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Increasing Aircrew Flight Equipment Personnel Proficiency

Insights from Members of the Career Field

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Preface

The Air Force Aircrew Flight Equipment specialty (AFE)—created in 2008 as a merger of two previously distinct career fields, Aircrew Life Support and Survival Equipment—plays a crucial role in ensuring the safety of aircraft pilots, other aircrew, and special warfare operators via training and by engaging in maintenance, inspection, repair, and adjustment of aircrew flight equipment, such as flight helmets, parachutes, and safety rafts. However, despite career field and Air Combat Command (ACC) leadership attention, proficiency of airmen in this career field has generally declined.

ACC/Flight Operations Division (A3T) asked RAND Project AIR FORCE (PAF) to investigate the causes for the decline in AFE proficiency and develop courses of action to mitigate the issue. The effort focused on collecting and analyzing subject-matter experts' viewpoints, insights, and suggestions for addressing the proficiency issues, which were gathered from interviews with a wide range of AFE personnel from eight Air Force bases.

The research reported here was commissioned by Air Combat Command, Directorate of Air and Space Operations and conducted within the Manpower, Personnel and Training Program as part of a fiscal year 2018 project. It should interest AFE community leadership; Air Force and U.S. Department of Defense (DoD) leaders concerned with the safety of aircraft pilots and the effectiveness of the Air Force more broadly; and Air Force and DoD senior leaders responsible for maintaining and refining the structure of Air Force organizations.

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Summary

Issue

Maintaining a proficient workforce in the Aircrew Flight Equipment (AFE) career field is of great concern to Air Force leadership because of the vital role these airmen play in protecting the lives of aircrew. Yet AFE performance problems have surfaced repeatedly over the past several years, raising concerns that the process for maintaining proficiency in the career field may be in need of a major overhaul. Although there was already a wealth of speculation about the causes of the proficiency problems among AFE personnel, Air Combat Command leadership requested RAND Project AIR FORCE's help in identifying (1) the full range of possible causes, (2) actions that Air Combat Command should take to increase proficiency in the AFE specialty, and (3) which ones to focus on first in remedying the problems.

Approach

Our study approach included the following:

- conducting focus groups and panel discussions at eight bases with members of the AFE workforce (primarily regular Air Force) and other personnel involved in their management and training
- reviewing and analyzing relevant Air Force data, policy guidance, and other related documentation.

Findings

- In the overwhelming majority of discussions, participants talked about the career field being less proficient than the ideal. In only two discussions did a participant say there were no proficiency concerns.
- Participants described a number of drivers of the proficiency problems currently plaguing the career field, including
  - various training problems, such as on-the-job training not meeting needs, problems with the structure and curriculum used in initial skills training, issues with technical orders, and inexperienced trainers
  - the high volume of tasks, including its impact on skill degradation and on a high operational tempo
  - leadership issues, such as inexperienced noncommissioned officers in charge (NCOICs), superintendents who are too junior or who are missing important depth of technical expertise in the area where they are leading, and a lack of officer advocacy for the career field
  - other personnel-related issues, such as morale and lack of experience.

Recommendations

We discuss and offer many recommendations to address the drivers of proficiency cited by participants. The following are among those that, in our judgment, are most likely to have the biggest impact:[1]

- Reduce the training burden and skill gap resulting from moving personnel across broad types of mission design series (MDS) (e.g., moving personnel from heavies to fighters) by limiting these moves in the short term and shredding the career field by MDS grouping in the long term. This will require additional manpower (i.e., changes to Air Force Manpower Analysis Agency [AFMAA]'s manpower determinants), and promotion opportunities may need to be protected if they are affected by reduced moves.
- Reduce the training burden and resulting skill gap from shop moves (i.e., moving personnel from one shop to another) by developing a formal strategy for them and changing the Career Field Education and Training Plan requirement that forces such moves. In the longer run, increase manpower to account for the additional training time that is needed when shop moves occur (i.e., account for these moves in AFMAA's manpower determinants).
- Change how training is managed and resourced. Formalize and resource on-the-job training and use key subject-matter experts (including former AFE personnel who have retired, separated, or are now civilians) for training the workforce at all levels to reinfuse the depth of knowledge that has been lost over time.
- Set up NCOICs and superintendents to succeed by assigning them to sections and flights in alignment with their recent MDS experience, teaching them AFE-specific planning skills, and developing them as AFE leaders prior to entering these positions. Additional manpower (i.e., changes to AFMAA's manpower determinants) will likely be needed to cover gaps during turnover.

