the work without some protected time to train up for it. It also may mean that a trainer is needed to help make sure that the trainee is properly refreshed on key steps on the tasks. If so, this too needs to be accounted for in the manning requirements. Lastly, if training is needed, there needs to be protected time given to the person who needs the retraining before they are allowed to perform the work. A process for monitoring who is in need of retraining would be important so that the needed time can be set aside and planned for in advance.

Figure 6.3. Percentage of Respondents Who Want More Opportunities to Practice or Check Their Work on the Most-Concerning Tasks



NOTE: The number of respondents ranged from 18 to 70.

Figure 6.4. Estimated Time Needed to Retrain Someone Who Has Not Performed the Most-Concerning Tasks in Six Months



NOTE: The number of respondents ranged from 12 to 50.

Implications

The proficiency levels of the 5- and 7-level workforces, discussed in Chapter 3, speak directly to the question of need for follow-on training. Proficiency on some tasks is low among some 5- and 7-levels who are responsible for performing those tasks in their current sections, which suggests that follow-on training is not adequate in its current state. The tasks for which proficiency is low among 5- and 7-levels are the tasks that the career field should focus on first.

The results presented in this chapter show which of the most-concerning tasks might benefit most from periodic practice to ensure currency when they are performed infrequently. Such practice may require resources that are not currently available or not existing in the units, including practice equipment and practice workspace. Note that other survey items, discussed in Chapters 4 and 8, provide additional insights into needs for hands-on practice equipment and space. These data also suggest that establishing policies requiring retraining (or demonstration of proficiency) when someone has not performed a task after an extended period may be beneficial for some of these tasks. Similarly, policies could be established that require periodic practice to maintain skills when they are not performed frequently.

These retraining needs shown in the data, however, potentially have sizable manpower requirements implications—implications that might not have been previously captured in the AFE career field's official manpower requirements. If the data have not been previously captured, they should be used to inform changes. To explain further, the manpower impacts stem from either the potential retraining time required when someone's skills lapse because of infrequent use or the practice time required to help prevent people's skills from degrading. These results show the total time required on each of the most-concerning tasks if someone performs the tasks infrequently, and they show which tasks tend to be performed infrequently and by what percentage of personnel. This information should be accounted for in the career field's manpower requirements.

Chapter 7. Is Workload Affecting Ability to Train?

Our survey included several items that addressed the extent to which OPTEMPO and work demands are interfering with people's ability to train personnel in AFE.

Workload Predictability and Variability

Understanding task predictability is important for ensuring that the right number of personnel are available to accomplish the work on any given day. If there is greater uncertainty in the workload, or if the variability is high, additional personnel may be needed to cover unanticipated surges in workload or be available for known increases in demands that occur periodically.

We therefore asked participants to rate their workload predictability (1 = not predictable at all, 3 = moderately predictable, and 5 = very predicable) and variability from day to day (1 = not at all, 3 = a moderate amount, 5 = a great deal). The results are shown in Figure 7.1. Responses showed that on average participants viewed their work as moderately predictable. They also, on average, tended to say that there was a moderate amount of variability in task demands from one day to the next. Answers tended not to vary much across skill levels or MAJCOMs on either question (differences were neither practically nor statistically significant from the overall mean). Although AFMC appears to have a noticeably higher mean rating of variability in task demands from one day to the next than the other MAJCOMs, the sample size for AFMC was small (n = 18), and the difference is not statistically significant.

Impact of Extra Duties and Select AFE Tasks

In the prior RAND study (Hardison et al., 2021), many participants in the focus groups talked about the impact of extra duties on the career field's ability to perform training. Participants often commented that AFE is much more likely to be asked to take on various extra duties on behalf of their units than personnel from other career fields. To explore this further in our survey, we asked participants how much they agree that AFE personnel are tasked with these duties more often than the other AFSCs. The response scale ranged from 1 (strongly disagree) to 7 (strongly agree).

We also asked people to indicate whether they themselves are tasked with specific extra duties so that the career field can directly compare their taskings with members of other AFSCs. In addition to the extra duties, participants in the prior study's focus groups also mentioned a number of AFE tasks that are part of the career field's responsibilities but that are viewed as either excessively time-consuming or tasks that other career fields should be responsible for instead. We compiled a list of those tasks (both the non-AFE duties and the AFE tasks viewed by some as burdensome) based on the prior study findings and input from our project points of

contact and asked the AFE workforce which of the tasks they currently spend time performing. The box shows the complete list of the tasks and extra duties we compiled.

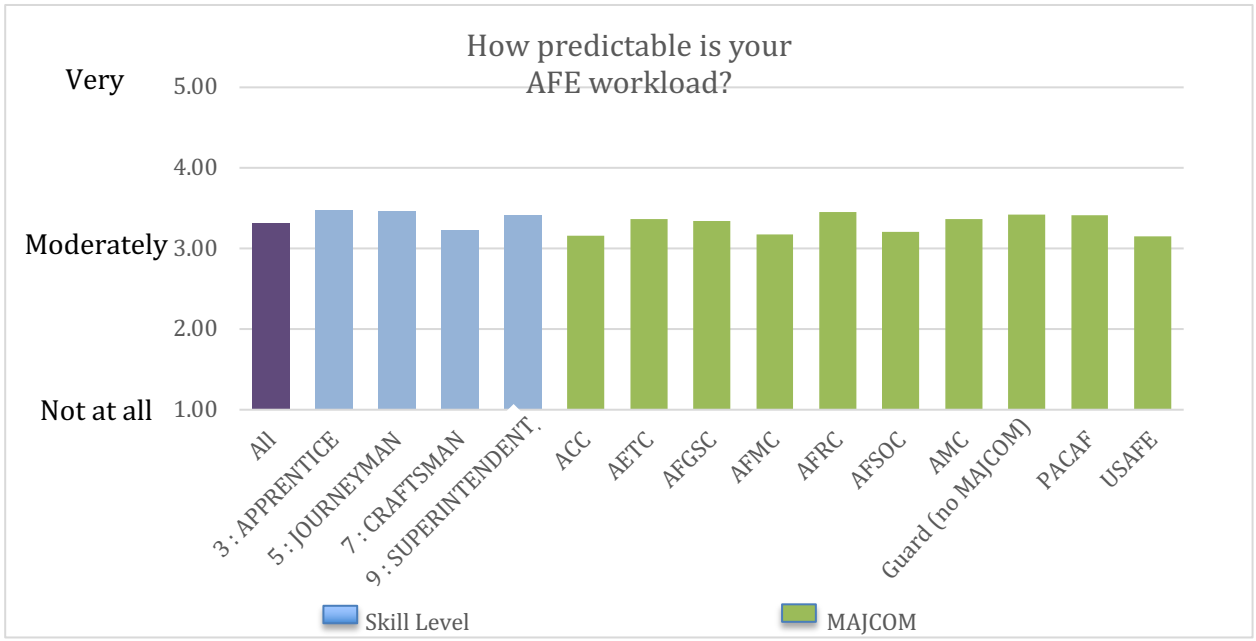
Extra Duties and Other Key SME-Identified AFE Tasks We Presented to Participants

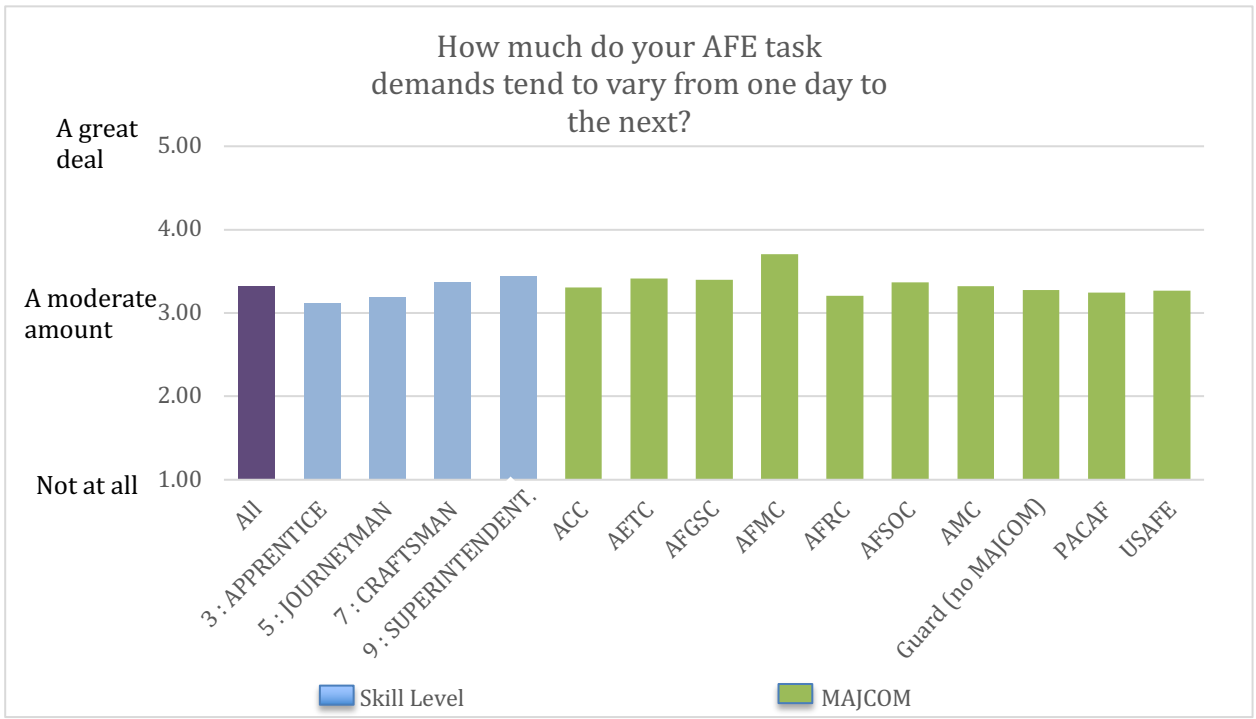
- ACCA
- AFERMS
- Airfield driving
- Building custodian
- Computer program
- Defense Travel System (DTS) monitor
- Drop zone duties
- Enlisted performance reports (EPRs)
- Equipment Custodian Program
- Escort duty
- Explosives safety program
- Extra work resulting from needing to redo someone else's faulty AFE work
- Fitting/training of incentive flyers
- Fitting of visiting aircrew/flyers
- Fixing of broken helmets that aircrew are abusing excessively (beyond normal wear and tear)
- Government Purchase Card program
- Ground safety program
- Hazmat program
- Honor Guard, bay orderly
- Janitorial or building maintenance work (e.g., wiping down bathrooms, raking leaves)
- Maintenance of O_2 and CO_2 bottles
- MAJCOM/HAF data calls
- Managing drug testing
- Management of information technology equipment custodian (ITEC)
- Miscellaneous requests from leadership
- Munitions program
- Precision Measurement Equipment Laboratory (PMEL) program
- Radio set adapters (RSAs)
- Resource advisor
- Security manager duties
- Spillover tasks from other career fields, such as survival, evasion, resistance, and escape (SERE); electrical and environmental; airfield management; avionics, or egress
- Storage and paperwork for munitions
- Supply ordering
- Technical order program
- Tracking of update training
- Turning in faulty equipment
- Unit Control Center member
- Unit executive officer
- Unit safety monitor
- Unit training manager duties
- Unit vehicle control officer
- Unscheduled aircrew training
- Vehicle control program
- Weapon safety representative tasks

Results for respondents' agreement that they are tasked more than other AFSCs are shown in Figure 7.2. Participants on average agreed that they were tasked with extra duties more often than other AFSCs in their units. Strength of agreement varied slightly across MAJCOMs and skill levels, but differences were not statistically or practically significant. In all MACOMs, participants believed that they had more taskings. It is certainly possible that the AFE career field receives the same amount of taskings as other AFSCs but personnel incorrectly believe the number to be more.[37]

[37] Personnel in the career field might not always be in a position to know the amount of taskings that are given to members of other career fields, as many have served as AFE their entire careers. However, the personnel who mentioned this uneven allocation of duties to AFE in our prior RAND study explained that they often can see which of these special duty assignments are given to the AFE personnel in their squadrons versus to other career fields in their squadrons, and they see them given to the AFE members much more frequently (Hardison et al., 2021). That said, it is possible that many of our respondents do not have this direct knowledge.

Figure 7.1. Perceptions of Task Demand Variability and Workload Predictability



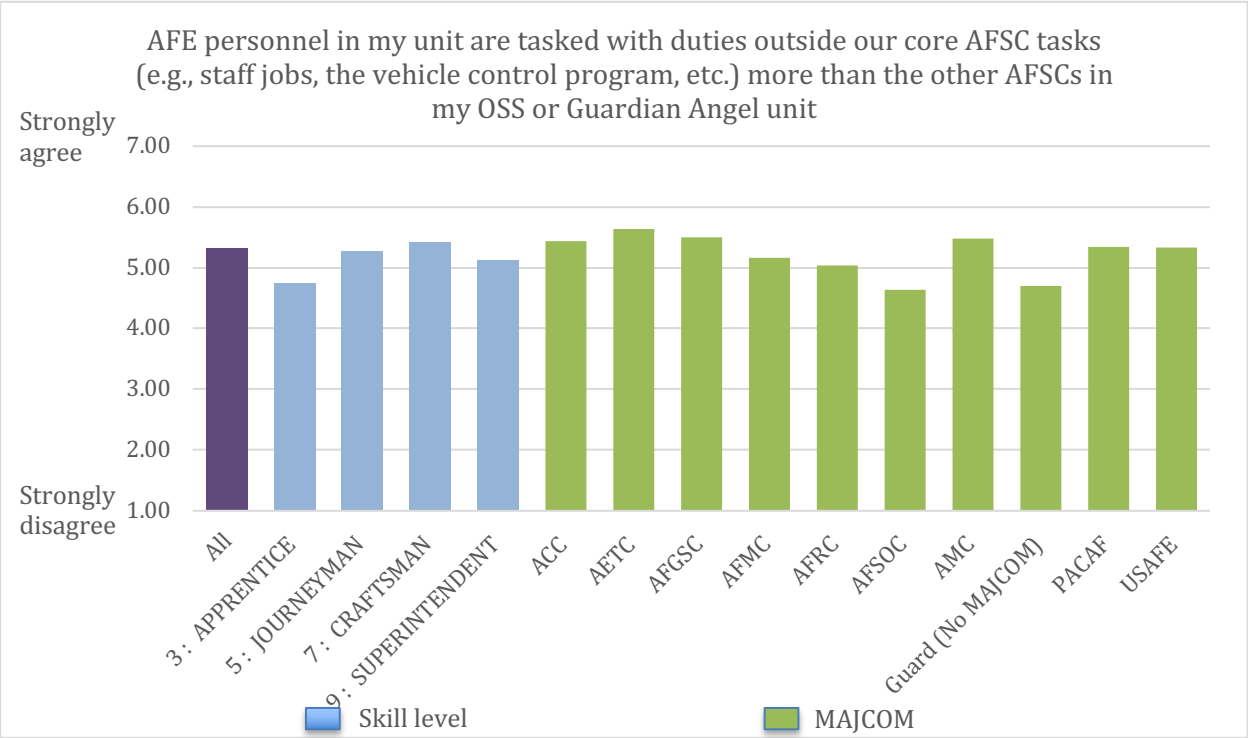


Sample sizes

All	ACC	AETC	AFGSC	AFMC	AFRC	AFSOC	AMC	Guard (no MAJCOM)	PACAF	USAFE	3	5	7	9
993	229	80	59	18	120	73	241	19	104	47	74	187	650	62

NOTE: "All" sample size includes more than the sum of the MAJCOM and skill-level sample sizes because of missing data or responses that were different from those listed above.

Figure 7.2. Average Agreement That AFE Personnel Are Tasked with More Extra Duties Than Other AFSCs



Sample sizes

All	ACC	AETC	AFGSC	AFMC	AFRC	AFSOC	AMC	Guard (no MAJCOM)	PACAF	USAFE	3	5	7	9
501	123	39	28	12	60	41	120	10	41	27	38	91	327	34

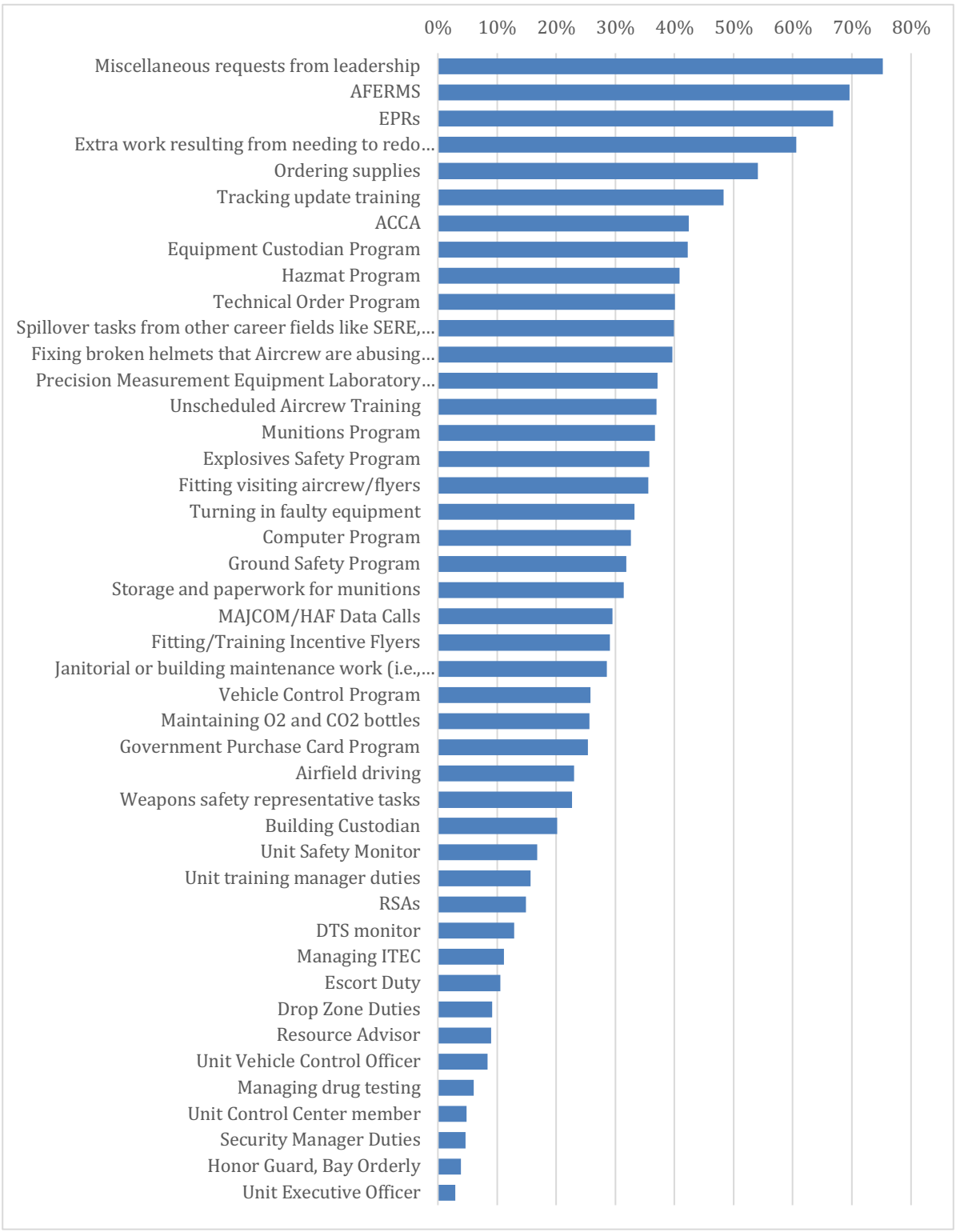
NOTE: OSS = operation support squadron. "All" sample size includes more than the sum of the skill-level sample sizes because of missing data.

In Figures 7.3 and 7.4, we show the proportion of personnel who reported being responsible for each of the tasks or duties shown in the previous box. Figure 7.3 shows the results overall; Figure 7.4 shows the results broken out by skill level. We break out the results by skill level on this item because the impact of each task on the availability of personnel takes on a different meaning depending on the skill levels. If these tasks are taxing the 7-levels, it means that fewer 7-levels are available to provide training. If these tasks are taxing the 5-levels, it means that they have less time to practice and hone their craft. It also means that those 5-levels are unavailable to execute the day-to-day work. As shown in Figure 7.4, the 7-level respondents were consistently more likely to report engaging in each of these activities than the 5- or 3-level respondents.