In addition, the Air Force needs to take steps to establish more-effective advocacy for the career field—one of only a few enlisted-only career fields in the Air Force. One way to do this could be to develop a select set of officers with AFE-specific expertise and experience and provide them with special-experience identifiers. The intent would be to produce officers who would be well situated as advocates for the career field and who could ensure a long-term investment in the AFE career field beyond the tactical level of leadership and execution.

Finally, further exploration of the latest manpower study's underlying methods and data is needed to determine whether the factors identified in this report are adequately captured. To accomplish this, the Air Force needs to (1) hold interviews with the AFMAA personnel who conducted the latest AFE career field manpower study, (2) compare the AFMAA analysis to the factors identified in this report as potentially affecting proficiency in the AFE career field, and (3) further vet that AFMAA analysis by convening a panel of AFE representatives to identify potential gaps in what is currently accounted for in the existing manpower standard.

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[1] Many recommendations are interrelated; implementation of some may negate the need for others.

Acknowledgments

We would like to acknowledge a number of Air Force personnel who contributed to this work. Maj Gen Kevin A. Huyck, our project sponsor while the work was ongoing, and our project point of contact, SMSgt Joseph Rust, provided important guidance and feedback over the course of the study. CMSgt John McEnaney invited us to attend the career field's 2019 Special Training Requirements Team meetings and separately offered his subject-matter expert views and insights as the AFE career field manager. Our points of contact from the various major commands helped plan and coordinate our visits with each of the eight bases, including SMSgt Joseph Rust, CMSgt Shane Sandlin (Air Force Special Operations Command A3/A3TL), SMSgt Chris Tennyson (Air Mobility Command A3/A3TL); CMSgt Paul Muggli (U.S. Air Force National Guard Bureau A2/3/6), SMSgt Bryan Rudquist (Air Force Global Strike Command/A3OL) MSgt Jordan Miles (U.S. Air Force National Guard Bureau A2/3/6), and SMSgt Terence Zelek (Air Education and Training Command/19AF/OSSL). Several of the career field's chiefs and AFE subject-matter experts also provided extensive comments and feedback on an earlier version of this report.

Several RAND Corporation colleagues also contributed to the work in various ways: Varun Chandorkar assisted with transcription; Kit Conn provided comments, ideas, and feedback on the draft report; and Tetsu Yamada helped review Occupational Analysis Reports early in the project. We would also like to thank our peer reviewers, Dave Schulker and Shirley Ross, for their detailed and insightful feedback and comments which significantly improved the report.

Lastly, we would like to thank our many interviewees and focus group participants for taking the time to sit with us and discuss their views, ideas, and concerns. Without their willingness to take time out of their busy schedules, we would not have been able to complete this study.

Abbreviations

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
AFEO	aircrew flight equipment officer
AFI	Air Force Instruction
AFMAA	Air Force Manpower Analysis Agency
AFMD	Air Force manpower determinant
AFPC	Air Force Personnel Center
AFSC	Air Force Specialty Code
AFSOC	Air Force Special Operations Command
ASVAB	Armed Forces Vocational Aptitude Battery
BA	back automatic
CBRN	chemical, biological, radiological, nuclear
CBRNE	chemical, biological, radiological, nuclear, and explosives
CDC	career development courses
CFETP	Career Field Education and Training Plan
CFM	career field manager
CMSgt	chief master sergeant
CUT	cross utilization training
DoD	U.S. Department of Defense
DPAS	Defense Property Accountability System
FTU	Field Training Unit

IPI	in-process inspection
IQT	initial qualification training
IST	initial skills training
MAJCOM	major command
MDS	mission design series
MSgt	master sergeant
NCO	noncommissioned officer
NCOIC	noncommissioned officer in charge
OAR	Occupational Analysis Report
OJT	on-the-job training
OPTEMPO	operational tempo
OSS	Operations Support Squadron
PCS	permanent change of station
QA	quality assurance
QI	quality inspector
RegAF	Regular Air Force
SEI	special experience identifier
SERE	survival evasion reconnaissance escape
SME	subject-matter expert
SMSgt	senior master sergeant
SNCO	senior noncommissioned officer
STRT	Specialty Training Requirements Team
TBA	Training Business Area
TDY	temporary duty assignment
TFI	Total Force Integration
TO	technical order
WAPS	Weighted Airman Promotion System

1. Introduction

The work performed by personnel in the Aircrew Flight Equipment career field (AFE) plays a vital role in protecting the lives of aircrew, special warfare personnel, and other personnel performing rated duties. More specifically, AFE personnel are responsible for inspecting, repairing, fitting, and maintaining important safety and flight equipment, including helmets, oxygen masks, parachutes, flotation devices, survival kits, aircrew night vision goggles, other helmet-mounted devices, antigravity garments, and aircrew chemical, biological, radiological, nuclear (CBRN) equipment (Air Force Enlisted Classification Directory, 2019).[2]

Many of these pieces of equipment are necessary not only for mission success but also for the safe return of aircrew to their families. Some pieces of equipment, such as life rafts, ejection-seat parachutes, and flotation devices, may be used only in the most extreme of circumstances (e.g., during an inflight emergency) but, when deployed, could mean the difference between life or death. Others, such as g-suits and oxygen masks used by aircrew and parachutes used by special warfare personnel, are life-preserving devices that are used daily. Other devices that AFE personnel are responsible for fitting and maintaining (e.g., night-vision goggles, helmets, and audio devices) may have indirect impact on safety or may support the mission in other meaningful ways.

In light of the direct impact that AFE personnel have on aircrew safety, maintaining a high level of performance of its personnel is of great concern to Air Force leadership. Yet performance problems among AFE personnel have surfaced repeatedly over the past several years, raising concerns that the process for maintaining the proficiency of AFE personnel is in need of a major overhaul. Several mishap reports, unit effectiveness inspections, and staff assistance visits have highlighted declining personnel proficiency across the AFE enterprise.

For example, at the request of AFE leadership, in 2013–2014, Air Combat Command (ACC) made the AFE proficiency issues a command interest item, and in 2015–2017, AFE requested that the Inspector General of the Air Force make this area a special-interest item. AFE program deficiencies have also limited flying at several units over the past couple of years. Inspections have continued to flag new problems, leading to additional grounding of aircraft even as our research was nearing completion. Despite this additional emphasis by senior leadership and concerted efforts by AFE leadership to address the problems, systemic issues have remained.

In 2017, following several incidents, the Air Combat Command Directorate of Air and Space Operations (ACC/A3) directed the Flight Operations Division (ACC/A3T) to develop a path

[2] Appendix G contains the AFE job description and entry requirements. Appendix H contains a glossary of key Air Force terms relevant to the AFE career field and used in this report.

forward. As part of developing that path forward, ACC/A3T asked RAND Project AIR FORCE to help identify actions that ACC should take to increase proficiency in the AFE specialty.

Exploring Potential Causes and Remedies

The decline in proficiency may be because of any number of changes that have occurred in the career field in recent years. The change in mandated frequencies of maintenance activities is one possible culprit. For example, because the mandated time period in which packed parachutes need to be repacked as part of standard maintenance is much longer now than it used to be, people are naturally less experienced overall at packing them. This may make them more likely to forget proper procedures and improperly pack a parachute.

Changes resulting from the merger of Air Force Specialty Code (AFSC) 1T0X1 (Life Support) and AFSC 2A7X4 (Survival Equipment) to create the AFE specialty, 1P0X1, in 2008 could be another culprit. In 2008, the career field was merged as a result of budget cuts from Program Budget Decision 720, which necessitated eliminating about 40,000 Air Force personnel across the Air Force (Troyer, 2007). The view at the time was that there was enough overlap in the duties performed by the two career fields that efficiencies could be gained if the career fields were merged, and fewer personnel would therefore be needed overall. The merger went forward, and the overall manpower requirements (i.e., the number of personnel that the Air Force Manpower Analysis Agency [AFMAA] manpower analysis specifies as needed to accomplish the work) for the merged career fields were reduced. The skills training was changed to cover the duties of both career fields, and the overall number of tasks in which personnel must maintain proficiency was increased. Both the change in training and the increase in tasks could be having an impact on performance.

Insufficient numbers of personnel to perform the work is yet another area for consideration. For example, ACC's AFE percentage manning for *funded authorizations* was at only 91 percent in July 2017,[3] and funded authorizations for the AFE career field as a whole are typically somewhere between 91 and 93 percent.[4] However, this percentage manning of *funded authorizations* does not, by itself, clarify how much AFE may actually be undermanned relative to the official AFMAA manpower requirements because some of the positions specified in the manpower requirements are consistently not funded. Thus, even if a high percentage of *funded manpower authorizations* are filled, there will typically be some number of *unfunded manpower*

[3] In this report, when we refer to AFE *manning* or the career field being *undermanned,* we are generally referring to the number of personnel who are in AFE positions and the potential shortfalls in those numbers. However, *manning* is a relative concept and, unless specified, it is often unclear what the comparison target for the manning should be. For example, the career field can be undermanned relative to funded authorizations, the official manpower requirements, or the work demands being placed on personnel. We try to specify the comparison where possible throughout the report.