These results confirm what was reported in the prior RAND study: that miscellaneous requests by leadership are commonplace (Hardison et al., 2021). The figures also show several other tasks (including tasks that are considered part of the AFE job) being performed by many members of the workforce. This includes, for example, entering information into AFERMS,

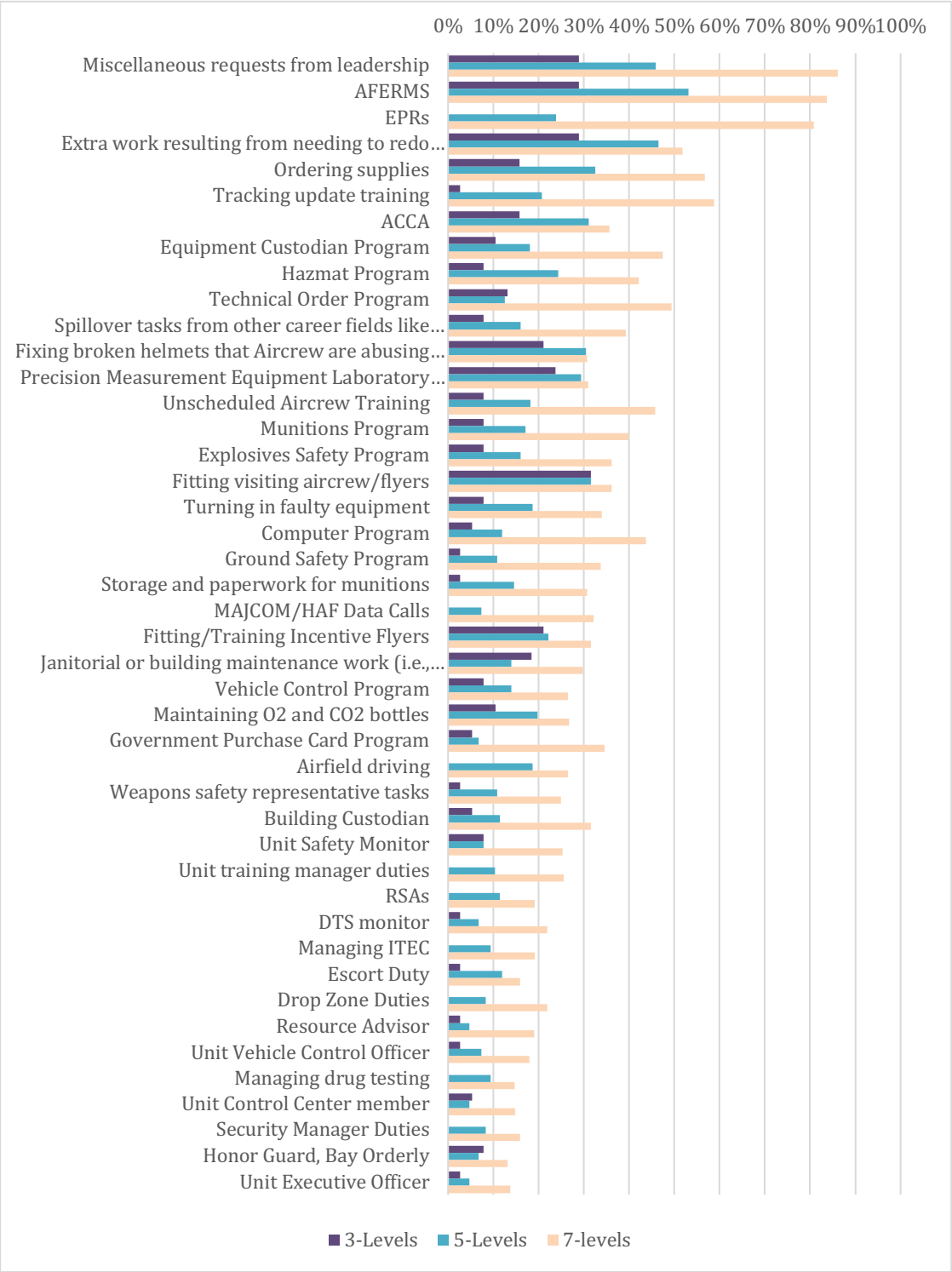
conducting EPRs, redoing work to fix someone else's mistakes, and tracking update training. Although many of these tasks are part of the AFE job; they were included in our survey specifically because they were among those raised in the past RAND report as tasks that are time-consuming and that can detract from time available to perform other work. They were included in this study to help document the amount of time personnel are spending on the tasks and how many personnel spend time on them.

Figure 7.3. Percentage of Respondents Saying That They Spend Time on Various Extra Duties or Other Select Tasks in AFE



NOTE: There were 483 respondents.

Figure 7.4. Percentage of Respondents Saying That They Spend Time on Various Extra Duties or Other Select Tasks in AFE (by skill level)



NOTE: Numbers of responses were 38 for 3-levels, 97 for 5-levels, and 331 for 7-levels. When 3-level bars are omitted in the figure, 0 percent of 3-level respondents said that they perform the duty or task.

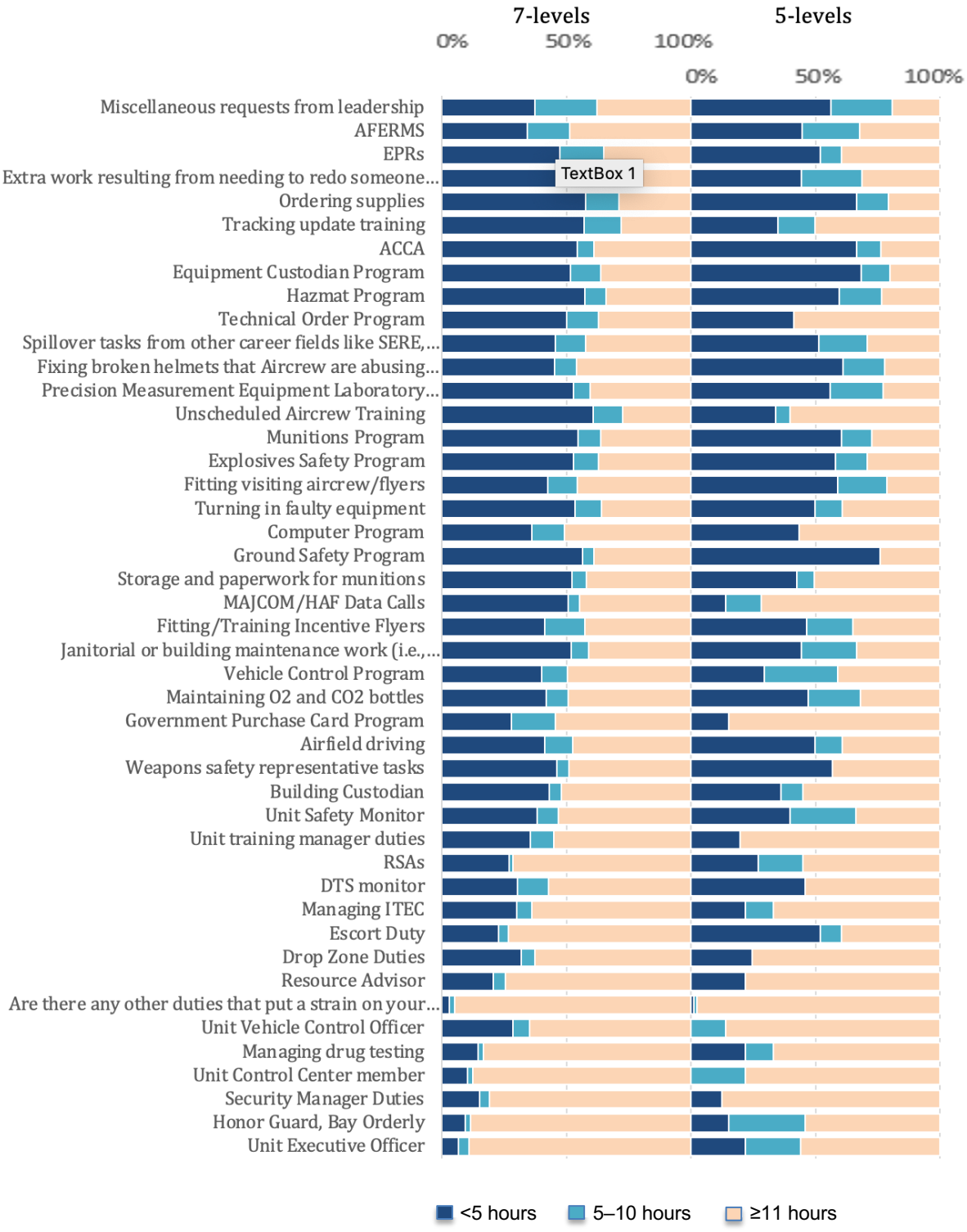
Other notable tasks that were high on the list include a range of AFE tasks that are part of AFE's core mission, but that may not be adequately accounted for in the existing manpower requirements. For example, the figure shows that more than a quarter of the workforce reports spending time fixing equipment that aircrew are abusing, performing unscheduled aircrew training, and fitting visiting aircrew and incentive flyers. In addition, there are AFE core work tasks that appear to be performed by sizeable proportions of the career field that some career field members have said (both in write in comments in this study and in the prior RAND study focus groups) can sometimes be especially time consuming (ACCA lines are an example). Spillover tasks from other career fields (such as SERE and hazardous materials training) are also included.

In addition to exploring which of these tasks and duties people are spending their time on, we also explored how much time they are spending. Figure 7.5 shows, of those who reported performing the task or duty in their current assignments, how many hours they estimated they are spending on it per month. The results are shown separately for 5- and 7-levels. The 3-levels were excluded from the figure because of small sample sizes in most of the tasks and duties. As shown in the figure, there are substantial proportions of 5- and 7-levels who estimated that they are spending 11 or more hours on the task or duty per month.

The results showing sizable proportions of 5- and 7-levels performing these tasks and spending many hours on them has potential implications for the availability of personnel to both accomplish the mission and provide training to the rest of the workforce. Participants in the focus groups in the prior RAND study (Hardison et al., 2021) described many of these tasks as potentially reducing the career field's bandwidth for training. In addition, participants expressed concerns that the burden was falling heavily on 7-levels, the very people who need to focus on training others in the workforce. This information documents how many are affected and how much of their time is being spent.

Although many of these tasks are unavoidable (e.g., EPRs), documenting the time spent on these tasks may help the career field argue for an increase in the manpower requirements or a reduction in some of the duties that are under the control of the MAJCOMs and squadron leaders.

Figure 7.5. Estimated Time Spent per Month, Among Those Performing the Duty or Task



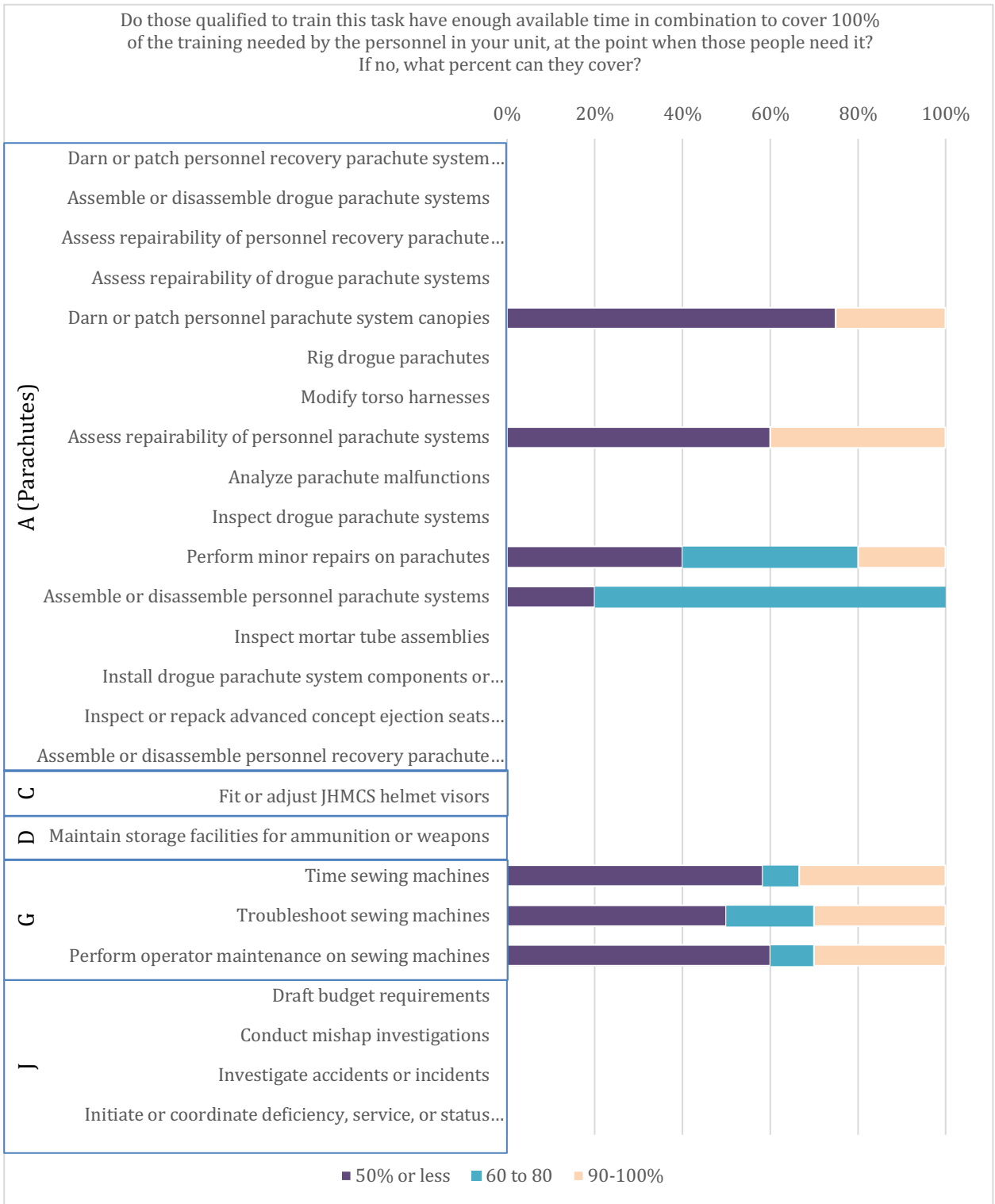
NOTE: Numbers of responses ranged from 5 to 52 for 5-levels and 40 to 285 for 7-levels. Numbers of 3-levels performing these duties or tasks were small on nearly all items; therefore, 3-levels are excluded from the figure.

Number of Trainers Needed

AFE lead trainers are the personnel responsible for ensuring that "training is conducted by qualified and appointed trainers" within their sections (Air Force Instruction 11-301, 2017, p. 34). They are also responsible for ensuring that training is planned for, proceeding as needed, and documented. Given these responsibilities, AFE lead trainers are uniquely qualified to determine whether the trainers they have available in their sections are able to meet the training needs. We therefore asked lead trainers to provide additional information about the trainers in their workforce.

More specifically, we asked them to estimate the proportion of training that can be covered by the qualified trainers in their sections. Figure 7.6 shows the percentage of lead trainers saying that 90 to 100 percent, 60 to 80 percent, and 50 percent or less of the training in their sections can be covered by their trainers on the most-concerning tasks. Sample sizes were too small to report results (fewer than five AFE lead trainers responded) on several of the most-concerning tasks. As a result, only a subset of the task results is shown in the figure. Of the results that are shown, we can see that, for most of the tasks, more than half of AFE lead trainers who responded believed that less than 80 percent of the training can be covered by the trainers that they have.

Figure 7.6. Percentage of Training That Lead Trainers Say Can Be Covered by the People Qualified to Train



NOTE: Number of respondents varies by task, ranging from two to four on items for which results are omitted in the figure and from 5 to 13 on the items for which results are shown.

Although we have focused largely on the most-concerning tasks throughout this chapter thus far, Table 7.1 lists all tasks for which fewer than 50 percent of lead trainers believe that the training needs can be fully covered (i.e., that 100 percent of the training can be covered) or nearly all of it (i.e., that 90 percent of the training can be covered), for those tasks with at least five lead trainer responses. As shown in the table, for a sizable number of tasks, a large portion of sections might not be able to fully meet their training needs.

Table 7.1. Tasks for Which Fewer Than 50 Percent of Lead Trainer Respondents Believe That 90 to 100 Percent of Training Needs Can Be Covered in Their Units

Task ("Do those qualified to train this task have enough available time in combination to cover 100% of the training needed by the personnel in your unit, at the point when those people need it? If no, what percent can they cover?")	*n*	Trainers Can Cover 90% to 100% of Needed Training (% agreement)
Establish ACCA work and rest cycles	5	0
Assemble or disassemble personnel parachute systems	6	0
Establish or implement contingency operations (CONOPs)	5	0
Rig 4-line releases	5	20
Darn or patch personnel parachute system canopies	5	20
Perform minor repairs on parachutes	5	20
Remove, replace, or install personnel parachute system components or accessories	5	20
Decontaminate or mitigate flight equipment	5	20
Troubleshoot sewing machines	11	27
Pack personnel parachute systems	7	29
Perform preventative maintenance on sewing machines	10	30
Inspect restraint devices, such as PCU-17/P or HBU-6/P	10	30
Perform operator maintenance on sewing machines	10	30
Time sewing machines	13	31
Assess repairability of personnel parachute systems	6	33
Fit or adjust anti-exposure suits or liners	6	33
Inspect personnel parachute systems	15	33
Assemble torso harnesses	8	38
Assemble restraint devices, such as PCU-17/P or HBU-6/P	8	38
Inventory pyrotechnics	5	40
Assemble or disassemble survival kits	17	41
Adjust sewing machines	7	43
Forecast munitions requirements	7	43
Conduct ACCA team training	21	43
Schedule equipment for inspection, repair, or maintenance	14	43
Inspect parachute harness components or accessories	16	44
Assemble or disassemble ACCAs	24	46
Conduct aircrew decontamination procedures	24	46
Inspect AFE continuation training equipment	17	47
Inspect survival radios	21	48

Task ("Do those qualified to train this task have enough available time in combination to cover 100% of the training needed by the personnel in your unit, at the point when those people need it? If no, what percent can they cover?")	*n*	Trainers Can Cover 90% to 100% of Needed Training (% agreement)
Operate joint chemical agent detectors (JCADs)	6	50
Repair life rafts	16	50
Assemble or disassemble sewing machine components or accessories	6	50
Program survival radios	16	50
Register beacons, radios, or search and rescue satellite-aided tracking (SARSAT) frequencies with outside agencies	14	50
Track misplaced or lost equipment	12	50
Remove or install hardware, such as grommets or snaps	14	50
Fold and pack life rafts	20	50
Inspect boom-type microphones	6	50
Inspect torso harnesses	10	50
Inspect life rafts	20	50
Pack LPUs	24	50
Decontaminate or mitigate ACCA work areas	18	50
Inventory flight equipment, other than aircraft installed equipment, ammunition, weapons, pyrotechnics, or ACDEs	14	50

Implications

In this chapter, we showed that the workforce views their workload as moderately variable from day to day. The survey results also showed that personnel believe that squadron leadership is tasking AFE more heavily with extra duties than other AFSCs. Gathering this information is important for determining whether the existing manpower analysis performed by AFMAA has adequately captured this workload and correctly factored it into the manpower requirements. This chapter also provided feedback to squadron leadership about the burden that these activities are placing on the AFE workforce.

We also asked members of the career field to report on tasks that are part of their core AFE responsibilities but that prior research suggested may be resulting in an increased workload that has not yet be fully accounted for in the manpower analyses by AFMAA. We therefore recommend sharing these results with squadron leaders and with AFMAA to explore whether changes or adjustments to either the workload or the manpower requirements are needed.

Lastly, these data showed that trainers believe that they do not have a sufficient number of skilled trainers available to meet the training need. Given this shortfall, it would be ideal if skilled 7-levels and 5-levels could be shielded from these extra duties as much as possible, at least for some period, so that the career field can work on ramping up the number of skilled personnel available to train. The use of mobile training teams, civilian, and contract personnel to fill the gaps in trainers temporarily could also be beneficial.

Chapter 8. Are There Other Ways Training Can Be Improved?

This chapter explores survey results that can be used to inform the ways in which training is designed and delivered. We also explored whether new technologies, such as video simulations, virtual reality, or augmented reality, could be used to help support and improve training in the career field.

Training Consistency

In the prior RAND study (Hardison et al., 2021), SMEs talked about differences in how tasks are performed across instructors and locations leading to confusion among personnel about the correct way to perform a task. TOs are an important tool that the career field relies on to help personnel in the field ensure that they are performing tasks consistently across locations and correctly every time they are performed. However, in the prior study, participants also talked about TOs sometimes not containing enough information to clarify how to perform *all* aspects of the tasks, which is part of what leads to some of the inconsistencies across locations, trainers, and personnel. Some participants also noted that there may be multiple acceptable ways to perform a task, but not all are included in the TOs. This too can lead to inconsistencies in how the work is performed and confusion about what is and is not acceptable. We asked several questions on the survey to explore these topics further.

We asked participants to respond to one question about the proportion of tasks that have shortcuts and another question about the proportion that were taught differently from their descriptions in the TOs.[38] The options on both questions ranged from 0 (none) to 5 (all). The results, in Figure 8.1, show that the average response across all participants was between "only a few" and "about half" on both questions. This suggests that some tasks are being taught differently or have shortcuts that are undocumented. AFGSC had the highest average responses on these items, suggesting that there may be more differences between trainers and TOs and more shortcuts in AFGSC than in other locations. However, these differences may simply be due to chance alone. Sample sizes for many of the MAJCOMs shown are small, ranging from ten and 11 (for guard [no MAJCOM] and AFMC, respectively) to 132 and 128 (for ACC and AMC, respectively). AFGSC's sample size on these items was 29.

We asked participants to indicate whether they agreed or disagreed with several statements about training consistency and TOs. Participant responses to the questions are shown in Figure 8.2. The figure is split into two panels. Questions that were worded positively (disagreement

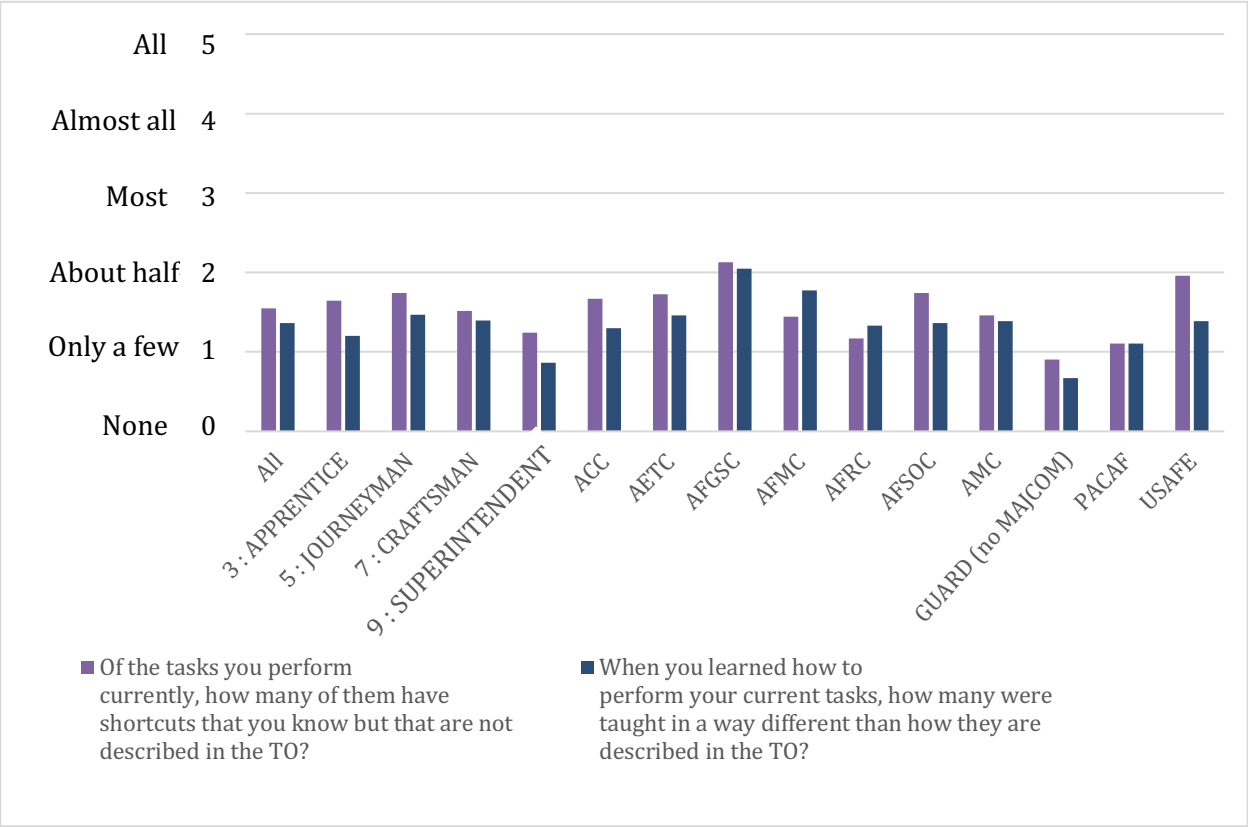
[38] We did not ask whether the shortcuts are considered acceptable or approved ways of performing the tasks. It is possible that there are approved shortcuts, but it is also possible that some shortcuts performed by some personnel or even some trainers may lead to increased risk and might not be advisable.

with the item indicates a concern) are shown in the top panel. Questions that were worded negatively (agreement with the item indicates a concern) are shown in the bottom panel. In each panel, ratings that are colored in red indicate a concern; the darker the red, the stronger the concern. In the top panel, the darkest red represents the proportion of respondents who disagree with the statement. In the bottom panel, the darkest red is the proportion of respondents who agree with it. Within each panel, the statements are rank ordered by level of agreement.