[4] According to comments provided to us by Headquarters Air Force, the Air Force effectively mans the specialty at 91–93 percentage of total funded manpower authorizations.

requirements as well,[5] and those unfunded positions also strain the workforce. This means that some AFE units could be manned at a much lower percentage when looking at the percentage of *total required* positions. That is, if there are a number of unfunded authorizations to begin with, *then* AFE is manned to 91–93 percent of whatever remains; thus, the actual manning percentages could be even more concerning.[6] This an important point that is sometimes misunderstood because of confusion about how percentage manning is typically reported (i.e., it is typically based only on percentage of funded authorizations). This issue of not accounting for the proportion of unfunded manpower requirements may therefore be masking some of the manning issues facing the career field. As a result, unless Air Force resourcing policy changes overall or AFE is given special emphasis (such as maintenance AFSCs), positions may continue to go unfunded, and the issue of insufficient numbers of personnel may persist even if AFE's funded authorizations are filled at a high percentage.

In addition, it is also possible that the overall *manpower requirements* outlined for the career field themselves may have been underestimated following the merger.[7] In fact, some units did at the time raise concerns that the official manpower requirements (i.e., the manpower standards established by the AFMAA) were insufficient. This concern has persisted since the merger, and it ultimately led to a reassessment of the AFMAA's manpower analysis and new manpower requirements established at the end of 2018.

The units have also indicated in the aggregate that apprentice airmen are filling in for the loss of experienced craftsmen that occurred after the merger, so the proficiency problem may also be an issue of overall workforce experience levels and training. The AFE community keeps data about the proficiency of airmen who do various jobs, and, in the past few years, they have noticed a decline in personnel proficiency among a range of personnel. Not only are there concerns that a drop in proficiency has been observed among those performing the work, but there are also worries that those overseeing and signing off on the work are not always noticing the problems.

The current organizational alignment of AFE personnel may be yet another factor affecting performance. Currently, AFE personnel are owned and managed by the Operations Support

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[5] According to Air Force Instruction (AFI) 38-101 (2019) "manpower positions are documented as *funded manpower authorizations* or *unfunded manpower requirements*" (p. 24).

[6] For example, if 5 percent of authorizations are unfunded, and *then* the career field is manned at 91 percent of the positions that remain, the number of personnel who would be reflected in the career field would be at only 86 percent of what is actually needed (0.95 × 0.91= 0.86).

[7] According to AFI 38-101 (2019) *manpower requirements* "quantify full-time equivalents needed to perform a job, mission, or program" (p. 24). They are the

> human resources needed to accomplish a specific job, workload, mission, or program. There are two types of manpower requirements: funded and unfunded. Funded manpower requirements are those that have been validated and allocated. Unfunded requirements are validated manpower needs that have been deferred because of budgetary constraints. Manpower requirements are generally determined by an Air Force Manpower Standard or other management decision. (p. 170)

Squadron (OSS), unless they are part of an AFE team supporting a Guardian Angel unit (units with missions that focus on personnel recovery), in which case they are owned and managed by that Guardian Angel unit. However, before the career field merger, the majority of the Life Support positions were owned and managed by the Flying Squadrons, and Survival Equipment positions were owned and managed by the Maintenance Squadrons. It is possible that removing positions from flying and maintenance squadrons has affected performance in a number of ways, including the erosion of technical sergeant (TSgt) proficiency, because the career field now relies on master sergeants (MSgts) at the OSS to run the entire program. Now, MSgts are thrust into leadership roles without any prior TSgt leadership experience (experience that TSgts used to get).

These are just some of the examples of the potential causes that ACC shared with us at the outset of our project and asked us to explore.

Goals of This Project

Although there was already a wealth of speculation about the causes of the proficiency problems among AFE personnel, ACC leadership requested RAND Project AIR FORCE's help in identifying the full range of possible causes and which ones to focus on first to remedy problems. A more systematic examination that could support or refute some of the speculation offered by a number of leaders was viewed as especially relevant to pursue, given that some problems might require major changes (including changes force-wide) to fix. Specifically, ACC leadership was concerned that, if an overhaul to any aspect of the career field was needed or if resources were going to be spent on new initiatives, such actions should be informed by a more systematic exploration of the workforce's views of potential causes. ACC therefore asked RAND to assist in systematically gathering this information to help inform future efforts to further explore and address proficiency problems.