In the second panel, the topmost item shows that more than 60 percent of respondents think that TOs need to be updated. This alone suggests that changes to TOs are needed. In addition, we also see in that second panel (in the bottommost item) that some respondents (over 20 percent) agreed that trainers usually teach them to perform tasks in a way that is different from how it is described in the TOs. This suggests that in some cases either TOs are incorrect and need to be updated to reflect the processes endorsed by trainers or that trainers are not following the correct procedures that have been outlined. In the case of the former issue, it is possible that there are multiple acceptable ways to perform a task and that only one way is described in the TO. If there are multiple acceptable ways, those should all be included.[39] Regardless, the fact that more than 20 percent of respondents agreed with this item suggests that there is room to make some improvements and changes to the TOs or to trainers' adherence to them.

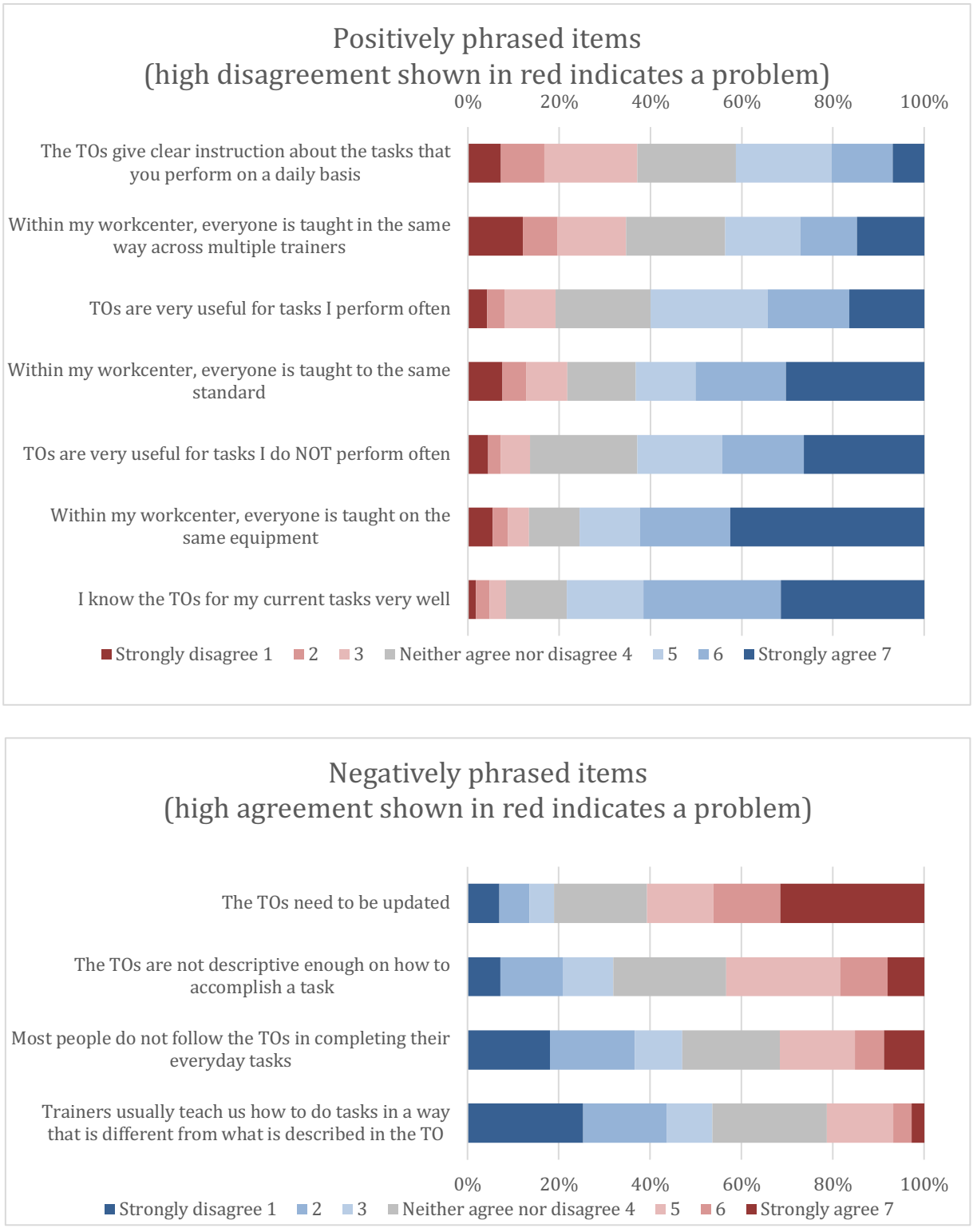
[39] In our prior RAND study (Hardison et al., 2021), participants noted that TOs often specify one way to execute a task but that in some cases there may be other acceptable ways of performing the tasks. This possibility is not documented in many cases; as a result, it leads to confusion among trainees and across units about what is or is not acceptable.

Figure 8.1. Average of Respondent's Estimates of the Proportion of Tasks That Have Shortcuts or Are Taught Differently from TOs



NOTE: There were 532 respondents.

Figure 8.2. TO Items: Proportion of Participants Responding Strongly Agree to Strongly Disagree



NOTE: The scale ranged from 1 to 7: 1 = strongly disagree, 4 = neither agree nor disagree, and 7 = strongly agree. The number of respondents ranged from 498 to 502.

Although nearly half of participants believed that people do follow the TOs when completing their everyday tasks, just over 30 percent of respondents believed the opposite—that people *do not follow* the TOs. The survey responses indicate an even split between people agreeing and disagreeing that TOs provide clear instructions and are descriptive enough.

When we looked at the responses to these items by MAJCOM, we saw similar results for most items. In the few cases in which there were some slight differences, the differences were not statistically significant.

High-Tech and Low-Tech Approaches to Training

The survey included a question exploring whether participants believed that training and performance can be improved with the use of new technologies, as well as with more-traditional technologies and even low-tech approaches. The question asked respondents to rate the usefulness of each approach for improving (1) training in the schoolhouse,[40] (2) training in the field, and (3) performance on the job. Results are shown in Figure 8.3. A total of 517 personnel responded to this question, and 334 of them were 7-levels. When we looked the responses of 7-levels only, their views were remarkably similar to that of the entire set of respondents. We therefore show the results for the entire sample in Figure 8.3.

One notable finding from these results is the clear preferences for the addition of some approaches versus others. The highest-rated approaches to improve training all relate to low-tech solutions: access to practice equipment, the use of non–virtual reality simulations during the work with practice equipment, mobile training teams, and dedicated training space. Although mobile training teams were among the most highly rated, they were rated as more useful for training and performance in the field than they were for the schoolhouse. Officially sanctioned videos were highly rated for use in the schoolhouse, as well as for training and performance in the field. Of the 57 write-in comments for which participants selected "other" in the survey questions, several elaborated on ways that videos could be used to help improve the TO content.

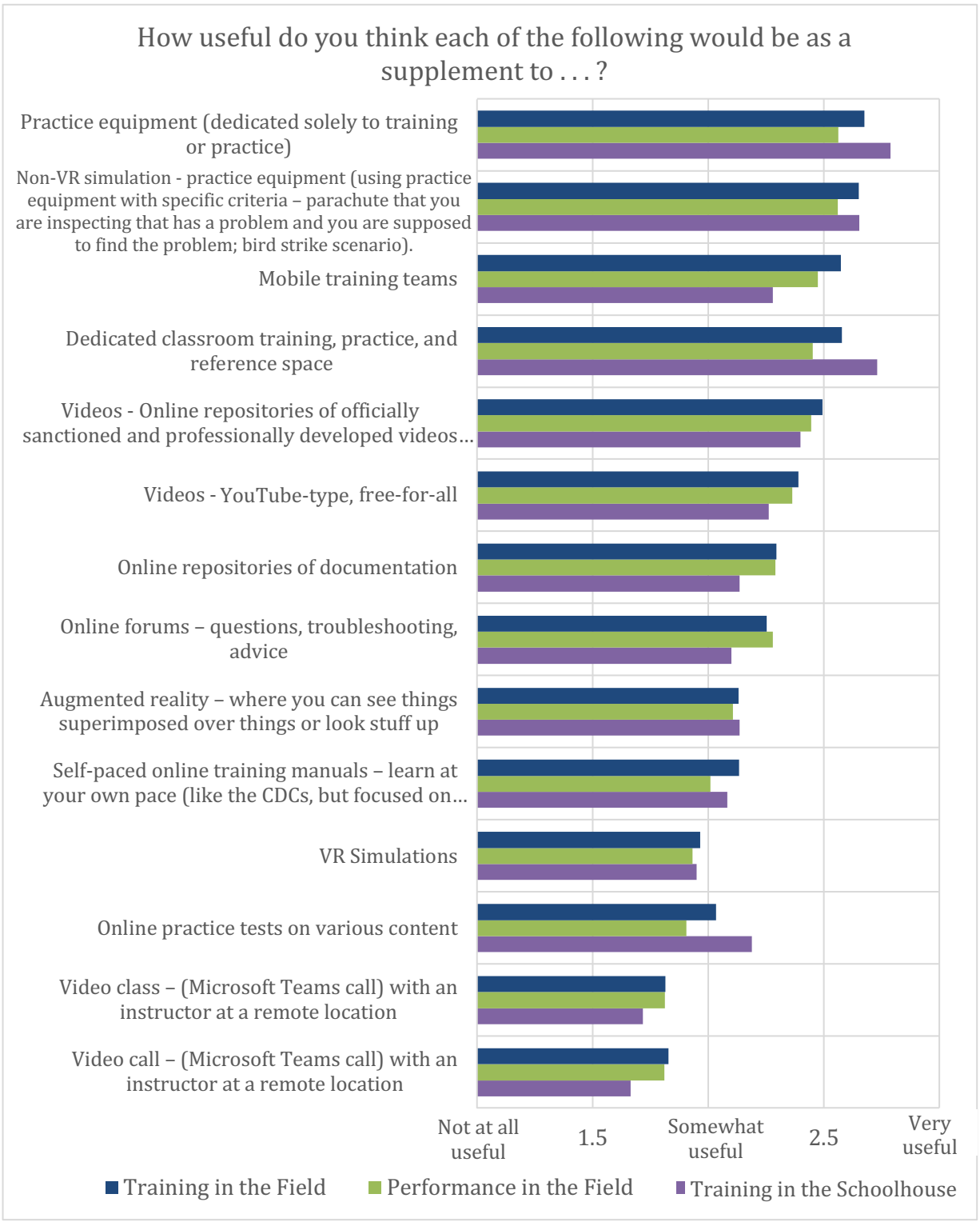
Although the use of how-to videos by instructors was highly rated as a tool for use in all three settings, video classes and video calls with instructors received the least support on the list of options we presented in this question. Virtual reality also was not viewed as especially useful. That said, virtual reality and augmented reality training are not currently used in AFE training; therefore, our participants had not had extended exposure to these technologies when responding to these questions. In addition, AFE personnel are not experts in the technology. It is possible that if they were exposed to these tools, their views on usefulness would change. For that reason, the technologies' usefulness for training in AFE may still be worth further exploration.

[40] In this context, the schoolhouse is essentially equivalent to IST, which is the primary schoolhouse for AFE personnel. However, it could more generally refer to any setting or location where classroom training is being delivered.

There were small differences in the responses across the three different use contexts (the schoolhouse, training in the field, and on-the-job performance) on some of the items. For example, online repositories and online forums were viewed as only slightly more useful for training in the field and for performance in the field than they were for the schoolhouse. Because of the larger sample size on this set of questions (517), this difference is statistically significant. However, from a practical perspective, in this example a mean rating of 2.1 and a mean rating of 2.3 are not that meaningfully different on the scale from 2 (somewhat useful) to 3 (very useful).

A comprehensive summary of the write-in responses to the question about the use of these training technologies and approaches can be found in Appendix B.

Figure 8.3. Mean Ratings of How Useful Each Training Approach Would Be for Training and Performance in the Field



NOTE: Responses options were very useful = 3, somewhat useful = 2, not at all useful = 1. There were 517 respondents. VR = virtual reality. See Appendix E for the full text of survey questions.

NCOIC and Trainer Views on What AETC, HAF, and the MAJCOMs Should Do Differently to Support AFE Training

We asked all trainer and NCOIC respondents the following open-ended question: "What do you wish AETC, HAF, and your MAJCOM would do differently to support AFE training?" Survey respondents logged 367 comments to this question. Almost half of those comments suggested changes to training, both at the schoolhouse and after IST. Among these comments was substantial support either for shredding the career field based on MDS or MAJCOM or for the schoolhouse to focus on training airmen for their units or first assignments. The comments about shredding the schoolhouse for training in the first assignment were discussed in Chapter 3. The following is an example of a suggestion for shredding at the receiving MAJCOM:

> I would like to see AFE technicians go through a MDS qualification course on the airframe/equipment that they are being assigned to. This could be done by AETC concurrently with the Aircrew training pipeline set-up in AETC or can be done at a designated MAJCOM base that is plus'd up on manning to provide designated trainers for the AFE trainees. Lastly, if it must be done at the initial duty station, then HAF should provide the needed MEST and supplemental days (for trainer) to the units instead of publishing a Min-Max MEST requirement that can be underfunded by MAJCOM or Wing level.

The following are examples of comments about shredding the entire career field, as well as some explanations for why shredding is needed and suggestions for how to execute the shreds:

> Ultimately this career field should be re-separated. There are too many tasks and training requirements. It's impossible to become proficient in this AFSC. The expectation to be proficient in over 500 tasks is absurd.
>
> ***
>
> There should be a shred out or separate AFSC for ST [special tactics]/Guardian Angel riggers.
>
> ***
>
> We all know we have way too many tasks in AFE to become SMEs on every piece of equipment so identifying the SME's on the piece of equipment and getting them to train others on it is the only way to fix our career field. We are giving our airmen weak training and expecting them to just know everything or figure it out on their own. If I was CFM [career field manager] for a day the first thing I would do is shred the career field out to fighters, heavies, & GA/STS [Guardian Angel/special tactics squadron]. Yeah, it sucks you might not be able to PCS to certain locations and may be limited in career advancement opportunities but it's not about the individual it's about the big picture and providing safe equipment to our Aircrew and right now we are failing.
>
> ***
>
> HAF should shred out all AFE members into different MAJCOM's upon graduation from the member's technical training. Experience and proficiency are lost when someone PCS's into a different command, especially if they're in a

supervisory or managerial (Superintendent, Flight Chief, etc.) position since they don't know how to run that particular program.

***

It is our duty to protect one of the Air Force's most critical assets: Pilots. By forcing together Life Support and Survival Equipment, it has created an environment that is increasingly more dangerous each year due to technicians having to branch out in their equipment training far greater than should be necessary. If this trend continues, aircraft will be lost more often, and more critically; people will die or suffer grave injuries due to improperly built, fit, and maintained equipment. This is further evidenced by the fact that the majority of Junior NCOs, upcoming Staff Sergeants down through Airman Basic aren't properly trained the way that I had been. Where they were just taught the inspection steps, and weren't educated on the "how" something works, nor the "why" it works like it does. Theory of Operations training is more often than not a thing of the past, and this is a grave mistake.

***

I believe splitting us back into Survival and Life Support would be highly beneficial. At the very least AFPC [U.S. Air Force Personnel Center] should use our SEI [special experience identifier] codes more efficiently. I have been to 4 different bases with 4 different sets of equipment. Every time I move it feels like I have to learn a whole new career. If AFPC would place us in only in locations with our current SEI it would greatly decrease the amount of mishaps and errors made by individuals. If someone does not enjoy a certain type of equipment or work they are assigned to, they should have a way to notify AFPC that they would like to switch to a different SEI. When people enjoy their work, they typically do a better job than when they are miserable, and the "survival" side of our job should absolutely not be done by people who are not good at it.

***

I feel as HAF should shred our career field out. I came from a training base after being there for 7.5 yrs. And coming to an operational heavy unit was a huge change for me and essentially like learning a completely new job.

***

I wish that AFE could be shredded out. To learn about components I haven't seen in 9 yrs at the same base was a waste of time. Let new airmen focus on exactly what will be at their base, either having a shredded portion in tech school or start a system that allows new airmen to go straight to their base to start OJT there.

***

I really would like to advocate for the idea of having AFE shred outs. Stemming from specific training gained at Tech School. As a member who has spent most of their career with Trainers and Heavy Aircraft, being assigned to a unit that supports fighters has been a major challenge. Especially if you are expected to perform at some of the more technical leadership levels either training or overseeing these sections.

***

The only thing I wish AFE did differently was shred us out by airframe for at least a good portion of our career. I was fighters for 6 years and then PCS'd to helos and C-130s where I was made NCOIC. I had to lead people on equipment I had never seen before. I had to focus a lot of my time in training on top of NCOIC roles while also leading my airman and gaining their trust.

***

I think that there should be different shreds for AFE, as soon as we get someone trained up on everything for the fighter shop there sent to our main shop to get signed off on chutes and kits. This is something that is unnecessary if they are coming right back to the fighter shop. Not only have they lost knowledge on the fighter shop training, but once they come back to the fighter shop they will just forget how to pack chutes and kits. I think that if someone is working with fighter airframes then they need to stay at the fighter shop. Unless they have very low work ethic and need to be transferred over to a slower pace shop permanently.

***

I think that people from 3–5 levels should primarily be stationed at bases based off their SEI codes/type of aircraft they are familiar with to keep productivity/training hurdles to a minimum.

***

Our CFETP consists of 1234 individual tasks, that does not include COTS [commercial off-the-shelf] items or additional tasks that we have to do. HAF needs to take a look at that, don't know what they can do better but it's ridiculous to think that any organization can become proficient on all those tasks. I know we have MDS specific ones but think about going from place to place with different MDS's and having to learn all new equipment that is supposed to save a life. For the Pre-Med world HAF needs to approve qualifications at the Unit Level and remove the US Army from telling us who can do our job.

***

Reduce the number of tasks individuals had to be trained on. When it comes to retaining technician proficiency, this is one of the largest factors. Our career field is dependent on SMEs to survive, especially heavy aircraft with an insanely large number of tasks. Realistically, SMEs will NOT be rotated, as we should play to their strengths, and therefore lose proficiency. The true way to fix this problem is instead of turning our career field into shreds of MDS type is to turn our career field into 2 shred of main shop and back shop, similar to how life support and survival were separated. This will reduce training requirements, increase proficiency, and increase manning for shops that desperately need it (such as Heavy airframes).

***

Break the career field back into two different AFSCs. The Airmen that are in now are not re-enlisting due to the overdemand on them to do everything. We are task saturated already. We are expecting people to be a jack of all trade master of none. The amount of tasks one has to be signed off on is too high. Or allow more time for training with current ops tempos remaining what they are. We are asking too much of our Airmen with too little to get the job done.

***

Incorporate shred outs so reduce the over abundance of tasks. MX [maintenance] got this down when they did it, we should do the same thing.

***

Split the career field. Yes, I know "life support" and "survival equipment" will never be a thing, and that actually works in our favor. What doesn't work is the amount of tasks we have (1,093 last time I checked) in our Specialty Training Standard (STS). While I understand that a good number of those are random parachute systems from special warfare and aerial drop functions, and vary from base to base (fighter, heavy, bomber, special warfare, etc.), I believe that two distinct AFSCs under the operations construct (to be clear: not in a maintenance squadron), split to care for either aircraft or aircrew, would best benefit the Air Force. If HAF was able to manage these two AFSCs and allocate the tasks between them, it would significantly improve proficiency rates. While a track system (a semi-shred out) may also be an answer our proficiency issues, there could still be a lot of tasks that do not receive the mastery we look to achieve as a single AFSC. Here is an example with two distinct AFSCs: KC-135 base with two AFSCs—AFSC 1P0X1 Aircrew Support takes all tasks related to personal gear worn or required by an aircrew member: mask, helmet, all helmet accessories (e.g., oxygen to mask regulators, NVGs [night-vision goggles], HMCS [helmet-mounted cueing system], PLTZ [polarized lead zirconium titanate], etc.), ACDE, AFECTI [aircrew flight equipment continuation training instructor], CSEL [Combat Survivor Evader Locator] issue, etc. AFSC 1P0X2 Aircraft Flight Equipment completes all back shop maintenance of aircraft-installed equipment: parachutes, emergency oxygen masks (e.g., EPOS [emergency passenger oxygen system], quick don masks, EEBDs [emergency escape breathing devices], etc.), survival kits, life rafts, PCKs [Proficiency Code Keys], (CRU-60/P, -94/P, -120/P), thermal curtains, escape slides, etc. In this construct, a single flight office with a Superintendent, a Flight Chief, a Quality Assurance NCOIC, a Lead Trainer, an AFECTI, and NCOICs as needed would work similarly to how many maintenance units operate.