Our Approach

We employed a variety of tools to gain an understanding of the AFE career field and the potential sources of proficiency issues. Over the course of our research, we explored Air Force personnel data, existing base-level trend analyses and inspection reports, AFI policy guidance, and a range of other briefings and documentation referencing proficiency issues. We also attended the AFE career field's most recent Specialty Training Requirements Team (STRT) held in 2019, where AFE leadership from across the major commands convened to revise the content of initial skills training (IST) and the Career Field Education and Training Plan (CFETP). We also held qualitative discussions with members of the AFE workforce and other personnel involved in their management and training at eight Air Force Bases: Barksdale, Davis-Monthan, Fort Wayne, Hurlburt, Langley, Robins, Sheppard, and Travis. These qualitative discussions served as the bulk of our research effort.

Why We Chose to Pursue Qualitative Discussions

At the outset, we approached this problem as one that would be best initially explored by gathering inputs and insights from people who would be considered subject-matter experts (SMEs) of interest. We viewed the collective insights of members of the workforce, their leadership, their customers, and other personnel directly involved in their training and development to be an informative, appropriate, and necessary source of information about the causes of the problems and what might help address them.

Our goals in holding discussions with these groups were twofold. First, we sought to use the discussions to identify the full range of potential causes of the proficiency problems and, thus, we included a broad range of participants. Second, we wanted to better understand the frequency of certain viewpoints held by our participants and identify which topics or ideas tended to recur across multiple groups as problems or solutions.[8] Because our intent in meeting our first goal was to be comprehensive in identifying possible causes and solutions, we present some ideas in this report that might have been raised infrequently but that we viewed as being relevant. In addition, we present quotations throughout the report to illustrate and highlight some of the more-specific comments that participants provided on a range of topics.

We also considered exploring quantitative data that might provide insights into performance and proficiency. We requested access to any data that might be available at each of the bases we visited but found that various types of data of interest were not readily available or were not being collected in a way that was consistent across locations. Because of this, we provide some additional recommendations at the end of this report about the types of data that could be collected going forward for use in future analysis and about ways to improve the usefulness of data that are currently gathered and reported across multiple locations.

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[8] Because we did not randomly sample personnel, these frequencies cannot be assumed to be representative of the frequencies of the viewpoints across the entire career field. But they can show us issues that come up repeatedly when talking to a subset of the workforce, including those who had been in the career field for many years and who had served in multiple locations across the Air Force over their careers. In addition, the bases we selected included those where a sizeable portion of the AFE workforce are stationed and included personnel serving the core set of major commands (MAJCOMs), types of aircrew, and mission design series (MDS) types served by AFE. Although we cannot with confidence say that the top most-frequent comments in our groups are also the top most-frequent comments that would occur in the entire population, we can say with confidence that topics that were raised frequently are held by multiple people in at least a sizeable subset of the population. We caution against an overemphasis on the ordering of the comments and instead suggest attending to the general finding that some topics came up often in our subset of participants. For those that came up far less often in our sample, it is possible that they would come up more frequently in other groups that were not represented in our sample. For that reason, we cannot definitively conclude that infrequently mentioned comments are less relevant to attend to than those mentioned more frequently.

Follow-On Work Collecting Additional Evidence to Confirm the Qualitative Findings Might Also Be Needed

We note upfront that these qualitative discussions cannot provide definitive information about causality. Thus, they may not be able to capture all possible causes of the AFE proficiency problems, and problems identified may result from misperceptions and not reality. However, the discussions can provide a good foundation on which to identify the perceived problem areas and their perceived seriousness, which could serve as a good starting point for identifying follow-on data needed to verify causality. That is, job incumbents can sometimes be the best-situated experts to identify obstacles to performance, and failing to ask them directly about what needs to be fixed could lead to major gaps in understanding the causal issues. For this study, we, along with the sponsor, therefore viewed collection of this qualitative information as an important first step that could help provide initial speculation on potential causation. But a large bureaucracy, such as the Air Force, has myriad policies, processes, and procedures that are controlled by many different organizations, and causation can be rooted in any of them—either close to the problems and symptoms or far removed from them. For a large organization to identify causation, a systems perspective is needed; this would require that a larger net be cast methodologically than simply this first step.

As a next step, a second layer of analysis that pursues and addresses causation of the issues and obstacles identified in this study would be needed to confirm the causal factors identified by the qualitative work presented here. We therefore also provide recommendations for additional research that could be pursued to verify causality as next steps to this work.

Types of Personnel Interviewed

To gather these insights, we conducted a total of 80 focus group discussions at eight bases. The eight bases we visited were selected intentionally (in consultation with our sponsor's office) to include AFE personnel working with a wide range of MDSs and across a range of MAJCOMs. This range of bases was selected not to be a representative sample of the AFE population, but rather to ensure that a wide range of AFE views and issues could be captured through our discussions.