***

The career field should be shredded. Fighters and heavies are very different. That would have to happen at Tech School. I also believe the career field should never have been merged from life support and survival equipment into AFE. Every base I have been to still has a basic separation for Life Support and Survival Equipment even though we are all called AFE. Either from working in a fighter squadron working on helmets and masks or at a main shop working on parachutes and survival kits. Knowledge on sewing in general is very very poor. Too many tasks are expected for us to be proficient in. That's not even including additional duties.

***

We cannot be efficient on all the equipment we are responsible for. We need to go back to separate career fields. I know this survey will not change anything, but it needs to be seriously discussed. There are too many responsibilities put upon AFE troops, shop additional duties, continuation training, and squadron additional duties.

Survey respondents also voiced many concerns about staffing AFE units. When new personnel arrive from tech school and are not adequately prepared to perform the tasks in their first unit of assignment, the training burden at the unit increases, which has downstream effects on staffing. If staffing models do not properly take account of the time AFE personnel spend either training others or being trained, the staffing to perform the AFE tasks becomes inadequate. The following are some examples of some general comments about insufficient staffing:

> More bodies in the flight itself because its small here.
>
> ***
>
> Raise manning requirements.
>
> ***
>
> Increase manning so training isn't inhibited by daily workload operations.
>
> ***
>
> Look at the currently workload and realized that AFE is doing a lot of work, and always on a rush to get the job done. There's little to no time to train people.
>
> ***
>
> Having more experienced manning would help offset the workload that gets in the way of training.
>
> ***
>
> Manning would be the #1 thing. But I realize how many difficulties there are when dealing with that. If the MAJCOM's could somehow ensure that proper training was taking place, and that people were retaining the information that was given, that would be beneficial.

The following comments include more specifics about why manning is a problem:

> Account for training during manning. For instance, we have multiple parachute systems and four dedicated bodies, and a high TDY tempo. We have one airman out on primary caregiver leave. And one out for months on convalescent leave. One 5-level in training in training, only the 5 level can pack since the other 7-level cannot get in-process inspections. We have to wait for the 5-level to train on the system before it can be inspected. We have zero wiggle room with our manning.
>
> ***
>
> I wish that AFE was allocated more bodies per section to disperse programs and other non AFE related tasks that are applicable. Instead of having one person running the section and all programs, training etc. More manpower would mean better quality training and more time committed to it.
>
> ***
>
> Wasting time training/re-training individuals fresh out of tech school on tasks they should have already know or know nothing about hinders readiness and manning overall when it comes to TDY/Deployments potentially leading to burn-out of qualified individuals (highly likely in small shops/overseas) because you can't afford a trainee to go to TDY/Contingency Ops.

***

> I have worked in ACC, PACAF, USAF, AFGSC, and AETC. I get a tech school graduate and train them up between 12–24 months. Between 24–36 months I lose that TTG [technical training group] to another base or I receive a newly minted 5-level from a base and have to train them on a completely different MDS. While in PACAF and USAFE specifically, I would go several quarters with insufficiently trained NCOs to train Airmen. This affected readiness and nearly affected daily operations.

Some comments offered specific suggestions changes needed to address the staffing issues that are preventing training. The following are examples:

> Have down days for AFE to complete mass training for all personnel.

***

> Give out dedicated days so that we can spend a full year getting a new troop spun up. 60/90 initial days after tech school and then guard drills for two years does not yield a competent 5 level in a timely manner. Much knowledge retention is lost over time.

***

> My recommendation would be to, for the time being, freeze transfers of shops on station (shop to shop) and allow a continuity of qualified experts and cadre be able to breathe in that position for more than 6 months at a time. I hear a worry about promotion eligibility and growth. Other career fields do not move around as we do, they are able to promote while maintaining the same job. How are they doing it?

***

> Mandate and approve 300 MEST days.

***

> AFRC and AMC should split manning equally across the career field for TFIA [Total Force Integration Association] units. As a whole manning for AFRC is not adequate to support airframes as a whole and AFRC should address this issue to beef up manning to match active-duty manning study.

***

> For my unit specifically with the U2s we need more manning for longer periods of time. It seems to always be the same individuals deploying and getting extended past original return dates. DAV [deployment availability] waivers are used on the regular to fill deployment slots to get individuals replaced in the Dets [detachments]. In my opinion this is a serious problem that will only get worse. This problem can and should be solved at HAF.

***

> Fund validated but unfunded positions in UMDs [unit manpower documents]. The lack of people is a main cause of the training deficiency, we have a million and one things to do daily workwise, then programs, then extra duties, AFE is the catch all for the OSS [operations support squadron]. The more people we have

the easier proficiency will be gained and the better our training programs would be.

***

In the Air National Guard most units all have fulltime manning numbers assigned from professional manpower studies, yet most AFE ANG shop have 1–3 unfunded positions. I wish that NGB [National Guard Bureau] through the DAF [Department of the Air Force] could fund all manpower positions.

***

HAF & AETC: Integrating AFE into field training detachments as AETC members not local unit! Separate AFE Lead Trainer and AFE continuation Trainers from the operational Flight construct. This will relieve the training burden at the Flight level so that daily ops and taskers do not interfere with upgrade or duty position training. Additionally, this will ensure a consistent training plan and quality level that is not dependent on who is the shop/section trainer or their style.

***

HAF, AETC, MAJCOM should review Manning Docs more often. Sending 3 levels to fix a worker shortage only makes things harder and not easier. People are forced to hurry up and train individuals so that they can get their 5 level, to better support the mission and to give people a break that are on swing/night shifts. Provide overly-manned bases TDY funds to go train and elevate strain on lower-manned bases.

***

MAJCOMs and HAF should work with AFPC to get a specific portion of 5/7-levels with SEIs to the appropriate bases to reduce the likelihood of 5 and 7 levels both being underqualified for the MDS.

***

I would like MAJCOM to give us the ability to hire new personnel, we are very short staffed and it is making it extremely difficult on our workforce to maintain the equipment in their section [and] to complete the additional duties that are assigned to them.

***

If commanders did not pull positions from the manning document and farm them out around the Wing, it would be wonderful. Across the AFE community, we are a critical AFSC and a deployable UTC [unit type code], AFE should not be losing manning locally when we are a shrinking AFSC.

***

To better facilitate the Quality Assurance Program as a whole, it would be in the MAJCOM's best interest to allow 3 inspectors in the Quality Assurance section for flight having 60 or more technicians assigned.

***

I believe that contracting out some of the responsibilities that AFE has at [our base] would help us become more efficient in our work. We have too many tasks

> to complete with little bodies to cover everything that it is hard to be trained and stay proficient in our work.

Implications

According to our survey results, personnel in the AFE career field believe that training and information in the TOs is not always as consistent as it should be. They also believe strongly that the use of videos could be beneficial to both improve training and help people maintain currency and perform the work correctly in the field. People reported value in having dedicated training space and equipment and opportunities to practice the skills in the field, as well as during formal training. Mobile training teams were also highly endorsed. In the write-in comments in response to the questions about training technology and approaches, respondents talked about the importance of having dedicated training units in the field where trainer and trainee time was protected and where their attention could be fully dedicated to training. Lastly, in response to our open-ended question about what AETC, MAJCOMS, and HAF should change to improve training, there were many comments expressed about staffing burdens and a need for shredding the career field. Taken in their entirety, these results suggest several sensible and concrete approaches that the career field should consider to improve training.

Chapter 9. Overarching Conclusions and Implications

As set out in Chapter 1, the survey we fielded to enlisted personnel in the AFE workforce covered six topic areas of interest to career field leadership:

- whether there are gaps in proficiency in the workforce
- whether IST is delivering the expected level of training
- whether follow-on training in the field is adequate for bringing personnel up to the needed proficiency levels
- whether there is a need for additional training to maintaining proficiency of 5- and 7-level personnel
- whether day-to-day duties or a lack of personnel interfering with people's ability to train
- ways to improve training and proficiency.

Details on the feedback from survey respondents in each of these areas, as well as about the proficiency of the career field overall, were covered in the previous chapters of this report. Here, we summarize the findings and offer recommendations to improve training in the AFE career field.

Summary of Findings

Are there proficiency gaps in the workforce? Yes. The results summarizing proficiency levels on the most-concerning tasks show that some 7-levels who are responsible for performing the tasks in their current sections do not consider themselves fully competent to perform those tasks. The results also show that NCOICs view only a subset of their workforce as capable of performing certain tasks without assistance or supervision (i.e., at a level of competent or higher). Information about the proficiency levels on these tasks in Chapter 3 and most- and moderately concerning tasks shown in Chapter 2 can be used by the career field to identify where to target training resources first.

Is IST delivering the levels of training expected? No. Survey results show that, in the eyes of trainers in the field, IST might not be meeting its intended proficiency targets on some of the tasks that trainers are responsible for addressing. Results in Chapter 4 show the OAR items for which ratings of IST graduate proficiency are lower than the proficiency targets on linked 2015 CFETP items. However, some tasks in the OAR do not line up exactly with the CFETP's task wording. For that reason, career field SMEs will need to look closely at the wording on linked tasks in the CFETP and OAR and determine whether the discrepancy is too great in any given instance to warrant drawing a firm conclusion. That said, on some tasks the wording is quite similar. In addition, even when there are differences, the results may still be useful in flagging areas in which IST changes may be warranted. Also of interest are the write-in comments about IST. As discussed in Chapter 4, some participants suggested doing away with IST altogether,

reducing it to focus only on tasks fundamental to the entire career field or creating separate tracks depending on the individual's first assignment and teaching only the equipment needed in that assignment. Other participants suggested lengthening IST and making it much more in-depth. Although both ideas were suggested in multiple write-in comments, we did not include a question asking about eliminating or lengthening IST directly and therefore cannot determine whether it is a widespread viewpoint. Many comments did, however, mention shredding IST or focusing it only on tasks relevant to the person's first assignment, suggesting that the recommendation may be a more widely held viewpoint.

Is follow-on training adequate in its current state? No. Chapter 3 shows gaps in the proficiency of 7-levels on many tasks. These gaps (which were among the factors we used to define the 25 most-concerning tasks) could be due to either insufficient follow-on training and insufficient maintenance of these skills or both. Results also showed that NCOICs estimate that more than 25 percent of their workforce is not fully competent on multiple tasks, another factor that we used to define the most-concerning tasks. Chapter 5 shows that many trainers believe that the ideal training time needed to get someone trained to the competent level after IST is not possible in their sections on several key tasks. Reasons why training cannot be completed included lack of availability of qualified instructors and lack of training space and equipment. However, overwhelmingly, trainers viewed interference by other work demands as the biggest obstacle. Some participants suggested that having unit follow-on training be staffed and conducted separately from the sections (i.e., having trainees and trainers assigned to a separate training section or unit) rather than having untrained personnel counted toward a section's manning could be a way to ensure that work demands cannot interfere. Personnel also suggested that shredding the career field could help narrow the focus of follow-on training and help develop depth of expertise.

Does the career field need additional continuation training to maintain proficiency? Yes. Trainers reported believing that many skills degrade if used infrequently and should ideally be performed or practiced frequently (monthly or more on average on most tasks). In addition, respondents indicated that many tasks are performed very infrequently in the field (once every six months or less) by some people who are responsible for them. These results suggest that there should be a process of certifying currency of skill sets and of maintaining them. The approach to maintaining skills could be addressed in a variety of ways.

Is workload affecting the career field's ability to maintain proficiency? In this study, we gathered a range of data that can be used to provide estimates about how much such tasks as extra duties or unanticipated work are affecting the workload in the field. We have not reviewed the latest manpower analysis for the AFE career field (it was underway when we began this study and remained under review when we fielded the survey), so it is unclear if this information is already well accounted for; however, we did meet with the AFMAA personnel to make sure that they were aware of the survey we were conducting. They noted that the results of the survey could provide potentially useful information to inform future manning estimates for the career

field; these personnel were anticipating using the results of our survey to make justified adjustments.

What can the career field do differently to improve training? From our survey results, we learned that AFE personnel want extra support to help them brush up on their proficiency and to check their work, so that they will feel confident that their work will not lead to a safety incident. People believed that the use of videos to illustrate proper techniques for performing the work could be extremely helpful. They discussed ways that videos could be embedded in the TOs to help personnel brush up on their skills and check their work. In their write-in comments, participants also discussed other ways that TOs could be improved. For example, some noted that helping personnel navigate the TOs without losing their place or inadvertently skipping important information could help prevent mistakes or a failure to learn to perform the task correctly.

Comments and survey responses also highlighted inconsistencies between how trainers teach certain tasks and the information in the TOs. Participants suggested using videos to help reduce inconsistencies across trainers or clarify when multiple approaches are acceptable. They also suggested making changes to the TO information and other career field documentation to ensure that alignment of information across sources is maintained.

These types of solutions could be leveraged to help prevent the skill degradation experienced in the career field.

Prioritizing Our Recommendations

We make several recommendations in this chapter; however, we recognize that the career field may need to prioritize these recommendations. We therefore suggest considering the following in establishing the priorities:

- **Focus resources on the areas where training is most needed.** We realize that resources to execute the above changes are necessarily scarce and limited. Our data show which tasks have the greatest proficiency gaps and which tasks the workforce identified as most concerning with respect to potential safety incidents. Resources should be focused on these tasks first. In addition, our data identify tasks for which people want more opportunities to practice or check their work. This could be used to inform which tasks could benefit most from development of videos or practice simulations.
- **Only implement recommendations with high costs for tasks for which safety is a concern.** Some recommendations may require resources, such as simulation or practice equipment. These should be reserved for tasks in which practice opportunities are viewed as likely to be important for maintaining skills and safety is a concern when skills are not maintained.
- **Consider the size of the potential gains.** If the costs of implementing a recommendation are likely to be high, consider implementing it only for tasks when the anticipated gains

might be expected to be high (or sizable enough to justify it). Some of these recommendations might be likely to be more successful or have a greater impact for some tasks than others. For example, if videos showing proper task execution can be implemented and distributed to the force quickly, that could be prioritized for tasks that are complex, in which mistakes have been identified across the force, and in which safety is a major concern. Other tasks might be best addressed through mobile training teams instead of video if oversight by an experienced trainer is considered especially important in catching and correcting common errors.

- **Some recommendations may negate the need for another recommendation.** For example, with respect to retraining needs, if the plan is to provide just-in-time training each time someone's skills degrade, then there is no need to ensure that a practice schedule is implemented to prevent a need for retraining. For each task, a decision needs to be made about whether it is better to let skills lapse and be retrained or to require periodic practice to keep skills fresh.
- **Prioritize both long- and short-term solutions.** It is important to consider how much time it will take to execute the recommendation and realize the potential benefits. Some recommendations will take planning and large-scale changes to execute. Recommendations that can be executed quickly are important to prioritize initially; however, long-term solutions (such as certifying and maintaining skills and addressing AFE work demands) should also be prioritized to help realize benefits in the longer term.

Recommended Changes to Training

On the basis of our findings in this survey and the findings from the prior study's focus groups (Hardison et al., 2021), we recommend that the career field consider the several changes to training.

Our first set of recommended changes focus on changes to IST:

- **Shred IST training.** Train personnel on their first assignment tasks only. Aim for increased depth beyond the level currently attained. This was mentioned as a solution in many write-in comments as a suggested improvement. This would eliminate training on tasks that will not be used in the first assignment. The saved training time could then be redirected to allow deeper training to occur prior to arriving in the field in those tasks needed on arrival, which would reduce the burden on the receiving units. If implemented, a follow-up study should be conducted to confirm whether this improves skills of those arriving at their first assignment (see recommendation about continued study below).
- **Address the perceived gaps in proficiency of IST graduates.** Although the schoolhouse may be providing the curriculum that it believes is achieving the requirements stated in the CFETP, trainers in the field do not agree. The schoolhouse should work with career field leaders to narrow the gap.

- **Consider other changes suggested in write-in comments.** Some comments suggested eliminating or reducing the role of IST. Some also mentioned reducing it to only fundamentals that are relevant to all assignments. This reduction in the role of IST is worth considering, especially if shredding the training is not an option. However, this may place an additional training burden on the field. In addition, some suggested lengthening IST and relying on it more heavily. This too should be considered as an option to reduce the training burden on the receiving units, especially if the training is shredded to align with the first assignment.

Our next set focuses on follow-on training after IST:

- **Build dedicated training units in the field and use mobile training teams.** Create a separate training section or unit in the field in which all IST graduates and new transfers (either because of shop moves or PCSs) go to be trained or retrained before they are placed into a unit. Deploy mobile training teams to help increase access to qualified trainers (i.e., trainers who are considered experts in the tasks).
- **Establish a process of certifying currency and maintaining skill sets.** Track how long it has been since someone has demonstrated proficiency on key tasks that are likely to degrade when not used (and on which MDSs they have that proficiency) and decertify currency after a specific amount of time has lapsed without practice. This can help the career field better match qualified personnel to assignments, provide needed retraining in advance of assignments, and justify manpower requirements resulting from the needed retraining.

With respect to workload and manpower requirements that may be interfering with the career field's ability to train personnel and maintain competence, we also recommend the following:

- **Address concerns about AFE work demands.** Work with AFMAA, operations support squadrons, and Guardian Angel commanders to reduce the work burden. AFMAA should adjust the manpower requirements to account for some of the workload factors that we captured in our data if they are not already well accounted for. Guardian Angel and operations support squadron leaders should review the workload findings about extra duties in our data to explore whether there are ways that they can help minimize the extra duties being levied on the career field.

We have three recommended changes to training technologies, materials, and approaches:

- **Develop videos and embed them in the TOs.** Creating video content would require some development time and resources. However, the potential gains of creating the content would seem to justify the investment. Video content should be incorporated in

stages so that its value could be further explored and confirmed to make sure that resources are spent wisely.[41]

- **Modernize TO technology.** Some participants commented that TOs could be improved to help the user to navigate through the content without losing their place. In addition, a few participants noted that supporting technology, such as replacing broken e-readers, needs to be prioritized to ensure that they are working properly.
- **Invest in practice simulation equipment and make it accessible.** Respondents want opportunities to practice, including access to practice equipment and ways to simulate the work in the field. Ideally, practice equipment and the associated practice simulations would be made readily available to those who want it. However, similar to the development of videos, developing simulations for all tasks would be costly and likely only useful for select tasks. Any simulations should be tested on a subset of personnel first to make sure they are worth the investment on a larger scale.

We have one recommendation about improving the training and quality assurance tracking system that alerts the career field to changes to training that are needed:

- **Devise a system specifically for flagging and recording training issues that is consistent across the career field.** Although the Training Business Area database and the quality assurance databases that are maintained by the career field contain a lot of information, their usefulness in addressing the issues explored in the survey is quite limited. We did explore those datasets for use in this study, but we found that the information included in them varies drastically from task to task, person to person, and unit to unit. For example, the training data show the last time that training was completed but cannot show whether or not someone believes that they are currently at the competent level, just that they were judged to be competent at some time in the past. For many of the individuals, training was completed years before, so the training records on file for a given task are often years old. As a result, the data cannot give a current snapshot of proficiency for the entire force responsible for a given task. In addition, perceived proficiency (of oneself and of others) may differ drastically from the official proficiency records in the system, as was noted by many in our prior study (Hardison et al., 2021). With respect to the quality assurance and inspection records, the information recorded by each unit is so drastically different as to not permit a high-level, force-wide look at problems on a task. The career field needs to establish a set of information to be documented in each quality assurance and inspection record to help inform changes to

[41] There may be many factors that may lead video content to prove less useful than it initially might seem. For example, the frequency with which TO content needs to be replaced may constrain the value of using video content. If TO content needs to be continuously or frequently updated to reflect changes to procedures or equipment, then professionally developed video content that constantly needs to be updated may be quite costly over time. In these cases, the career field should consider whether a process can be established to update video content quicky and inexpensively. If it cannot, then spending the resources on developing video might not be justified.

training. That information should include specifics on what types of activities need to be better documented in the TO or through video demonstrations to help prevent mistakes or improper execution of tasks, what type of practice activities or equipment are needed, obstacles to proper training and retraining people who are making mistakes, and a way to flag a task as something that the career field needs to address at a more central level. Although we recommend considering ways to add information to the Training Business Area database and the quality assurance and control records, we also note that respondents in this and the prior RAND study noted that training documentation and data entry are excessively burdensome already. Careful consideration should be made to ensuring that whatever additional entry requirements are levied are going to be useful for informing training and considered manageable to execute by the force.

Recommendations for Next Steps for Career Field Leaders

In addition to recommending various changes to training and ways to flag training needs as they occur, we also recommend that surveys such as the one we administered in this study continue to be readministered periodically (e.g., every three to five years) and especially after the career field makes changes to training.[42] The survey data presented here should be used as a baseline for comparison to similar future surveys of the workforce to explore whether changes to training are effective at improving proficiency. The survey could be readministered in full, career field–wide, to explore the effects of changes that affect all AFE personnel. In addition, parts of the survey could be readministered to select individuals who have participated in a changed training program or other performance-improvement intervention to explore the value and benefit of that specific program. For example, key elements of the survey (e.g., self-rated and NCOIC views of proficiency, confidence in the correctness of one's work, concerns about the work leading to a safety incident) could be administered to targeted groups of individuals who have been given a TO with embedded video content on parachute packing. In this example, task-specific questions could be limited to only those involving parachute packing tasks.

[42] Surveys such as this one, when administered regularly, can allow for comparisons over time. They can also allow the career field to identify problems as they are emerging—and long before they become a larger, more widespread concern. This survey can help identify when scarce training resources need to be redirected to help address the new concerning proficiency areas, recognizing that the greatest area of concern may change over time. Lastly, the survey should be administered after various interventions, such as changes to training or to how personnel are structured or allocated to assignments (e.g., establishment of shreds, reducing PCSs to new MDS types), to determine whether the changes are leading to improvements and to help determine whether additional changes are still needed. Surveys may be needed more frequently than every three to five years to capture any potential improvements resulting from interventions. Surveys may also need to be modified to include different content to better capture improvements resulting from specific programs or interventions.

Appendix A. Prioritizing Tasks Using the Survey Results

In this appendix, we explain the method used to group the tasks into the categories of most concerning, moderately concerning, and least concerning. To assign each task to one of these categories, we computed what we refer to as the *level-of-concern* score. This score was calculated for each task by averaging responses on several survey questions about that task.[43] These are the variables we used to create that score:

- percentage of 7-levels and 5-levels who rated their proficiency as less than competent (i.e., partially proficient or lower) on the CFETP scale
- average of the NCOICs' estimates of the percentage of personnel in their sections who were less than competent or higher according to the CFETP scale
- average self-ratings of confidence that a respondent's work would not lead to a safety incident
- percentage of respondents who said that they want a way to practice
- percentage of respondents who said that they want a way to check their work
- percentage of NCOICs who said that they were concerned about a task leading to a safety incident among those competent or higher.