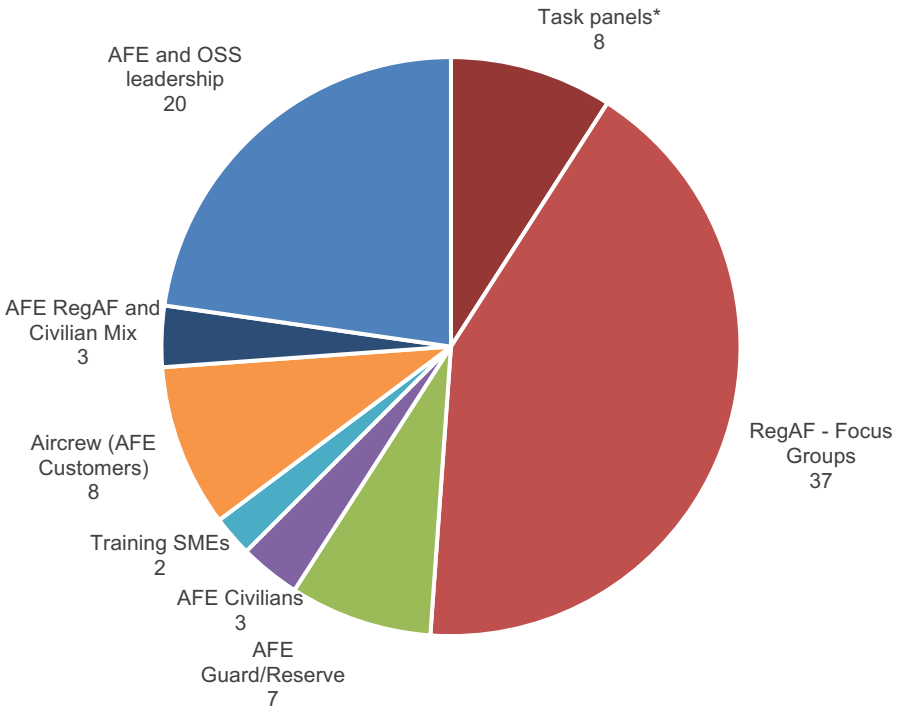
Focus group discussions at each base included a range of both AFE operators and leadership. 37 of the focus groups were with members of the Regular Air Force (RegAF) workforce at a range of skill levels (seven at the 3-level [18 percent], 13 at the 5-level (34 percent), and 18 at the 7-level (47 percent). We also held focus groups with civilians, reservists, and guard personnel to explore their views of the cause for declining proficiency in AFE.[9] We talked with some of AFE's customers (i.e., the aircrew whose lives are potentially affected by the quality of

[9] Although the focus of our study was on RegAF proficiency issues, some of the same findings may also be relevant to the management of civilian, guard, and reserve personnel.

AFE's work), including fighter pilots and special tactics personnel. We also spoke with two groups of leadership at the bases we visited: (1) OSS commanders and Guardian Angel equivalents and (2) AFE-specific leadership within their organizations (the superintendent and aircrew flight equipment officer [AFEO]). Figure 1.1 shows the number of discussions we held with each of these groups.

In addition to focus groups, we held eight additional task panel discussions (one per base; also shown in Figure 1.1) in which participants were presented with the Air Force's official list of AFE tasks and asked to identify those for which proficiency was a problem.[10] We then discussed those tasks and the potential causes of the problems.

Figure 1.1. Number of Discussions by Discussion Type



NOTE: * Some participants in the task panels also participated in the RegAF focus group discussions.

The number of participants per discussion varied, but, on average, there were about three participants in each. Table 1.1 lists the total numbers of participants for each type of discussion.

[10] The tasks list was drawn from the most recent AFE Occupational Analysis Report (OAR).

Table 1.1. Total Number of Participants by Type of Discussion

Type of Discussion	Total Number of Participants
AFE RegAF	98
AFE task panels[a]	47
AFE and OSS leadership	~42**
AFE guard/reserve	12
AFE civilians	10
AFE RegAF and civilian mix	18
Aircrew (AFE customers)	22
Training SMEs	6

[a] Some participants in the task panels also participated in the RegAF focus group discussions. **Numbers of participants in the leadership discussions were not always recorded. This total number is therefore an approximate figure using the people who we anticipated as participants for the discussions. In some cases, there were more participants who attended a given discussion.