Tasks with an average standardized score of greater than 0.75 (meaning that the average across the variables was more than 0.75 standard deviations above the mean) were grouped into the most-concerning category of tasks. Those tasks are listed in Table A.1.[44] Tasks that were higher than 0 and up to 0.75 standard deviations above the mean were grouped into the moderately concerning category, shown in Table A.2. All remaining tasks that were below the mean were given the lowest category designation of least concerning and are shown in Table A.3. We restricted the data shown in those tables to include only tasks for which we had a sample size of 20 or more on at least one of the variables. Tasks that were administered in the survey but did not have at least 20 or more respondents on at least one variable are shown in Table A.4. Tasks that were included in the CFETP but not included in the survey are shown in a list at the end of the appendix.

[43] We standardized each variable to have a mean of 0 and a standard deviation of 1. This was calculated by subtracting each task's mean from the mean across all tasks and then dividing by the standard deviation across all tasks. The coefficient alpha computed across the variables was 0.65. This is marginally below the recommended minimum of 0.70 suggested by Nunnally (1978). This means that responses on the different variables included in our most-concerning score may reflect more than one concept, in the same way that the score on a math word problem reflects both math ability and reading ability. In this case, we were less concerned about achieving good internal consistency because we intended to use the scores only to identify tasks that are most concerning, not to report on a singular cohesive theoretical construct, such as proficiency or training needs.

[44] Tasks shown in the tables are ordered from high to low by the level-of-concern score.

Cells in the center part of the tables are shaded using a heat map to show how high or low a value is relative to all other tasks. The values that are most concerning on a given variable are shown in red. Values that are least concerning are shown in blue. Values near the average of the values in the column are shown in white. Gray cells mean that the sample size was from 0 to 5 and therefore omitted. Table A.1 shows mostly red and pink values for nearly all variables and tasks. Table A.3 shows nearly all blue cells for nearly all variables and tasks. In the far-right column of the tables (shown in bright green cells), we present the level-of-concern scores. Tasks are grouped by duty area and the task code for each is shown in the far-left column.

It is critical to note that although we have grouped tasks into top, middle, and low priorities, the career field should review the tasks in the tables to ensure that our approach has not omitted any critical tasks that should also be prioritized. For example, some tasks in Table A.2 were rated as having low proficiency among 7-levels but were not included in the top-priority group because they did not also tend to have high ratings across many of the variables (e.g., in Table A.2, task F0229, "Operate joint chemical agent detectors [JCADs]" shows 56 percent of 7-levels as proficient). In addition, many tasks were excluded from the set we present in the main body of the report because there were fewer than 20 respondents on any of the variables. In these examples, there may be good reason for the career field to consider these omitted tasks as of concern and in critical need of a training intervention (e.g., in need of additional training resources, practice equipment, closer attention to training in the units, improvements to TOs), even though they were not included in our set of 25 most-concerning tasks.

Table A.1. Most-Concerning Tasks Based on Responses to Key Variables

Task	Description	Competent or Higher			Confident No Safety Incident	Want Way to		NCOIC Safety Concerns	*n* Range		Level-of-Concern Score
		7-Level	5-Level	NCOIC Section		Practice	Check Work		Max *n*	Min *n*	
A0021	Darn or patch personnel recovery parachute system canopies	53%		67%	3.25	33%	5%	15%	21	2	2.06
A0005	Assemble or disassemble drogue parachute systems	52%		72%	3.17	27%	10%	13%	30	5	2.01
A0014	Assess repairability of personnel recovery parachute systems	52%		68%	3.55	25%	11%	13%	36	5	1.84
A0012	Assess repairability of drogue parachute systems	43%		65%	3.44	25%	13%	5%	32	6	1.81
A0020	Darn or patch personnel parachute system canopies	69%		65%	3.77	39%	6%	16%	31	3	1.78
A0072	Rig drogue parachutes	58%		74%	3.17	20%	9%	5%	35	5	1.31
A0043	Modify torso harnesses	60%		80%	3.19	28%	8%	5%	25	5	1.31
A0013	Assess repairability of personnel parachute systems	70%		73%	3.72	22%	11%	12%	45	6	1.30
A0001	Analyze parachute malfunctions	72%		78%	4.00	28%	21%	4%	47	7	1.14
A0032	Inspect drogue parachute systems	58%		73%	3.30	16%	8%	5%	37	6	1.09
A0051	Perform minor repairs on parachutes	76%		63%	3.15	8%	8%	7%	25	4	1.04
A0006	Assemble or disassemble personnel parachute systems	80%	77%	79%	4.02	17%	9%	17%	70	12	1.03
A0033	Inspect mortar tube assemblies	71%		80%	3.42	16%	3%	11%	31	4	0.99
A0042	Install drogue parachute system components or accessories	56%		80%	3.14	15%	7%	0%	27	5	0.86
A0034	Inspect or repack advanced concept ejection seats (ACESs) II	70%		79%	3.05	11%	4%	6%	28	4	0.79
A0007	Assemble or disassemble personnel recovery parachute systems	73%		78%	3.77	23%	9%	3%	56	8	0.79
C0124	Fit or adjust JHMCS helmet visors	50%		70%	3.46	16%	6%	10%	32	5	1.31
D0176	Maintain storage facilities for ammunition or weapons	88%		88%	3.94	22%	22%	5%	20	2	0.79
G0280	Time sewing machines	54%		54%	3.54	20%	13%	2%	53	8	1.46
G0281	Troubleshoot sewing machines	59%		51%	3.79	26%	10%	2%	52	7	1.17
G0264	Perform operator maintenance on sewing machines	64%		56%	3.79	24%	8%	0%	46	7	0.89
J0389	Draft budget requirements	70%			3.17	27%	27%		22	0	2.40
J0380	Conduct mishap investigations	49%			4.06	43%	21%		58	0	2.35
J0401	Investigate accidents or incidents	53%			4.03	36%	22%		36	0	2.14

Task	Description	Competent or Higher			Confident No Safety Incident	Want Way to		NCOIC Safety Concerns	*n* Range		Level-of-Concern Score
		7-Level	5-Level	NCOIC Section		Practice	Check Work		Max *n*	Min *n*	
J0399	Initiate or coordinate deficiency, service, or status reports, such as material deficiency reports (MDRs), with other agencies	68%			4.00	19%	11%		37	0	0.79

NOTE: The values that are most concerning on a given variable are shown in red. Values that are least concerning are shown in blue. Values near the average of the values in the column are shown in white.

Table A.2. Moderately Concerning Tasks Based on Responses to Key Variables

Task	Description	Competent or Higher			Confident No Safety Incident	Want Way to		NCOIC Safety Concerns	*n* Range		Level-of-Concern Score
		7-Level	5-Level	NCOIC Section		Practice	Check Work		Max *n*	Min *n*	
A0049	Pack personnel recovery parachute systems	81%		75%	3.63	15%	5%	6%	41	5	0.63
A0009	Assemble torso harnesses	86%	67%	82%	3.71	17%	6%	0%	63	17	0.53
A0038	Inspect personnel recovery parachute systems	70%	73%	84%	3.70	12%	7%	3%	57	10	0.52
A0047	Pack drogue parachute systems	63%		71%	3.23	12%	0%	0%	25	4	0.50
A0036	Inspect personnel lowering devices (PLDs)	60%		86%	3.53	14%	5%	0%	22	5	0.43
A0048	Pack personnel parachute systems	90%	75%	87%	4.05	13%	7%	8%	67	11	0.38
A0060	Remove, replace, or install emergency oxygen cylinders	73%		73%	3.39	9%	5%	0%	22	7	0.28
A0063	Remove, replace, or install personnel recovery parachute system components or accessories	81%		80%	3.75	11%	3%	5%	36	5	0.22
A0071	Rig 4-line releases	85%		75%	3.13	6%	0%	0%	31	7	0.20
A0040	Inspect restraint devices, such as PCU-17/P or HBU-6/P	87%	86%	88%	3.91	16%	7%	2%	82	21	0.05
B0109	Repair life rafts	75%	78%	73%	4.12	17%	10%	0%	84	16	0.50
B0082	Fit or adjust life preserver units (LPUs)	82%		85%	4.00	19%	5%		21	6	0.19
C0111	Adjust or align helmet-mounted displays (HMDs)	71%		73%	3.71	22%	8%	3%	38	8	0.71
C0130	Inspect attenuation custom communication earpiece systems (ACCESs)	80%		75%	3.67	19%	5%	0%	21	7	0.14
D0161	Forecast munitions requirements	92%		66%	3.96	16%	6%	4%	52	3	0.50
E0204	Register beacons, radios, or search and rescue satellite-aided tracking (SARSAT) frequencies with outside agencies	92%	63%	68%	4.05	11%	6%	2%	91	15	0.46
E0203	Program survival radios	84%	67%	82%	4.09	13%	5%	4%	91	22	0.40
E0201	Locate inadvertently activated beacon signals	64%		75%	4.15	15%	6%	0%	33	3	0.21
E0208	Verify appropriate communications security (COMSEC) employment	87%		81%	4.09	19%	5%	2%	52	7	0.15
F0231	Perform pallet build-up activities	79%	45%	78%	4.28	16%	6%	0%	51	10	0.62
F0229	Operate joint chemical agent detectors (JCADs)	56%		81%	3.76	21%	0%	0%	24	2	0.52
F0222	Establish ACCA work and rest cycles	83%		69%	3.86	5%	5%	4%	25	3	0.21
G0236	Assemble or disassemble sewing machine components or accessories	76%		56%	4.21	22%	7%	0%	34	5	0.56

Task	Description	Competent or Higher			Confident No Safety Incident	Want Way to		NCOIC Safety Concerns	*n* Range		Level-of-Concern Score
		7-Level	5-Level	NCOIC Section		Practice	Check Work		Max *n*	Min *n*	
G0235	Adjust sewing machines	76%		58%	4.00	22%	4%	0%	38	5	0.52
G0265	Perform preventative maintenance on sewing machines	78%		64%	3.89	23%	8%	0%	50	7	0.49
H0286	Clean anti-exposure suits or liners	70%		74%	3.50	17%	3%	0%	30	6	0.36
H0314	Instruct aircrew members on equipment or procedural modifications	86%		83%	3.67	12%	12%	3%	37	4	0.28
H0344	Track TCTO or TCTD inspections	89%	75%	77%	4.00	13%	9%	0%	131	15	0.27
I0367	Personalize continuation training lesson plans	80%			4.23	26%	13%		23	0	0.71
I0365	Evaluate training methods or techniques of instructors	89%			4.23	21%	15%		39	0	0.46
I0370	Prepare job qualification standards (JQSs)	88%			4.23	24%	9%		33	0	0.32
I0361	Evaluate effectiveness of continuation training materials, programs, plans, or procedures	84%			4.24	17%	12%		42	0	0.26
I0362	Evaluate effectiveness of training materials, programs, plans, or procedures, other than for continuation training	86%			4.23	13%	13%		46	0	0.18
I0359	Develop training materials, programs, plans, or procedures, other than for continuation training	95%			4.16	14%	12%		50	0	0.02
J0383	Conduct, evaluate, or participate in continuous process improvement programs, such as green belt, action requests (ARs), and Air Force Technical Order (AFTO) 22s (Technical Manual [TM] Change Recommendation and Reply)	72%			4.20	17%	9%		47	0	0.38
J0385	Determine or establish logistics requirements, such as personnel, equipment, tools, parts, supplies, or workspace	80%			3.89	10%	6%		98	0	0.13
J0413	Review aircraft flight or maintenance records, such as AFTO Form 781-Series	73%			3.77	7%	3%		29	0	0.13
J0390	Establish organizational policies, such as operating instructions (OIs), standard operating procedures (SOPs), or support agreements	85%			4.06	10%	9%		80	0	0.03

NOTE: The values that are most concerning on a given variable are shown in red. Values that are least concerning are shown in blue. Values near the average of the values in the column are shown in white.

Table A.3. Least-Concerning Tasks Based on Responses to Key Variables

Task	Description	Competent or Higher			Confident No Safety Incident	Want Way to		NCOIC Safety Concerns	*n* Range		Level-of-Concern Score
		7-Level	5-Level	NCOIC Section		Practice	Check Work		Max *n*	Min *n*	
A0037	Inspect personnel parachute systems	88%	89%	83%	4.01	12%	6%	3%	125	26	0.00
A0035	Inspect parachute harness components or accessories	85%	88%	85%	4.03	12%	6%	3%	126	30	−0.11
A0062	Remove, replace, or install personnel parachute system components or accessories	86%	75%	86%	4.14	11%	5%	0%	61	11	−0.15
A0008	Assemble restraint devices, such as PCU-17/P or HBU-6/P	85%	86%	89%	3.84	11%	4%	0%	53	14	−0.20
A0041	Inspect torso harnesses	88%	88%	90%	3.73	10%	2%	2%	94	22	−0.22
A0065	Remove, replace, or install restraint harness components or accessories	86%	91%	92%	3.72	14%	3%	0%	37	11	−0.26
A0027	Inspect automatic opening devices (AODs)	94%		95%	4.10	13%	13%	0%	23	4	−0.26
A0024	Fit or adjust personnel parachutes or torso harnesses	92%			3.61	5%	0%		22	5	−0.38
A0056	Remove, replace, or install aircrew restraint equipment hardware or components	83%		89%	4.04	6%	3%	0%	33	7	−0.56
B0086	Inspect life raft carrying cases	69%	92%	77%	3.88	3%	0%	0%	30	12	−0.12
B0083	Fold and pack life rafts	86%	88%	85%	4.07	11%	6%	0%	106	33	−0.13
B0110	Repair LPUs	80%	87%	79%	4.11	11%	3%	0%	62	15	−0.13
B0079	Check pressure readings of escape slide compressed air cylinders	64%			3.88	0%	0%		21	6	−0.15
B0092	Install life rafts in survival kits, such as ACES II or ML-4s	89%	79%	89%	4.09	10%	6%	0%	114	25	−0.18
B0097	Perform vent checks on life rafts	87%	81%	93%	4.00	8%	4%	0%	75	21	−0.25
B0094	Install survival kits in life rafts	93%	82%	90%	4.07	11%	4%	0%	126	32	−0.28
B0087	Inspect life raft components or accessories	94%	83%	90%	4.07	7%	4%	0%	127	40	−0.38
B0088	Inspect life rafts	89%	91%	87%	4.10	7%	4%	0%	134	42	−0.42
B0093	Install LPU components or accessories	96%	91%	87%	4.19	9%	5%	0%	132	33	−0.52
B0089	Inspect LPU components or accessories	92%	94%	89%	4.11	9%	3%	0%	105	30	−0.52
B0096	Pack LPUs	94%	94%	88%	4.18	9%	3%	1%	173	48	−0.55

Task	Description	Competent or Higher			Confident No Safety Incident	Want Way to		NCOIC Safety Concerns	*n* Range		Level-of-Concern Score
		7-Level	5-Level	NCOIC Section		Practice	Check Work		Max *n*	Min *n*	
B0090	Inspect LPUs	95%	95%	90%	4.16	9%	4%	0%	141	43	−0.60
C0117	Customize breathing equipment	91%	75%	73%	4.30	11%	4%	0%	27	11	−0.01
C0119	Fit or adjust communication earplugs	95%	79%	84%	3.79	11%	3%	2%	64	17	−0.07
C0126	Fit or adjust NVDs	88%	83%	81%	4.05	8%	4%	2%	105	22	−0.12
C0113	Build-up helmets	90%	86%	84%	4.10	9%	3%	3%	151	40	−0.19
C0148	Patch, repair, or replace helmet custom edge rolls	88%	84%	83%	3.83	3%	3%	0%	73	17	−0.22
C0122	Fit or adjust hush kits			87%	4.00	5%	5%	0%	20	9	−0.26
C0121	Fit or adjust helmets, other than joint helmet-mounted cueing system (JHMCS) helmet display units (HDUs)	84%	91%	88%	4.10	10%	4%	2%	93	22	−0.28
C0123	Fit or adjust integrated chin and nape straps (ICNSs) or nape straps	91%	82%	90%	4.03	9%	4%	0%	123	37	−0.28
C0120	Fit or adjust eye protection devices	90%	83%	84%	4.05	4%	3%	0%	123	34	−0.35
C0128	Fit or adjust oxygen masks	96%	88%	88%	4.12	6%	4%	4%	140	31	−0.38
C0127	Fit or adjust oxygen mask suspension harnesses	100%		84%	3.95	5%	5%	5%	22	4	−0.39
C0134	Inspect eye protection devices	86%	85%	91%	3.98	4%	2%	0%	56	21	−0.46
C0129	Fit or adjust zetaliners or x-liners	93%	95%	86%	3.75	5%	3%	0%	59	18	−0.47
C0115	Clean or disinfect zetaliners or x-liners	100%	92%	92%	4.00	9%	3%	0%	33	12	−0.62
C0132	Inspect boom-type microphones	87%	88%	93%	4.10	3%	0%	0%	36	15	−0.62
C0145	Mount boom microphones on helmets	100%	84%	90%	4.08	1%	3%	0%	74	24	−0.63
C0142	Maintain protective helmets	98%	91%	94%	4.01	2%	4%	1%	112	30	−0.66
C0137	Inspect, assemble, or disassemble oxygen masks	99%	92%	94%	4.14	4%	4%	1%	129	38	−0.71
C0133	Inspect communication cords	96%	93%	94%	4.00	1%	3%	0%	67	27	−0.77
C0158	Replace communication cords	100%	95%	95%	4.16	0%	5%	0%	42	18	−0.86
C0114	Clean or disinfect oxygen masks	98%	97%	96%	4.14	4%	3%	0%	119	37	−0.94
D0169	Inventory explosive devices	96%		89%	4.15	14%	10%	0%	31	4	−0.37
D0175	Maintain pyrotechnic opening devices	100%		85%	3.96	11%	7%	0%	29	5	−0.39
D0164	Inspect pyrotechnics	92%	83%	93%	4.10	8%	2%	2%	59	11	−0.47
D0168	Inventory ammunition	100%		88%	4.41	11%	7%	0%	28	5	−0.68

Task	Description	Competent or Higher			Confident No Safety Incident	Want Way to		NCOIC Safety Concerns	*n* Range		Level-of-Concern Score
		7-Level	5-Level	NCOIC Section		Practice	Check Work		Max *n*	Min *n*	
D0170	Inventory pyrotechnics	96%		92%	4.33	8%	3%	0%	43	6	−0.82
E0200	Inspect survival radios	90%	81%	82%	4.23	10%	7%	3%	125	29	−0.06
E0205	Remove or install electronic communications equipment or signaling devices	89%	83%	89%	4.13	11%	5%	0%	73	11	−0.29
E0198	Inspect electronic communications equipment or signaling devices	94%	86%	84%	4.12	8%	4%	0%	84	20	−0.44
E0199	Inspect strobe lights	100%		92%	3.81	5%	0%	0%	22	8	−0.75
F0223	Establish or implement contingency operations (CONOPS)	86%		65%	3.80	0%	0%	4%	23	1	0.00
F0212	Conduct ACCA team training	93%	80%	74%	4.14	7%	8%	0%	92	13	−0.04
F0213	Conduct ACDE don or doff procedures	93%	78%	84%	3.93	10%	4%	1%	91	16	−0.06
F0214	Conduct aircrew decontamination procedures	91%	73%	85%	4.08	11%	5%	0%	142	31	−0.11
F0218	Coordinate setup of ACCAs with other agencies	82%		73%	4.07	7%	7%	0%	22	3	−0.14
F0224	Fit or adjust ACDEs	95%	71%	86%	4.05	8%	5%	0%	103	22	−0.14
F0210	Assemble or disassemble ACCAs	93%	76%	87%	4.15	7%	4%	1%	141	35	−0.23
F0221	Decontaminate or mitigate flight equipment	90%		83%	3.89	3%	3%	3%	34	4	−0.23
F0219	Decontaminate or mitigate ACCA work areas	95%	76%	87%	4.17	11%	6%	0%	85	16	−0.24
F0211	Assemble or disassemble ACDE components or accessories, such as building D-bags or D-1 bags	92%	81%	88%	3.96	5%	3%	1%	116	29	−0.28
F0225	Inspect ACDEs	92%	79%	88%	3.95	6%	4%	0%	106	22	−0.29
F0226	Inventory ACDEs	95%	77%	88%	3.96	5%	4%	0%	104	24	−0.32
F0227	Issue ACDEs	95%	77%	89%	3.97	3%	4%	0%	95	20	−0.38
F0220	Decontaminate or mitigate ACDE accessories or components	93%		86%	4.20	0%	4%	0%	26	3	−0.69
G0242	Fabricate AFE protective covers	87%		78%	4.19	0%	0%	0%	24	4	−0.39
H0338	Repair anti-G garments	75%	91%	80%	3.74	14%	2%	0%	43	10	−0.04
H0331	Remove or install hardware, such as grommets or snaps	78%	84%	83%	3.99	13%	3%	0%	118	30	−0.04
H0322	Maintain safety data sheets (SDSs)	89%	77%	81%	4.18	9%	7%	0%	75	13	−0.04

Task	Description	Competent or Higher			Confident No Safety Incident	Want Way to		NCOIC Safety Concerns	*n* Range		Level-of-Concern Score
		7-Level	5-Level	NCOIC Section		Practice	Check Work		Max *n*	Min *n*	
H0334	Remove, replace, or install anti-exposure suit components or accessories	80%	83%	87%	3.99	9%	3%	0%	100	22	−0.07
H0303	Fit, adjust, or modify anti-G garments	83%	92%	89%	3.77	10%	5%	3%	42	13	−0.17
H0343	Track misplaced or lost equipment	77%	89%	88%	4.13	12%	5%	0%	83	17	−0.18
H0324	Pack anti-exposure suits	92%	90%	84%	3.90	11%	4%	0%	27	10	−0.22
H0307	Inspect anti-exposure suits or liners	84%	83%	88%	3.93	9%	1%	0%	138	34	−0.28
H0327	Perform quality assurance (QA) checks on flight equipment	95%	100%	82%	4.21	6%	8%	2%	126	11	−0.38
H0340	Schedule equipment for inspection, repair, or maintenance	94%	88%	90%	4.07	6%	3%	0%	102	26	−0.44
H0333	Remove or install survival kits	93%	84%	90%	4.09	7%	2%	1%	138	35	−0.44
H0301	Fit or adjust anti-exposure suits or liners	85%	88%	87%	3.96	2%	0%	0%	55	16	−0.45
H0345	Transport personnel or equipment on flightlines	97%	78%	95%	4.34	9%	4%	0%	68	18	−0.47
H0305	Inspect AFE continuation training equipment	97%	85%	88%	4.06	5%	3%	0%	106	26	−0.47
H0284	Assemble or disassemble survival kits	93%	95%	91%	4.17	12%	4%	1%	146	37	−0.47
H0308	Inspect anti-G garments	96%	92%	92%	3.81	7%	2%	3%	44	13	−0.53
H0316	Inventory flight equipment, other than aircraft installed equipment, ammunition, weapons, pyrotechnics, or ACDEs	96%	88%	92%	3.99	4%	3%	0%	99	25	−0.57
H0330	Remove or install flight equipment onto aircraft	92%	90%	92%	4.14	6%	4%	0%	142	42	−0.61
H0300	Demonstrate use of flight equipment	98%	87%	92%	4.29	8%	3%	1%	73	23	−0.62
H0285	Assemble or disassemble survival vests	91%	97%	90%	4.05	6%	2%	0%	124	34	−0.68
H0332	Remove or install survival components or accessories	93%	96%	93%	4.09	8%	3%	1%	185	53	−0.69
H0306	Inspect aircraft installed flight equipment	94%	93%	91%	4.10	4%	2%	0%	152	41	−0.70
H0311	Inspect survival components	98%	93%	92%	4.09	6%	3%	1%	195	57	−0.73
H0312	Inspect survival vests	93%	94%	94%	3.96	3%	1%	0%	163	49	−0.74

Task	Description	Competent or Higher			Confident No Safety Incident	Want Way to		NCOIC Safety Concerns	*n* Range		Level-of-Concern Score
		7-Level	5-Level	NCOIC Section		Practice	Check Work		Max *n*	Min *n*	
H0342	Stencil data onto items, such as equipment, clothing, or parachute components or accessories		100%	95%	3.88	10%	0%	0%	21	6	−0.80
H0315	Inventory aircraft installed equipment	97%	97%	92%	4.20	3%	2%	0%	121	28	−0.81
H0321	Maintain passenger demonstration kits	100%			4.00	0%	0%	0%	25	8	−0.88
I0369	Plan or schedule training	94%	70%		4.42	13%	7%		102	0	−0.02
I0354	Determine training requirements, other than continuation training requirements	90%			4.16	15%	7%		73	0	−0.09
I0350	Conduct formal course classroom training	91%			4.18	11%	11%		38	0	−0.09
I0352	Coordinate continuation training with other agencies	85%			4.16	12%	6%		52	0	−0.15
I0353	Determine continuation training requirements	90%			4.38	14%	9%		76	0	−0.15
I0358	Develop or procure training materials or aids, other than for continuation training	83%			4.23	8%	8%		26	0	−0.20
I0366	Maintain training records or files in training business area (TBA)	96%	87%		4.42	12%	10%		171	0	−0.30
I0349	Conduct ACDE training	89%			4.15	10%	4%		68	0	−0.31
I0372	Train aircrew members to perform preflight equipment inspections	98%	75%		4.33	8%	4%		123	0	−0.35
I0363	Evaluate progress of trainees in continuation training	97%			4.41	11%	9%		117	0	−0.42
I0368	Personalize lesson plans, other than for continuation training	86%			4.68	17%	4%		24	0	−0.47
I0371	Set up or tear down survival training equipment	95%			4.38	10%	6%		68	0	−0.54
I0351	Conduct on-the-job training (OJT)	97%	96%		4.34	12%	8%		191	0	−0.57
I0364	Evaluate progress of trainees, other than for continuation training	96%	100%		4.24	11%	7%		103	0	−0.64
I0357	Develop or procure continuation training materials or aids	100%			4.72	7%	4%		27	0	−1.09
J0384	Counsel subordinates concerning personal matters	86%			4.16	9%	7%		109	0	−0.17
J0398	Implement safety or security programs	87%			3.92	8%	4%		26	0	−0.22

Task	Description	Competent or Higher			Confident No Safety Incident	Want Way to		NCOIC Safety Concerns	*n* Range		Level-of-Concern Score
		7-Level	5-Level	NCOIC Section		Practice	Check Work		Max *n*	Min *n*	
J0406	Maintain TCTOs and TCTDs	91%			4.08	8%	7%		75	0	−0.27
J0382	Conduct supervisory performance feedback sessions	93%			4.15	10%	6%		132	0	−0.34
J0394	Evaluate inspection report findings or inspection procedures	91%			3.93	6%	4%		69	0	−0.35
J0392	Establish procedures for accountability of equipment, tools, parts, or supplies	97%			4.07	8%	7%		136	0	−0.36
J0407	Maintain TO libraries	92%			4.17	10%	5%		73	0	−0.37
J0408	Manage electronic files or records	91%			4.16	9%	5%		116	0	−0.38
J0404	Maintain organizational equipment or supply records	87%			4.22	9%	4%		82	0	−0.42
J0379	Conduct general meetings, such as staff meetings, briefings, conferences, or workshops	90%			3.84	5%	0%		21	0	−0.50
J0378	Brief personnel concerning training programs or matters	95%			3.94	5%	2%		44	0	−0.57
J0396	Evaluate maintenance or utilization of equipment, tools, parts, supplies, or workspace	97%			4.06	5%	4%		75	0	−0.59
J0381	Conduct supervisory orientations for newly assigned personnel	95%			4.03	4%	4%		85	0	−0.60
J0397	Evaluate personnel for compliance with performance standards	95%			4.30	7%	5%		130	0	−0.60
J0395	Evaluate job hazards or compliance with Air Force Occupational Safety and Health (AFOSH) program	88%			3.84	0%	0%		28	0	−0.61
J0391	Establish performance standards for subordinates	96%			4.00	5%	2%		87	0	−0.62
J0387	Develop or establish work methods or procedures	94%	100%		4.02	5%	5%		153	0	−0.70
J0409	Perform critical point inspections (CPIs) or in-process inspections (IPIs)	98%	92%		4.26	6%	5%		200	0	−0.72
J0375	Assign personnel to work areas or duty positions	97%			4.10	2%	3%		90	0	−0.76
J0386	Determine or establish work assignments or priorities	97%	100%		4.00	3%	4%		152	0	−0.82
J0416	Review TO changes or TCTOs	98%			4.32	2%	3%		180	0	−0.93

NOTE: The values that are most concerning on a given variable are shown in red. Values that are least concerning are shown in blue. Values near the average of the values in the column are shown in white.

Table A.4. Tasks Excluded from Prior Figures Because of Sample Size

Task	Description	Competent or Higher			Confident No Safety Incident	Want Way to		NCOIC Safety Concerns	*n* Range		Level-of-Concern Score
		7-Level	5-Level	NCOIC Section		Practice	Check Work		Max *n*	Min *n*	
A0028	Inspect cargo parachute systems					20%	30%		10	2	2.84
A0019	Darn or patch drogue parachute system canopies	50%		60%	2.86	38%	6%	7%	16	2	2.18
A0002	Assemble or disassemble cargo parachute systems					25%	17%		12	3	1.91
A0069	Repair parachute system packs or containers	85%		60%	3.44	5%	5%	8%	19	3	0.89
A0059	Remove, replace, or install drogue parachute system components or accessories				2.60	9%	0%		11	4	0.88
A0068	Repair or construct seams on aircrew flight equipment (AFE)	92%		82%	3.08	7%	7%	8%	15	2	0.65
A0044	Operationally check personnel parachute system canopy releases	93%			3.36	17%	0%	7%	18	2	0.47
A0070	Repair torso harnesses	91%			3.43	6%	0%	0%	17	3	−0.24
A0064	Remove, replace, or install PLDs			90%	3.60	11%	0%	0%	19	6	−0.33
A0046	Pack deceleration parachute systems								2	1	
A0050	Perform minor maintenance on PLDs								2	1	
A0004	Assemble or disassemble deceleration parachute systems								3	1	
A0015	Clean restraint devices, such as PCU-17/P or HBU-6/P								3	1	
A0018	Darn or patch deceleration parachute system canopies								3	2	
A0003	Assemble or disassemble deceleration parachute system canisters or containers								4	1	
A0025	Fit or adjust restraint devices, such as PCU-17/P or HBU-6/P								4	2	
A0030	Inspect deceleration parachute systems								4	2	
A0031	Inspect drag chute deployment bags								4	2	
A0039	Inspect personnel restraint equipment, such as aircraft seat belts or shoulder harnesses								4	1	

Task	Description	Competent or Higher			Confident No Safety Incident	Want Way to		NCOIC Safety Concerns	*n* Range		Level-of-Concern Score
		7-Level	5-Level	NCOIC Section		Practice	Check Work		Max *n*	Min *n*	
A0011	Assess repairability of deceleration parachute systems								5	1	
A0026	Hang parachutes								5	1	
A0053	Prepare parachutes for shipment								5	2	
A0054	Prepare parachutes for storage								6	2	
A0045	Pack cargo parachute systems								9	2	
B0099	Procure carbon dioxide cylinders for LPUs			73%					9	2	0.17
B0105	Remove, replace, or install FLU-9/P or FLU-9B/P inflators			83%	3.75	11%	0%	0%	19	4	−0.18
B0101	Remove or install LPUs on parachutes or torso harnesses			81%	4.00	7%	0%		15	5	−0.28
B0104	Remove, replace, or install flotation test fixture components or accessories			80%	4.27	17%	0%	0%	16	3	−0.35
B0085	Inspect escape slides				3.73	0%	0%		14	3	−0.62
B0084	Inspect escape slide carrying cases				3.83	0%	0%		15	4	–0.73
B0095	Pack escape slides				3.92	0%	0%		16	3	−0.82
B0080	Coordinate life rafts for servicing with outside agencies								4	1	
B0098	Prepare escape slide or life raft cylinders for condemnation, shipping, or refilling								4	1	
B0108	Repair life raft carrying cases								5	1	
B0081	Coordinate refills of compressed gas cylinders with outside agencies								7	1	
C0146	Mount dual-visors on helmets			80%	3.25	25%	0%	0%	16	5	0.63
C0143	Modify ACCESs			62%	4.00	17%	8%	0%	13	3	0.26
C0147	Mount lip lights on boom microphones				3.57	12%	0%		17	5	0.03
C0149	Perform daily-use inspections on combined aircrew system testers (CASTs)					18%	0%		11	1	−0.08
C0131	Inspect bailout oxygen bottles	75%		88%	4.79	11%	5%	0%	19	6	−0.55
C0125	Fit or adjust nuclear flash blindness goggles, such as EEU-2/P, EEU-2A/P, or MIL-G-635								3	1	
C0138	Issue JHMCS HDUs								3	1	

Task	Description	Competent or Higher			Confident No Safety Incident	Want Way to		NCOIC Safety Concerns	*n* Range		Level-of-Concern Score
		7-Level	5-Level	NCOIC Section		Practice	Check Work		Max *n*	Min *n*	
C0140	Maintain nuclear flash blindness goggles, such as EEU-2/P, EEU-2A/P, or MIL-G-635								3	1	
C0116	Coordinate refills of high-pressure oxygen bottles with other agencies								4	1	
C0139	Issue optical devices								8	3	
C0157	Repair eye protection devices								9	1	
D0184	Remove, replace, or install parachute time-delay cartridges			56%					8	2	2.11
D0186	Remove, replace, or install reefing line cutters			57%					7	1	1.87
D0182	Remove, replace, or install locking cord cutters			69%					6	2	0.88
D0173	Load individual weapons			76%					8	4	0.84
D0162	Inspect facility explosives licenses			61%				0%	17	1	0.57
D0174	Maintain ammunition or weapons	93%		86%	3.94	17%	17%	0%	18	3	0.23
D0177	Maintain storage facilities for pyrotechnics			84%	3.36	23%	0%	0%	19	5	0.22
D0172	Issue ammunition or weapons	81%		77%	4.06	11%	5%	0%	19	2	0.09
D0180	Remove, replace, or install ammunition or pyrotechnics in survival kits or vests			78%	3.38	20%	0%	0%	18	5	0.04
D0196	Turn-in pyrotechnics			63%				0%	10	1	−0.12
D0190	Store ammunition or weapons			85%				0%	10	1	−0.25
D0189	Remove, replace, or install universal water-activated release system (UWARS) canopy release fittings	85%		78%	4.25	11%	0%	0%	19	3	−0.35
D0179	Post explosive class and division requirements placards			86%				0%	17	3	−0.38
D0160	Coordinate distribution of pyrotechnics with munitions maintenance personnel							0%	10	1	−0.53
D0171	Inventory weapons	100%		93%	4.11	11%	5%	0%	19	2	−0.62
D0159	Clear weapons	100%		92%	3.91	7%	0%	0%	14	3	−0.71
D0194	Transport pyrotechnics for turn-in			77%				0%	10	1	−0.80
D0192	Store pyrotechnics			90%				0%	10	1	−0.82
D0188	Remove, replace, or install survival kit signal flares			85%		10%	0%	0%	13	3	−0.82

Task	Description	Competent or Higher			Confident No Safety Incident	Want Way to		NCOIC Safety Concerns	*n* Range		Level-of-Concern Score
		7-Level	5-Level	NCOIC Section		Practice	Check Work		Max *n*	Min *n*	
D0178	Perform arms room attendant duties								3	1	
D0191	Store parachute explosive devices								4	1	
D0163	Inspect locking cord cutters								6	1	
D0183	Remove, replace, or install parachute explosive devices for storage								6	2	
D0165	Inspect reefing line cutters								8	2	
E0197	Coordinate maintenance or inspection of electronic devices with other agencies								4	1	
E0206	Remove or install strobe lights								8	1	
E0207	Track radio battery service life or usage								9	2	
F0234	Repair ACDEs			68%		0%	9%	8%	12	2	0.55
F0209	Annotate ACDE size data for aircrew members			87%	3.79	0%	0%	0%	17	3	–0.65
F0216	Conduct ground egress procedures with ACDE			88%				0%	16	2	−0.96
F0232	Prepare equipment or sites for detection of agents								5	2	
F0228	Monitor detection papers								7	2	
F0230	Perform equipment or site protection procedures, such as for mobility bins or vehicles								7	1	
F0217	Coordinate pickup or destruction of contaminated flight equipment with other agencies								9	3	
G0238	Construct tackings or knots for AFE			94%	4.00	6%	0%	0%	18	7	−0.72
G0237	Assess repairability of aircraft fabric items, such as avionics nets, bunk covers, or dust covers								1	1	
G0241	Design patterns, templates, blueprints, or prototypes								1	1	
G0239	Coordinate or process sewing machines for off-base maintenance or repairs with outside agencies								4	1	
H0298	Coordinate TCTO or time compliance technical directive (TCTD) modifications on equipment with other agencies	60%		69%	3.18	8%	8%	0%	19	3	1.00
H0337	Repair anti-exposure suits or liners			69%		10%	0%	0%	10	3	−0.32

Task	Description	Competent or Higher			Confident No Safety Incident	Want Way to		NCOIC Safety Concerns	*n* Range		Level-of-Concern Score
		7-Level	5-Level	NCOIC Section		Practice	Check Work		Max *n*	Min *n*	
H0319	Lubricate zippers on anti-exposure suits			86%					9	2	−0.87
H0346	Wax cords or threads			87%					8	3	−1.62
H0320	Lubricate zippers on anti-G garments								3	1	
H0325	Perform aircraft safe for maintenance inspections								3	2	
H0323	Operationally check drying tower winches								4	2	
H0317	Issue flight equipment, other than JHMCS HDUs, optical devices, ammunition, weapons, ACDEs, or explosive devices								5	2	
H0304	Glue seams of anti-exposure suits								6	1	
H0293	Coordinate modifications on equipment, other than technical compliance technical order (TCTO) modifications, with other agencies								7	1	
H0295	Coordinate prepositioning of equipment in aircraft with other agencies								7	3	
H0299	Darn survival vests								9	1	
I0373	Write training reports					30%	40%		10	3	4.42
I0355	Develop continuation training materials, programs, plans, or procedures					20%	20%		10	2	1.91
I0356	Develop formal course curricula, plans of instruction (POIs), or specialty training standards (STSs)	88%			4.25	24%	18%		17	16	0.66
I0360	Develop written tests								8	8	
J0403	Maintain due-in-from-maintenance (DIFM) transaction reports				3.30	27%	9%		11	2	1.53
J0418	Write inspection reports	83%			3.58	19%	19%		16	2	1.15
J0388	Develop organizational or functional charts	87%			3.23	0%	0%		17	2	–0.13
J0376	Assign sponsors for newly assigned personnel	92%			3.50	0%	0%		12	10	–0.43
J0400	Inventory classified materials or documents					0%	0%		11	2	–1.24
J0377	Brief aerospace physiology topics, such as hypoxia or sensory illusions								1	1	

Task	Description	Competent or Higher			Confident No Safety Incident	Want Way to		NCOIC Safety Concerns	*n* Range		Level-of-Concern Score
		7-Level	5-Level	NCOIC Section		Practice	Check Work		Max *n*	Min *n*	
J0411	Prepare reports of survey								4	1	
J0415	Review joint technical data (JTD) changes, TCTDs, or supplements								6	1	
J0402	Maintain administrative and training files, such as AF Form 1522s (Aviation Resource Management System [ARMS] Additional Training Accomplishment Report)								7	1	
J0414	Review budget requirements								7	1	
J0417	Schedule personnel for deployments, temporary duties (TDYs), leaves, or passes								7	5	
J0405	Maintain publications libraries, other than technical order (TO) libraries								9	1	

NOTE: The values that are most concerning on a given variable are shown in red. Values that are least concerning are shown in blue. Values near the average of the values in the column are shown in white. PLD = personnel lowering device.

Tasks Not Included in the Survey

Task	Description
A0010	Assess repairability of cargo parachute systems
A0016	Darn or patch cargo parachute system canopies
A0017	Darn or patch cargo parachute system pilot chutes
A0022	Fabricate parachute components or accessories
A0023	Fabricate standard air drop training bundles (SATBs)
A0029	Inspect cargo slings
A0052	Perform static weight tests on personnel restraint equipment or PLDs
A0055	Recover cargo parachutes from off-station drop zones
A0057	Remove, replace, or install cargo parachute system components or accessories
A0058	Remove, replace, or install cargo sling hardware
A0061	Remove, replace, or install ground crew restraint equipment hardware
A0066	Repair cargo parachute release systems
A0067	Repair container delivery system (CDS) slings
A0073	Rig parachute loads
A0074	Schedule maintenance for AODs
A0075	Verify serviceability of parachute actuator testers
A0076	Wash parachute canopies
B0077	Assemble or disassemble escape slide compressed air cylinders
B0078	Bleed escape slide compressed air cylinders
B0091	Inspect or test manual reverse osmosis desalinators, such as MROD-06-LL-01 or MROD-35-LL-01
B0100	Remove or install escape slide batteries
B0102	Remove, replace, or install escape slide compressed air cylinders
B0103	Remove, replace, or install escape slide hardware
B0106	Repair escape slide carrying cases
B0107	Repair escape slides
C0112	Assemble or disassemble oxygen prebreather consoles
C0118	Fabricate helmet custom edgerolls
C0135	Inspect passive attenuation communication earphones (PACEs)
C0136	Inspect portable oxygen bottles
C0141	Maintain pilot interface connectors
C0144	Modify PACEs
C0150	Perform quick-disconnect coupling checks on ejection seat emergency oxygen cylinders
C0151	Purge JHMCS HDUs
C0152	Remove or install carbon monoxide detector components or accessories
C0153	Remove or install F-35 HDUs
C0154	Remove or install F-35 helmet vehicle interfaces (HVIs)
C0155	Remove or install high-pressure oxygen bottles
C0156	Remove or install seat kit oxygen regulators
D0166	Inspect spreading gun assemblies
D0167	Inspect, remove, or install AADs
D0181	Remove, replace, or install ballistic opening devices
D0185	Remove, replace, or install pyrotechnic AODs
D0187	Remove, replace, or install spreading gun assemblies
D0193	Transport ammunition or weapons for turn-in
D0195	Turn-in ammunition or weapons
E0202	Maintain soldier portable chargers (SPCs)
F0215	Conduct ejection egress procedures with ACDE
F0233	Remove or install filter assemblies wearing ground crew ensembles (GCEs)
G0240	Cut foam rubber for aircraft mattresses or seat cushions

Task	Description
G0243	Fabricate aircraft batting insulation
G0244	Fabricate aircraft blanket insulation
G0245	Fabricate aircraft covers, such as seat, headrest, or armrest covers
G0246	Fabricate aircraft fabric item patches, such as aircraft blowout or inspection hole patches
G0247	Fabricate aircraft fabric items, such as avionics nets, bunk covers, or dust covers
G0248	Fabricate aircraft headliners
G0249	Fabricate aircraft soundproofing
G0250	Fabricate cannon plug covers
G0251	Fabricate gaskets or seals
G0252	Fabricate heat reflective curtains
G0253	Fabricate inlet or exhaust plugs
G0254	Fabricate locally manufactured items
G0255	Fabricate military aircrew restraint system (MARS) belts
G0256	Fabricate privacy curtains
G0257	Inspect aircraft soundproofing
G0258	Inspect aircraft upholstery
G0259	Inspect protective covers
G0260	Inspect thermal curtains
G0261	Interpret blueprints
G0262	Modify inlet or exhaust plugs
G0263	Overhaul sewing machine face assemblies
G0266	Remove, replace, or install aircraft fabric item patches, such as aircraft blowout or inspection hole patches
G0267	Remove, replace, or install aircraft floor coverings
G0268	Remove, replace, or install aircraft soundproofing
G0269	Remove, replace, or install fabric item hardware
G0270	Remove, replace, or install protective cover hardware
G0271	Remove, replace, or install sewing machine motors
G0272	Repair aircraft soundproofing
G0273	Repair aircraft upholstery
G0274	Repair cargo nets
G0275	Repair protective covers
G0276	Repair thermal curtains
G0277	Repair troop seats
G0278	Reseal thermal curtains
G0279	Sew flight clothing modifications, such as knee boards or map straps
H0282	Adjust F-35 inflation hoses
H0283	Adjust pressure regulators
H0287	Clean belt testers
H0288	Conduct ejection egress procedures, other than with ACDE
H0289	Conduct helicopter emergency egress device system (HEEDS) techniques or procedures
H0290	Conduct non-ejection egress procedures, other than with ACDE
H0291	Conduct pre-ejection procedures on ejection seat trainers
H0294	Coordinate nondestructive inspections (NDIs) of tools or equipment with NDI facilities
H0296	Coordinate preventive maintenance for drying tower equipment, such as ropes or tie-down bars, with other agencies
H0297	Coordinate replacement of oil and water separator components or accessories
H0302	Fit or adjust F-35 pilot flight equipment
H0309	Inspect automatic deployment actuators
H0310	Inspect belt testers
H0313	Install automatic deployment actuators
H0318	Lubricate belt testers
H0326	Perform preventive maintenance on tension devices, such as cable tension devices

Task	Description
H0328	Remove or install F-35 full coverage lower G-garment connectors
H0329	Remove or install F-35 inflation hoses
H0335	Remove, replace, or install drying tower cables
H0336	Remove, replace, or install oil and water separator components or accessories
H0339	Repair or modify coveralls, such as bunny suits
H0341	Service hydraulic equipment, such as filling reservoirs or bottles
I0347	Administer or score tests
I0348	Complete student entry or withdrawal forms
J0374	Annotate time and attendance sheets for civilian employees
J0393	Evaluate aircrew members performing ground egress procedures
J0410	Plan layouts of facilities
J0412	Research, prepare, or interpret deployment reports
J0419	Write job or position descriptions
J0420	Write or endorse civilian performance appraisals

NOTE: AAD = automatic actuation device; AOD = automatic opening devices.