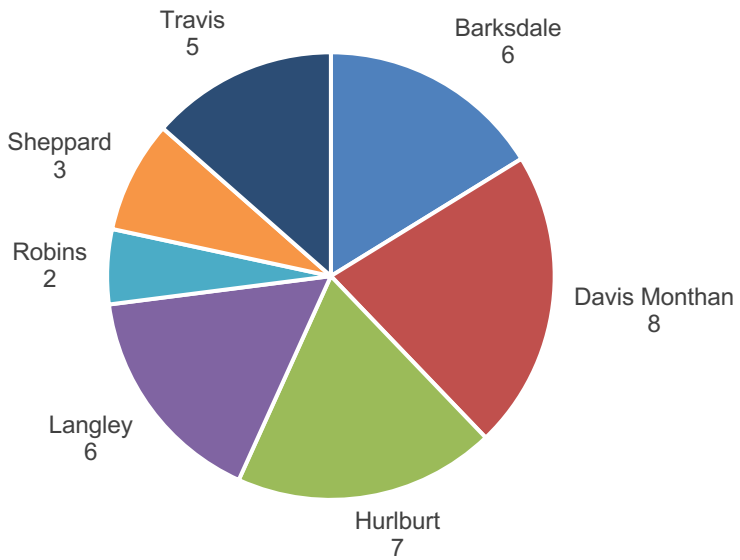
As both Figure 1.1 and Table 1.1 show, the bulk of our data was collected from the RegAF participants. This is both a function of the fact that there are far fewer personnel in the other groups we targeted and because we sought to invite a large number of personnel from the group most likely to have visibility and insight into the RegAF proficiency issues—members of the RegAF workforce itself. Because the numbers of discussions in the other groups are small, we do not present quantitative summaries of those qualitative discussions in this report. Instead, we focus our quantitative summaries only on the RegAF discussions.

Of the eight bases visited, one base (Fort Wayne) consisted entirely of guard personnel and therefore is not included in the summary RegAF figures that we report throughout the document.[11] Figure 1.2 shows the total number of RegAF discussions by base for the remaining seven bases. Although our frequency calculations included only comments from the RegAF focus groups, comments from the other groups are included in the report to illustrate various points of discussion. Appendix A contains further explanation of the focus groups, task panel discussions, and how we coded and quantified the results.

Lastly, representatives from each of the MAJCOMs (including several of the career field's chiefs and others) provided us with feedback and input on the ideas raised by our participants. We included some of their comments (referred to as SME comments) when relevant.

[11] We explored these data along with the coding results from the leadership discussions, civilians, and customers. An examination of the coding frequency results for those groups did not uncover any uniquely new information that was not already mentioned by the RegAF participants. In general, we saw that guard personnel identified fewer causes and solutions overall relative to that of the RegAF groups.

Figure 1.2. Number of Regular Air Force Workforce Focus Groups by Base



How We Present the Results

Throughout the main body of this report, we present our findings from the discussions in two ways. First, we summarize the types of comments that came up in the RegAF focus groups and the task panels using figures displaying the proportion of focus groups that mentioned a given topic (see Appendix A for more on our focus group coding methodology). Because the numbers of focus groups differed so drastically by base (Figure 1.2), we opted to weight the focus groups such that each base's results were contributing equally (e.g., focus groups at Robins Air Force Base were given a weight of 4, whereas focus groups at Davis Monthan were given a weight of 1).[12] We chose this approach (weighting bases rather than focus groups equally) because we did not want those bases with high numbers of focus groups to dominate our findings and mask issues that might be relevant only at the bases with smaller numbers of group discussions. This way, the results we present in the figures are not intended to be representative of the AFE population, but rather they capture the full variety of views and perceived issues that existed across the bases we visited.[13] The majority of our figures present just the results from our

[12] We also calculated the results as a simple overall proportion of RegAF focus groups mentioning each topic, regardless of the base where the group was located (i.e., the number of focus groups mentioning a topic was divided by 37) and compared the results with those we obtained weighting each base's results equally. The differences between the two approaches were negligible and did not result in meaningfully different conclusions. The differences in the resulting percentages ranged from zero to six, with an average of two and a standard deviation of one. Using this unweighted approach, the overall conclusions regarding the most frequently mentioned issues remain the same.

[13] As a reminder, we intentionally selected bases with different MDSs and from different MAJCOMs to capture a wide range of experiences and views.