Appendix B. Write-In Comments for the Technology Question

On the survey we asked participants, "How useful do you think each of the following would be as a supplement to" (1) training in the field, (2) performance in the field, and (3) training in the schoolhouse, and participants were presented with a series of high- and low-tech approaches to training to rate. Fifty-seven out of the 519 people who answered this question responded by selecting "other" and writing in a comment. These comments are useful in providing additional context to the ratings they provided on the items we presented. They also provide supplemental ideas that go beyond the survey responses.

We binned the comments into several broad themes:[45]

- relevance of videos and other technology
- TO improvements
- streamlining and simplifying training
- standardization and documentation needed to address inconsistencies across trainers and units
- allowing specialization
- course content
- dedicated field training programs and mobile training teams
- other topics (training should be hands-on, need a way to validate [verify] or ensure currency of proficiency, tech school or CDCs are not needed, need better ways to train the trainer).

In the remainder of this appendix, we define each theme briefly and list the related comments.

Relevance of Videos and Other Technology

One of the more frequently mentioned topics was the potential value of using training videos, simulations, and virtual reality and the need for better technology. The following are examples of those comments:

> I-pads, TV screens, more computers . . .
>
> ***

[45] We used a systematic coding process to identify the major comment themes. Two researchers first reviewed the comments and identified a starting list of themes. One researcher then coded (i.e., binned) a subset of the comments into the themes and added additional themes to capture new ideas they identified while coding. The second researcher then spot-checked the coding and identified areas where there were discrepancies or areas of disagreement. The researchers then worked together to further refine the themes and clarify them and prevent additional disagreement. The first researcher then coded the entire sample of comments using the refined list of themes.

> In some instances, it could be beneficial for LL classes[46] to be taught with videos that are officially sanctioned and professionally developed by instructors.
>
> ***
>
> In GA [Guardian Angel], it would be great to have training videos combined with the online forum (with a direct POC) as mentioned above for technique purposes. There are different physical methods for performing tasks so there should be an array of educational material to train members (like on parachute packing) and new techniques to help them. This helps especially if the methods taught in house aren't effectively helping members master the technique or control of the equipment (canopy control). In essence, videos of examples showing the technique variances and what each technique can be used for, or what body type it may be useful for. In addition, the forum area would be maintained by an FAA [Federal Aviation Administration] Master Rigger who could answer questions either in real-time or within a week for issues currently affecting members. As we do not have a dedicated training area for GA equipment it would be great to have access to a Master Rigger who is very knowledgeable on the equipment to aid units who have training shortfalls from lack of qualifications and experience.

Interestingly, although our survey item findings where participants rated virtual reality simulations showed that on average most people felt that virtual reality simulations were not especially useful, there was one comment that mentioned virtual reality simulations as being useful:

> For in the field training, either having mobile teams dedicated to critical tasks, or combining video classes with VR [virtual reality] Sims will provide the best result to accomplish in the field training.

TO Improvements

Many people also offered specific suggestions on ways of improving TOs. Many of the TO-specific comments included discussion of how videos and other technology should be embedded in the TOs:

> We have the technology now to connect with other units anywhere. The digital age is upon us, and we are not utilizing it to the full benefits! Videos are amazing that could be loaded to digital TOs. Colored pictures are amazing that can be loaded to digital TOs. Training on sewing machines and how to videos can be loaded on to digital TOs . . . for training and reference before and during the operations of these machines. Pictures of how all the equipment is marked for standardization. If there's a question on any piece of equipment you will have the TO to do the job step by step and a helper guide along the way for some of the more intricate parts that aren't clear in the TO and how it should look when completed. . . . There's just so much that can be done to really give folks the tools and confidence to tackle anything, it's just going to need an incredible overhaul!

[46] *LL* are the first two digits of a course code (see Air Force Instruction 11-301, 2017).

***

T.O.s need to have 30 to 60 second video clips on performing tasks. That way there will be no question on how to inspect or repair a piece of equipment. Also, the videos would be short enough that if something were to change then it would be a quick fix.

***

Color pictures in TOs with more details and links to online instructional videos for critical steps would be a huge benefit.

***

Most people who have packed a drogue has probably heard of the "reverse J" but it's not anywhere in the TO. It is past due for there to be videos embedded within TOs. Doing the drogue splice repair via text was very hard for such a big repair. A step-by-step video for those larger tasks should be available.

Streamlining and Simplifying Training

Comments about TOs also reflected on ways to streamline and simplify TOs. Some comments pointed out how jumping around in the TOs led to inefficiency, potential confusion, and mistakes:

All of the tools above, but simple 1. 2. 3 steps. Too much of our career field is confused by moving from one TO to another and "interpretations" of guidance.

***

TOs that can be followed without jumping around to find specific steps. In order from start to finish.

***

It would be great if the List of Effective Pages would be put back in to the TOs. It is such a pain in the a-- to have to look on ETIMS [Enhanced Technical Management System] to find the change. Please put the List of Effective Pages back in the TOs when there are changes.

***

How about looking at all the TOs and writing them to read step A to Z instead of them having you jump from place to place. This career field likes to make things more difficult than what it needs to be like the ASVAB [Armed Services Vocational Aptitude Battery] score to get in was extremely high.

***

Additionally, electronic TOs are somewhat user friendly, however TOs should be built like [Enhanced Technical Management System] where a figure is referenced, technicians can click on reference, and another page pops up. This removes the requirement for a technician to navigate away from a process in order to find a figure or otherwise specified step. No capability to go "back" when referencing "out of order" steps. Electronic pubs often "forward reference" numerous times, leaving a technician lost at the end of the research. Pubs should leave "bread crumbs" so technicians can navigate backwards.

One suggested creating reduced TO content tailored to each specific unit's equipment:

> Why can't digital TOs be divided even more down to the individual equipment that that particular shop uses? Why does someone have to go through the chute TO and try and figure out what pertains to the particular style of chute they have. More focus less vague guidance and attention I feel would lead to less discrepancies and more proficient, confident AFE technicians whether in their own shop, in the field, deployed, or in another unit's shop with different gear and different ways of doing business. Yes the TO gives us the steps but we all know that each unit does business differently! And DPAS is crippling progress!!!!!!

One suggested taking steps to make the type of information included much more consistent and uniform across equipment:

> Highly recommend overhauling all of the TOs so they are look similar. Work packages are a great format for junior technicians to read and follow versus using paragraphs. Also some TOs on one similar equipment type mentions a requirement while the other type does not. For example, the JHMCS HGU-55A/P TO mentions that visor snap screws may not protrude/must be flush however, the standard HGU-55/P TO does not mention it, but the bladder extends to that area. Even though, these are two separate equip types, having similar requirements aids in building proficiency and standardization.

Two talked about consolidating many sources of guidance:

> Consider maximum consolidation of guidance in publications. Too often, there are "outward" references in pubs that require either time or situational awareness of reference, which can lead to potential oversights.
>
> ***
>
> Having Tech Data Consolidated and updated in a singular location instead of messages, T.O.s, AFMANs [Air Force manuals], AFIs [Air Force instructions], OIs [operating instructions], Tech manuals, etc. and/or not conflicting with each other.

Standardization and Documentation Needed to Address Inconsistencies Across Trainers and Units

Several respondents talked about reducing inconsistencies across trainers and units:

> Lack of communication between trainers. Most trainers train individuals differently trainer to trainer.
>
> ***
>
> Standardized training classes for trainers. A big issue is everyone trains differently, and Train the Trainer is different at every base. I think it would help if we have a more standardized train the trainer course and a way to hold the trainers to the standard in some way.
>
> ***
>
> What would be helpful to AFE specifically, is for us to be afforded more opportunities to train within our field, and not get saddled with 400 additional

duties as has been the case at every unit I have been with over the last 10 years (Why does AFE continually get selected to be VCOs [vehicle control officials] for entire wings for instance when we typically only use one to two vehicles? WHY does AFE have to arm aircrew members when SECURITY FORCES EXISTS [SOLELY] TO ARM PEOPLE?!) We should also be provided with more chances to work with other AFE members to come together and better standardize the way we inspect gear. Yes, this is all covered in the TOs, but there are still so many base-specific, or AoR [area of responsibility]-specific, or MAJCOM specific "isms" that vary so much from base to base that there STILL feels like very little universality within the career field.

***

Standardized MDS equipment ACROSS THE BOARD. No more "up to interpretation." Equipment/supplies shortages, NSN [National Stock Number], . . . etc. standardized across every specific MDS. Supply contact for AFE in regards to GPC [Government Purchase Card] and Supply needs.

Allowing Specialization

Several comments mentioned a need to shred the career field, have SEI codes, or a need to allow people to specialize or train in one area of AFE only:

Separate styles of aircraft such as fighters and heavies to avoid task saturation and being tested on items that the students may never see in the field throughout their career.

***

Shred part of us out and maybe let us choose our airframe. Let us be proficient at what we do.

***

Tech school and career development should be specific to type of airframe to alleviate unnecessary information. Trying to cover heavy and fighter aircraft with some STS [specialty training standards] information inside a 13-week tech school isn't feasible.

***

Training specific to MDS/SEI specific. For example, if an individual is filling a billet for heavy aircraft, they shouldn't need to train on ACES II equipment.

Course Content

Several identified specific courses or course content:

7-level school for UGT [upgrade training].

***

Basic parachutist course for GA/STS [Guardian Angel/Special Tactics Squadron] technicians before they begin training on maintaining parachute systems.

***

> We need to “practice” like we “play,” i.e.—Malfunction officer training should be a developed and sanctioned program of record/training course that is a REQUIREMENT for people PRIOR to being signed off to complete this duty/function. Without FULLY qualified people (especially in a topic such as malfunctions) only allows for a future failure point in the event a real-world scenario takes place. In my opinion, we NEED to put a stronger emphasis and budget for training such as this to ensure our people are sent out the door and into the field ready to take on ANY situation they have the potential to encounter.

Two mentioned DPAS training:

> The only thing that I can think of that would help the new airmen is a video/class on how to use DPAS/AFRMS.

Dedicated Field Training Programs and Mobile Training Teams

Two participants mentioned mobile training teams:

> Specialized teams to include MAJCOM sustainment teams to travel to certain locations pertaining to certain gear, making group discussions and guidance. (Worked very well with the new Digital Eye Piece system.)
>
> ***
>
> Recruit known SMEs from the career field to instruct their specialty at the schoolhouse or be a part of a mobile training team. We should be relying on and utilizing the experts we currently have to teach subjects the career field struggles with.

And others mentioned having a dedicated section, training unit, or other formalized field training program:

> Each base should have a dedicated training section where individuals go to get trained on their MDS specific tasks before being framed out to a squadron. AFE rotation plans should go out the window. People in AFE move too much and most are worried about career progression but most in AFE can’t even do the basics of the job. We need experts in AFE not people that have moved sections to get a duty title.
>
> ***
>
> There should be more emphasis on training and re-organization of operational structure; training units should be such for everyone, then they PCS to an operational unit once they obtain proficiency.
>
> ***
>
> We could use an FTD [field training detachment], pipeline type training. An additional tech school curriculum for 3 levels could be added and then you could send 3 levels to this base. We don’t fit the mold of standard AFE so why is our tech training only designed for that. You want expertise but aren’t willing to institutionalize expert training, and expect incompetent leaders to somehow gain the expertise to OJT experts?
>
> ***

> On The Job Training school houses at each base. School houses at each base changes the manning document requirements. Trainers working in the schoolhouse do not impact mission capabilities and allow trainees to be in a non pressured environment to train and learn while Main shop 5 lvl, 7 lvl's can manage actually mission requirements without training a new employee, decreasing capabilities to work efficiently because of trainee and trainer requirements. Training school houses could be retired AFE CONTRACTED.

Other Topics

Participants also discussed a few other topics; however, the comments on these topics were mentioned by notably fewer respondents.

The first was about how training should be hands-on:

> More hands on and less CBT [computer-based training].
>
> ***
>
> Virtual trainings would be useless in the field, can't stop a bullet virtually, accounting for adrenaline rush, possible vision impairment and other stressors in a deployed location or location with high threat all of that "virtual" training is redundant, hands on in person training is most effective for anyone.
>
> ***
>
> Hands-on specific with all equipment.
>
> ***
>
> Hands-on training by an expert with sole focus on the training without interruption.
>
> ***
>
> I think that it is important to have training equipment available but there is a lot of value added to real-world equipment because there is a chance that it might be used so the expectation is higher. If we hold trainee's to a lower expectation/hold their hand, they will not be as motivated or grasp the importance of our job. We need to locate each trainee's "zone of proximal development."

A few were about needing a way to validate (verify) or ensure currency of proficiency:

> It would be nice to have leadership that works on equipment more often so that when asked about it they are very familiar with it and know what to do instead of having leaders that haven't touched the equipment or it has been a very long time. I feel like working with the lower enlisted on all tasks to stay familiar can help them know what the actual equipment is and can be confident on knowing them when/if asked about them.
>
> ***
>
> Objective and thorough validation of trainer capabilities.

A few were about how tech school or CDCs are not needed:

> Tech School is largely irrelevant to our career field.

***

> My flight keeps discussing what the use of training Airmen on parachute, life raft, and similar equipment is at tech school when we just train them like they have never seen the equipment before. Seems like we could cut down on schoolhouse time and focus on things every unit will do like sewing machine MX [maintenance] and how to read/navigate a T.O.

***

> Remove CDCS.

Lastly, a few suggested that the career field needs better ways to train the trainer:

> Training is only as good as the trainer. If we utilize outside resources that train to the same level, everyone gets the same training. Provide a platform for questions just in case there are issues or concerns along the way.

***

> We need trainers that are trained well and motivated. We do not need [to be] trained during a WIT [wing inspection team]. We need to make time get rid of extra duties as they get in the way of training.

Appendix C. Skill Level Progression Described in the Career Field Education and Training Plans

AFE's CFETP offers the following descriptions of skill levels 3 through 9:

> 5.1. Apprentice (3) Level. Following Basic Military Training, initial skills training is provided in a 3-level (apprentice) resident course taught at the 82d Training Group, 361st Training Squadron, Sheppard Air Force Base, Texas. Training provided in this course is determined by the results from the AFE Utilization and Training Workshop (U&TW). During the U&TW, subject matter experts use their extensive knowledge and experience and data provided by the Occupational Analysis Report (OAR) to determine course content. Task and knowledge training requirements are identified in Section A of the CFETP (STS [specialty training standards]). Upon completion of this initial-skills course, graduates are awarded the 3-skill level (AFSC 1P031). The course provides a foundation for additional training at the graduates' first duty assignment where trainees work with a trainer to increase knowledge and skills. Trainees utilize career development courses (CDC), task qualification training, and other exportable courses to progress in their career field. Once trainees have been task certified, they may perform the task unsupervised.
>
> 5.2. Journeyman (5) Level. Upgrade training to the 5-skill level includes task and knowledge training. After award of the 3-skill level, trainees are enrolled in the AFE Journeyman (5-level) CDC. Additionally, trainees must complete 5-skill level upgrade training requirements (core tasks & duty position tasks) identified in the STS [specialty training standards] and attachment 1. Once upgraded to the 5-skill level, trainees enter into continuation training to broaden their experience base by increasing their knowledge and skills in troubleshooting and solving more complex problems. Five-levels may be assigned job positions such as quality control and various section positions. After having at least 48 months in the Air Force, 5-levels should attend Airman Leadership School (ALS) to enhance their Professional Military Education (PME). Five-levels will be considered for appointment as unit trainers. Individuals will use their CDCs to prepare for Weighted Airman Promotion System (WAPS) testing. They should also consider continuing their education toward a Community College of the Air Force (CCAF) degree.
>
> 5.3. Craftsman (7) Level. For award of the 7-skill level, an individual must successfully complete all required 7-level training identified in this CFETP and meet 7-level minimum upgrade requirements (AFI 36-2201 and Enlisted Classification Directory). Completion of CDC 1P071 is part of the required 7-level upgrade training. A craftsman can expect to fill various supervisory and management positions such as shift leader, element NCOIC, flight superintendent, and various staff positions. Craftsmen should take courses or obtain added knowledge of management of resources and personnel. Exportable Mission Design Series (MDS)/Weapon Systems (WS) specific courses and MAJCOM/unit directed courses are also available. Continued academic education through CCAF and higher degree programs, especially in resources

and personnel management, is encouraged. In addition, when promoted to TSgt, individuals will attend the Noncommissioned Officer Academy (NCOA). TSgt's should enroll in the Senior NCO Academy (SNCOA) correspondence course to further their professional development. MSgt's will also attend SNCOA, in-residence, prior to promotion to the rank of SMSgt.

5.4. Superintendent (9) Level. For award of the 9-skill level, individuals must hold the rank of SMSgt. A 9-level can expect to fill positions such as flight chief, superintendent, and various staff NCOIC jobs. Additional training in the areas of budget, manpower, resources, and personnel management should be pursued through continuing education. In-residence or correspondence attendance at the SNCOA prior to promotion to the rank of SMSgt is mandatory. Additional higher education and completion of courses outside their career AFS is also recommended.[47]

[47] U.S. Department of the Air Force, 2015, pp. 9–10.

Appendix D. Task Items from the Career Field's Occupational Analysis Report

This appendix provides the complete list of items found in the AFE career field's 2017 occupational analysis report ordered by task number.[48] This list can be used to look up the full text of the items shown in some figures in the main body of the report.

A. Performing Parachute, Drogue, Deceleration, and Harness Maintenance Activities

Task	Description
A0001	Analyze parachute malfunctions
A0002	Assemble or disassemble cargo parachute systems
A0003	Assemble or disassemble deceleration parachute system canisters or containers
A0004	Assemble or disassemble deceleration parachute systems
A0005	Assemble or disassemble drogue parachute systems
A0006	Assemble or disassemble personnel parachute systems
A0007	Assemble or disassemble personnel recovery parachute systems
A0008	Assemble restraint devices, such as PCU-17/P or HBU-6/P
A0009	Assemble torso harnesses
A0010	Assess repairability of cargo parachute systems
A0011	Assess repairability of deceleration parachute systems
A0012	Assess repairability of drogue parachute systems
A0013	Assess repairability of personnel parachute systems
A0014	Assess repairability of personnel recovery parachute systems
A0015	Clean restraint devices, such as PCU-17/P or HBU-6/P
A0016	Darn or patch cargo parachute system canopies
A0017	Darn or patch cargo parachute system pilot chutes
A0018	Darn or patch deceleration parachute system canopies
A0019	Darn or patch drogue parachute system canopies
A0020	Darn or patch personnel parachute system canopies
A0021	Darn or patch personnel recovery parachute system canopies
A0022	Fabricate parachute components or accessories
A0023	Fabricate standard air drop training bundles (SATBs)
A0024	Fit or adjust personnel parachutes or torso harnesses
A0025	Fit or adjust restraint devices, such as PCU-17/P or HBU-6/P
A0026	Hang parachutes
A0027	Inspect automatic opening devices (AODs)

[48] AETC, 2017.

Task	Description
A0028	Inspect cargo parachute systems
A0029	Inspect cargo slings
A0030	Inspect deceleration parachute systems
A0031	Inspect drag chute deployment bags
A0032	Inspect drogue parachute systems
A0033	Inspect mortar tube assemblies
A0034	Inspect or repack advanced concept ejection seats (ACESs) II
A0035	Inspect parachute harness components or accessories
A0036	Inspect personnel lowering devices (PLDs)
A0037	Inspect personnel parachute systems
A0038	Inspect personnel recovery parachute systems
A0039	Inspect personnel restraint equipment, such as aircraft seat belts or shoulder harnesses
A0040	Inspect restraint devices, such as PCU-17/P or HBU-6/P
A0041	Inspect torso harnesses
A0042	Install drogue parachute system components or accessories
A0043	Modify torso harnesses
A0044	Operationally check personnel parachute system canopy releases
A0045	Pack cargo parachute systems
A0046	Pack deceleration parachute systems
A0047	Pack drogue parachute systems
A0048	Pack personnel parachute systems
A0049	Pack personnel recovery parachute systems
A0050	Perform minor maintenance on PLDs
A0051	Perform minor repairs on parachutes
A0052	Perform static weight tests on personnel restraint equipment or PLDs
A0053	Prepare parachutes for shipment
A0054	Prepare parachutes for storage
A0055	Recover cargo parachutes from off-station drop zones
A0056	Remove, replace, or install aircrew restraint equipment hardware or components
A0057	Remove, replace, or install cargo parachute system components or accessories
A0058	Remove, replace, or install cargo sling hardware
A0059	Remove, replace, or install drogue parachute system components or accessories
A0060	Remove, replace, or install emergency oxygen cylinders
A0061	Remove, replace, or install ground crew restraint equipment hardware
A0062	Remove, replace, or install personnel parachute system components or accessories
A0063	Remove, replace, or install personnel recovery parachute system components or accessories
A0064	Remove, replace, or install PLDs
A0065	Remove, replace, or install restraint harness components or accessories
A0066	Repair cargo parachute release systems
A0067	Repair container delivery system (CDS) slings
A0068	Repair or construct seams on aircrew flight equipment (AFE)
A0069	Repair parachute system packs or containers
A0070	Repair torso harnesses

Task	Description
A0071	Rig 4-line releases
A0072	Rig drogue parachutes
A0073	Rig parachute loads
A0074	Schedule maintenance for AODs
A0075	Verify serviceability of parachute actuator testers
A0076	Wash parachute canopies

B. Performing Flotation Equipment Maintenance Activities

Task	Description
B0077	Assemble or disassemble escape slide compressed air cylinders
B0078	Bleed escape slide compressed air cylinders
B0079	Check pressure readings of escape slide compressed air cylinders
B0080	Coordinate life rafts for servicing with outside agencies
B0081	Coordinate refills of compressed gas cylinders with outside agencies
B0082	Fit or adjust life preserver units (LPUs)
B0083	Fold and pack life rafts
B0084	Inspect escape slide carrying cases
B0085	Inspect escape slides
B0086	Inspect life raft carrying cases
B0087	Inspect life raft components or accessories
B0088	Inspect life rafts
B0089	Inspect LPU components or accessories
B0090	Inspect LPUs
B0091	Inspect or test manual reverse osmosis desalinators, such as MROD-06-LL-01 or MROD-35-LL-01
B0092	Install life rafts in survival kits, such as ACES II or ML-4s
B0093	Install LPU components or accessories
B0094	Install survival kits in life rafts
B0095	Pack escape slides
B0096	Pack LPUs
B0097	Perform vent checks on life rafts
B0098	Prepare escape slide or life raft cylinders for condemnation, shipping, or refilling
B0099	Procure carbon dioxide cylinders for LPUs
B0100	Remove or install escape slide batteries
B0101	Remove or install LPUs on parachutes or torso harnesses
B0102	Remove, replace, or install escape slide compressed air cylinders
B0103	Remove, replace, or install escape slide hardware
B0104	Remove, replace, or install flotation test fixture components or accessories
B0105	Remove, replace, or install FLU-9/P or FLU-9B/P inflators
B0106	Repair escape slide carrying cases
B0107	Repair escape slides
B0108	Repair life raft carrying cases
B0109	Repair life rafts

C. Performing Helmet, Optical Accessory, and Oxygen and Breathing Equipment Maintenance Activities

Task	Description
C0111	Adjust or align helmet-mounted displays (HMDs)
C0112	Assemble or disassemble oxygen prebreather consoles
C0113	Build-up helmets
C0114	Clean or disinfect oxygen masks
C0115	Clean or disinfect zetaliners or x-liners
C0116	Coordinate refills of high-pressure oxygen bottles with other agencies
C0117	Customize breathing equipment
C0118	Fabricate helmet custom edgerolls
C0119	Fit or adjust communication earplugs
C0120	Fit or adjust eye protection devices
C0121	Fit or adjust helmets, other than joint helmet-mounted cueing system (JHMCS) helmet display units (HDUs)
C0122	Fit or adjust hush kits
C0123	Fit or adjust integrated chin and nape straps (ICNSs) or nape straps
C0124	Fit or adjust JHMCS helmet visors
C0125	Fit or adjust nuclear flash blindness goggles, such as EEU-2/P, EEU-2A/P, or MIL-G-635
C0126	Fit or adjust NVDs
C0127	Fit or adjust oxygen mask suspension harnesses
C0128	Fit or adjust oxygen masks
C0129	Fit or adjust zetaliners or x-liners
C0130	Inspect attenuation custom communication earpiece systems (ACCESs)
C0131	Inspect bailout oxygen bottles
C0132	Inspect boom-type microphones
C0133	Inspect communication cords
C0134	Inspect eye protection devices
C0135	Inspect passive attenuation communication earphones (PACEs)
C0136	Inspect portable oxygen bottles
C0137	Inspect, assemble, or disassemble oxygen masks
C0138	Issue JHMCS HDUs
C0139	Issue optical devices
C0140	Maintain nuclear flash blindness goggles, such as EEU-2/P, EEU-2A/P, or MIL-G-635
C0141	Maintain pilot interface connectors
C0142	Maintain protective helmets
C0143	Modify ACCESs
C0144	Modify PACEs
C0145	Mount boom microphones on helmets
C0146	Mount dual-visors on helmets
C0147	Mount lip lights on boom microphones
C0148	Patch, repair, or replace helmet custom edge rolls

Task	Description
C0149	Perform daily-use inspections on combined aircrew system testers (CASTs)
C0150	Perform quick-disconnect coupling checks on ejection seat emergency oxygen cylinders
C0151	Purge JHMCS HDUs
C0152	Remove or install carbon monoxide detector components or accessories
C0153	Remove or install F-35 HDUs
C0154	Remove or install F-35 helmet vehicle interfaces (HVIs)
C0155	Remove or install high-pressure oxygen bottles
C0156	Remove or install seat kit oxygen regulators
C0157	Repair eye protection devices
C0158	Replace communication cords

D. Performing Weapon, Ammunition, Pyrotechnic, and Explosive Device Maintenance Activities

Task	Description
D0159	Clear weapons
D0160	Coordinate distribution of pyrotechnics with munitions maintenance personnel
D0161	Forecast munitions requirements
D0162	Inspect facility explosives licenses
D0163	Inspect locking cord cutters
D0164	Inspect pyrotechnics
D0165	Inspect reefing line cutters
D0166	Inspect spreading gun assemblies
D0167	Inspect, remove, or install AADs
D0168	Inventory ammunition
D0169	Inventory explosive devices
D0170	Inventory pyrotechnics
D0171	Inventory weapons
D0172	Issue ammunition or weapons
D0173	Load individual weapons
D0174	Maintain ammunition or weapons
D0175	Maintain pyrotechnic opening devices
D0176	Maintain storage facilities for ammunition or weapons
D0177	Maintain storage facilities for pyrotechnics
D0178	Perform arms room attendant duties
D0179	Post explosive class and division requirements placards
D0180	Remove, replace, or install ammunition or pyrotechnics in survival kits or vests
D0181	Remove, replace, or install ballistic opening devices
D0182	Remove, replace, or install locking cord cutters
D0183	Remove, replace, or install parachute explosive devices for storage
D0184	Remove, replace, or install parachute time-delay cartridges
D0185	Remove, replace, or install pyrotechnic AODs

Task	Description
D0186	Remove, replace, or install reefing line cutters
D0187	Remove, replace, or install spreading gun assemblies
D0188	Remove, replace, or install survival kit signal flares
D0189	Remove, replace, or install universal water-activated release system (UWARS) canopy release fittings
D0190	Store ammunition or weapons
D0191	Store parachute explosive devices
D0192	Store pyrotechnics
D0193	Transport ammunition or weapons for turn-in
D0194	Transport pyrotechnics for turn-in
D0195	Turn-in ammunition or weapons
D0196	Turn-in pyrotechnics

E. Performing Electronic Communication Equipment and Signaling Device Maintenance Activities

Task	Description
E0197	Coordinate maintenance or inspection of electronic devices with other agencies
E0198	Inspect electronic communications equipment or signaling devices
E0199	Inspect strobe lights
E0200	Inspect survival radios
E0201	Locate inadvertently activated beacon signals
E0202	Maintain soldier portable chargers (SPCs)
E0203	Program survival radios
E0204	Register beacons, radios, or search and rescue satellite-aided tracking (SARSAT) frequencies with outside agencies
E0205	Remove or install electronic communications equipment or signaling devices
E0206	Remove or install strobe lights
E0207	Track radio battery service life or usage
E0208	Verify appropriate communications security (COMSEC) employment

F. Performing Aircrew Contamination Control Area (ACCA) and Aircrew Chemical Defense Ensemble (ACDE) Activities

Task	Description
F0209	Annotate ACDE size data for aircrew members
F0210	Assemble or disassemble ACCAs
F0211	Assemble or disassemble ACDE components or accessories, such as building D-bags or D-1 bags
F0212	Conduct ACCA team training
F0213	Conduct ACDE don or doff procedures
F0214	Conduct aircrew decontamination procedures
F0215	Conduct ejection egress procedures with ACDE

Task	Description
F0216	Conduct ground egress procedures with ACDE
F0217	Coordinate pickup or destruction of contaminated flight equipment with other agencies
F0218	Coordinate setup of ACCAs with other agencies
F0219	Decontaminate or mitigate ACCA work areas
F0220	Decontaminate or mitigate ACDE accessories or components
F0221	Decontaminate or mitigate flight equipment
F0222	Establish ACCA work and rest cycles
F0223	Establish or implement contingency operations (CONOPS)
F0224	Fit or adjust ACDEs
F0225	Inspect ACDEs
F0226	Inventory ACDEs
F0227	Issue ACDEs
F0228	Monitor detection papers
F0229	Operate joint chemical agent detectors (JCADs)
F0230	Perform equipment or site protection procedures, such as for mobility bins or vehicles
F0231	Perform pallet build-up activities
F0232	Prepare equipment or sites for detection of agents
F0233	Remove or install filter assemblies wearing ground crew ensembles (GCEs)
F0234	Repair ACDEs

G. Performing Aircraft Cover, Soundproofing, Upholstery, Thermal Curtain, Cargo Net, and Sewing Machine Maintenance Activities

Task	Description
G0235	Adjust sewing machines
G0236	Assemble or disassemble sewing machine components or accessories
G0237	Assess repairability of aircraft fabric items, such as avionics nets, bunk covers, or dust covers
G0238	Construct tackings or knots for AFE
G0239	Coordinate or process sewing machines for off-base maintenance or repairs with outside agencies
G0240	Cut foam rubber for aircraft mattresses or seat cushions
G0241	Design patterns, templates, blueprints, or prototypes
G0242	Fabricate AFE protective covers
G0243	Fabricate aircraft batting insulation
G0244	Fabricate aircraft blanket insulation
G0245	Fabricate aircraft covers, such as seat, headrest, or armrest covers
G0246	Fabricate aircraft fabric item patches, such as aircraft blowout or inspection hole patches
G0247	Fabricate aircraft fabric items, such as avionics nets, bunk covers, or dust covers
G0248	Fabricate aircraft headliners
G0249	Fabricate aircraft soundproofing
G0250	Fabricate cannon plug covers
G0251	Fabricate gaskets or seals
G0252	Fabricate heat reflective curtains

Task	Description
G0253	Fabricate inlet or exhaust plugs
G0254	Fabricate locally manufactured items
G0255	Fabricate military aircrew restraint system (MARS) belts
G0256	Fabricate privacy curtains
G0257	Inspect aircraft soundproofing
G0258	Inspect aircraft upholstery
G0259	Inspect protective covers
G0260	Inspect thermal curtains
G0261	Interpret blueprints
G0262	Modify inlet or exhaust plugs
G0263	Overhaul sewing machine face assemblies
G0264	Perform operator maintenance on sewing machines
G0265	Perform preventative maintenance on sewing machines
G0266	Remove, replace, or install aircraft fabric item patches, such as aircraft blowout or inspection hole patches
G0267	Remove, replace, or install aircraft floor coverings
G0268	Remove, replace, or install aircraft soundproofing
G0269	Remove, replace, or install fabric item hardware
G0270	Remove, replace, or install protective cover hardware
G0271	Remove, replace, or install sewing machine motors
G0272	Repair aircraft soundproofing
G0273	Repair aircraft upholstery
G0274	Repair cargo nets
G0275	Repair protective covers
G0276	Repair thermal curtains
G0277	Repair troop seats
G0278	Reseal thermal curtains
G0279	Sew flight clothing modifications, such as knee boards or map straps
G0280	Time sewing machines
G0281	Troubleshoot sewing machines

H. Performing Aircrew Flight Equipment (AFE) Maintenance Activities

Task	Description
H0282	Adjust F-35 inflation hoses
H0283	Adjust pressure regulators
H0284	Assemble or disassemble survival kits
H0285	Assemble or disassemble survival vests
H0286	Clean anti-exposure suits or liners
H0287	Clean belt testers
H0288	Conduct ejection egress procedures, other than with ACDE
H0289	Conduct helicopter emergency egress device system (HEEDS) techniques or procedures
H0290	Conduct non-ejection egress procedures, other than with ACDE

Task	Description
H0291	Conduct pre-ejection procedures on ejection seat trainers
H0293	Coordinate modifications on equipment, other than technical compliance technical order (TCTO) modifications, with other agencies
H0294	Coordinate nondestructive inspections (NDIs) of tools or equipment with NDI facilities
H0295	Coordinate prepositioning of equipment in aircraft with other agencies
H0296	Coordinate preventive maintenance for drying tower equipment, such as ropes or tie-down bars, with other agencies
H0297	Coordinate replacement of oil and water separator components or accessories
H0298	Coordinate TCTO or time compliance technical directive (TCTD) modifications on equipment with other agencies
H0299	Darn survival vests
H0300	Demonstrate use of flight equipment
H0301	Fit or adjust anti-exposure suits or liners
H0302	Fit or adjust F-35 pilot flight equipment
H0303	Fit, adjust, or modify anti-G garments
H0304	Glue seams of anti-exposure suits
H0305	Inspect AFE continuation training equipment
H0306	Inspect aircraft installed flight equipment
H0307	Inspect anti-exposure suits or liners
H0308	Inspect anti-G garments
H0309	Inspect automatic deployment actuators
H0310	Inspect belt testers
H0311	Inspect survival components
H0312	Inspect survival vests
H0313	Install automatic deployment actuators
H0314	Instruct aircrew members on equipment or procedural modifications
H0315	Inventory aircraft installed equipment
H0316	Inventory flight equipment, other than aircraft installed equipment, ammunition, weapons, pyrotechnics, or ACDEs
H0317	Issue flight equipment, other than JHMCS HDUs, optical devices, ammunition, weapons, ACDEs, or explosive devices
H0318	Lubricate belt testers
H0319	Lubricate zippers on anti-exposure suits
H0320	Lubricate zippers on anti-G garments
H0321	Maintain passenger demonstration kits
H0322	Maintain safety data sheets (SDSs)
H0323	Operationally check drying tower winches
H0324	Pack anti-exposure suits
H0325	Perform aircraft safe for maintenance inspections
H0326	Perform preventive maintenance on tension devices, such as cable tension devices
H0327	Perform quality assurance (QA) checks on flight equipment
H0328	Remove or install F-35 full coverage lower G-garment connectors
H0329	Remove or install F-35 inflation hoses
H0330	Remove or install flight equipment onto aircraft
H0331	Remove or install hardware, such as grommets or snaps
H0332	Remove or install survival components or accessories

Task	Description
H0333	Remove or install survival kits
H0334	Remove, replace, or install anti-exposure suit components or accessories
H0335	Remove, replace, or install drying tower cables
H0336	Remove, replace, or install oil and water separator components or accessories
H0337	Repair anti-exposure suits or liners
H0338	Repair anti-G garments
H0339	Repair or modify coveralls, such as bunny suits
H0340	Schedule equipment for inspection, repair, or maintenance
H0341	Service hydraulic equipment, such as filling reservoirs or bottles
H0342	Stencil data onto items, such as equipment, clothing, or parachute components or accessories
H0343	Track misplaced or lost equipment
H0344	Track TCTO or TCTD inspections
H0345	Transport personnel or equipment on flightlines
H0346	Wax cords or threads

I. Performing Training Activities

Task	Description
I0347	Administer or score tests
I0348	Complete student entry or withdrawal forms
I0349	Conduct ACDE training
I0350	Conduct formal course classroom training
I0351	Conduct on-the-job training (OJT)
I0352	Coordinate continuation training with other agencies
I0353	Determine continuation training requirements
I0354	Determine training requirements, other than continuation training requirements
I0355	Develop continuation training materials, programs, plans, or procedures
I0356	Develop formal course curricula, plans of instruction (POIs), or specialty training standards (STSs)
I0357	Develop or procure continuation training materials or aids
I0358	Develop or procure training materials or aids, other than for continuation training
I0359	Develop training materials, programs, plans, or procedures, other than for continuation training
I0360	Develop written tests
I0361	Evaluate effectiveness of continuation training materials, programs, plans, or procedures
I0362	Evaluate effectiveness of training materials, programs, plans, or procedures, other than for continuation training
I0363	Evaluate progress of trainees in continuation training
I0364	Evaluate progress of trainees, other than for continuation training
I0365	Evaluate training methods or techniques of instructors
I0366	Maintain training records or files in training business area (TBA)
I0367	Personalize continuation training lesson plans
I0368	Personalize lesson plans, other than for continuation training
I0369	Plan or schedule training

Task	Description
I0370	Prepare job qualification standards (JQSs)
I0371	Set up or tear down survival training equipment
I0372	Train aircrew members to perform preflight equipment inspections
I0373	Write training reports

J. Performing Management and Supervisory Activities

Task	Description
J0374	Annotate time and attendance sheets for civilian employees
J0375	Assign personnel to work areas or duty positions
J0376	Assign sponsors for newly assigned personnel
J0377	Brief aerospace physiology topics, such as hypoxia or sensory illusions
J0378	Brief personnel concerning training programs or matters
J0379	Conduct general meetings, such as staff meetings, briefings, conferences, or workshops
J0380	Conduct mishap investigations
J0381	Conduct supervisory orientations for newly assigned personnel
J0382	Conduct supervisory performance feedback sessions
J0383	Conduct, evaluate, or participate in continuous process improvement programs, such as green belt, action requests (ARs), and Air Force Technical Order (AFTO) 22s (Technical Manual [TM] Change Recommendation and Reply)
J0384	Counsel subordinates concerning personal matters
J0385	Determine or establish logistics requirements, such as personnel, equipment, tools, parts, supplies, or workspace
J0386	Determine or establish work assignments or priorities
J0387	Develop or establish work methods or procedures
J0388	Develop organizational or functional charts
J0389	Draft budget requirements
J0390	Establish organizational policies, such as operating instructions (OIs), standard operating procedures (SOPs), or support agreements
J0391	Establish performance standards for subordinates
J0392	Establish procedures for accountability of equipment, tools, parts, or supplies
J0393	Evaluate aircrew members performing ground egress procedures
J0394	Evaluate inspection report findings or inspection procedures
J0395	Evaluate job hazards or compliance with Air Force Occupational Safety and Health (AFOSH) program
J0396	Evaluate maintenance or utilization of equipment, tools, parts, supplies, or workspace
J0397	Evaluate personnel for compliance with performance standards
J0398	Implement safety or security programs
J0399	Initiate or coordinate deficiency, service, or status reports, such as material deficiency reports (MDRs), with other agencies
J0400	Inventory classified materials or documents
J0401	Investigate accidents or incidents
J0402	Maintain administrative and training files, such as AF Form 1522s (Aviation Resource Management System [ARMS] Additional Training Accomplishment Report)
J0403	Maintain due-in-from-maintenance (DIFM) transaction reports
J0404	Maintain organizational equipment or supply records

Task	Description
J0405	Maintain publications libraries, other than technical order (TO) libraries
J0406	Maintain TCTOs and TCTDs
J0407	Maintain TO libraries
J0408	Manage electronic files or records
J0409	Perform critical point inspections (CPIs) or in-process inspections (IPIs)
J0410	Plan layouts of facilities
J0411	Prepare reports of survey
J0412	Research, prepare, or interpret deployment reports
J0413	Review aircraft flight or maintenance records, such as AFTO Form 781-Series
J0414	Review budget requirements
J0415	Review joint technical data (JTD) changes, TCTDs, or supplements
J0416	Review TO changes or TCTOs
J0417	Schedule personnel for deployments, temporary duties (TDYs), leaves, or passes
J0418	Write inspection reports
J0419	Write job or position descriptions
J0420	Write or endorse civilian performance appraisals

Abbreviations

AAD	automatic actuation device
ACC	Air Combat Command
ACCA	aircrew contamination control area
ACDE	aircrew chemical defense ensemble
ACES	advanced concept ejection seat
AETC	Air Education and Training Command
AFE	aircrew flight equipment
AFERMS	Aircrew Flight Equipment Records Management System
AFGSC	Air Force Global Strike Command
AFMAA	Air Force Manpower Analysis Agency
AFMC	Air Force Materiel Command
AFRC	Air Force Reserve Command
AFSC	Air Force Specialty Code
AFSOC	Air Force Special Operations Command
AMC	Air Mobility Command
ANG	Air National Guard
AOD	automatic opening device
CDC	career development course
CFETP	Career Field Education and Training Plan
DPAS	Defense Property Accountability System
EPR	enlisted performance report
HAF	Headquarters Air Force
IST	initial skills training
ITEC	information technology equipment custodian
JHMCS	Joint Helmet Mounted Cueing System
MAJCOM	major command
MDS	Mission Design Series
MEST	mission-essential skills training
NCOIC	noncommissioned officer in charge
NVD	night-vision device
OAR	occupational analysis report
OJT	on-the-job training
OPTEMPO	operational tempo
PACAF	Pacific Air Forces
PCS	permanent change of station

PLD	personnel lowering device
RSA	radio set adapter
SEI	special experience identifier
SERE	survival, evasion, resistance, and escape
SME	subject-matter expert
STS	specialty training standard
TBA	Training Business Area
TCTD	time compliance technical directive
TCTO	technical compliance technical order
TDY	temporary duty
TO	technical order
USAF	U.S. Air Force
USAFE	U.S. Air Forces in Europe

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PROJECT AIR FORCE

Aircrew flight equipment (AFE) personnel inspect, repair, maintain, pack, and adjust aircrew flight equipment, which is vital to the safety of the aircrews. Consequently, U.S. Air Force leadership is concerned about proficiency in the career field. Previous RAND research suggested that changes to training may be needed. This report, following from that recommendation, provides a deeper review and identifies improvements.

The authors conducted a survey of more than 1,000 AFE enlisted personnel to help the career field better justify specific changes to training and personnel management policies. The survey explored six topics: (1) the workforce's level of proficiency, (2) adequacy of initial skills training, (3) adequacy of follow-on training in the field, (4) maintenance of proficiency of 5-level and 7-level personnel, (5) impact of workload on ability to train, and (6) ways to improve training and proficiency. The authors identify proficiency gaps in the workforce and suggest where to first target training resources.

$49.95

ISBN-10 1-9774-1165-7
ISBN-13 978-1-9774-1165-5

www.rand.org

RR-A991-1