RegAF focus groups; however, in a few figures (where there are differences worth noting), we also include results summarizing the task panel discussion comments.[14]

In interpreting the figures, it is also important to note that not all topics were raised or discussed by every focus group. For example, some focus groups were not asked about the pros and cons of being in the flying versus the operations squadron (discussed in Chapter 6), some groups did not name specific tasks as being of particular concern (discussed in Chapter 3), and some did not mention leadership issues as a cause of proficiency problems (discussed in Chapter 4). However, other broad topics (e.g., training issues) were raised in all or nearly all discussions. To help clarify which topics were discussed in nearly every focus group and which were not, in each figure, we first summarize the proportion of focus groups in which the *broad* topic was discussed. We then follow that with a more detailed breakdown of the proportion of focus groups in which the *specific* types of comments relating to that broad topic were discussed. Both the overall *broad* topic proportions and the more-detailed *specific* comments use the same denominator for the calculations: number of focus groups at a base mentioning a topic (*specific* or *broad*) divided by the total number of focus groups at that base, and then averaged across bases.

The second way we present our findings is by providing additional context after each figure in the form of a qualitative written summary of each topic, issue, or comment; elaborating on the points participants raised; and providing example quotes from participants.

Organization of This Report

The remainder of this report contains the results of our research, highlighting the key problems cited during our discussions as contributing to proficiency problems in the AFE career field and solutions posed by participants. We begin in Chapter 2 with problems associated with the training pipeline—from IST through initial qualification training (IQT), certification, and upgrades—and other topics relevant to training. Chapter 3 discusses the implications for proficiency of the large number of tasks for which AFE personnel are now responsible, subsequent to the 2008 merger. In Chapter 4, we focus on leadership problems and the need to cultivate capable leaders in both positions of noncommissioned officer in charge (NCOIC) and superintendent. Chapters 5 and 6 address the need to retain and use expertise and increase AFE's connection to the mission, respectively. In the final chapter, we conclude the report with next steps, highlighting those recommendations that we believe warrant the greatest attention from policymakers. A series of appendixes provide supporting information, as indicated throughout the report.

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[14] Because there was only one task panel per base, the results presented in the figures are a simple proportion calculated as the number of task panels mentioning a topic divided by eight (Fort Wayne was included in the calculation of the task panel results).

2. Problems in the Training Pipeline

A healthy training pipeline and career progression is fundamental to ensuring that AFE airmen are able to fulfill their responsibilities. As stated in the CFETP, the ability for AFE personnel to progress from one skill level to the next is closely tied to the career field's ability to accomplish the mission (Department of the Air Force, 2015). However, leaders and members of the workforce repeatedly pointed to training problems as one critical driver of the proficiency issues currently plaguing the career field—both as a potential cause of the proficiency problems and as an approach to fixing it. A range of training issues were mentioned in our discussions, along with recommendations for changes to training to address them. We discuss these insights in this chapter.

Background on Aircrew Flight Equipment Training

To understand the training problems discussed in this chapter, it is necessary to be familiar with career progression in the AFE career field and the associated training requirements. It is also important to understand how airmen are moved around to new assignments so that they can gain experience working on different types of equipment and further their training. Thus, we begin with a brief overview of the current training and career progression pipeline and of the position rotations that occur early in an airman's career—both of which have implications for airman proficiency.

Career Progression and Associated Training Requirements

AFE personnel enter into the career field after Basic Military Training and report directly to IST located at the 82nd Training Group, 361st Training Squadron, Sheppard Air Force Base, Texas. IST lasts 56 days and consists of courses designed to teach the fundamentals of the AFE career field, although some of this time is spent on appointments, nontechnical training, and various wing-mandated and other non-training-related events. Upon completion, airmen graduate as a 3-level (AFSC 1P031) apprentice and have the foundation to obtain "additional training at the graduates' first duty assignment" (Department of the Air Force, 2015, p. 9, sec. 5.1). Once airmen arrive at their first duty assignment, IQT starts, and they receive additional on-the-job training (OJT) using "career development courses (CDC), task qualification training, and other exportable courses" (Department of the Air Force, 2015 p. 9, sec. 5.1) to progress in their career

field. Once airmen have been certified in a particular task, they may perform that task unsupervised.[15]

To upgrade to the 5-skill level (journeyman), airmen are required to complete "1P051 CDCs, all core tasks, duty position tasks, one MDS [mission design series] aircraft/WS [weapon system], and a minimum of 12 months upgrade training" (Department of the Air Force, 2015, p. 10, sec. 6.2).[16] "Technicians will be qualified from 'tip to tail' on one weapons system before the award of 5-level" (Department of the Air Force, 2015, p. 10, sec. 6.2). Highly competent and select airmen at the 5-skill level may be assigned to quality control and be responsible for training airmen at the 3-skill level (AFI 11-301, 2017b). After at least 48 months in the Air Force, 5-levels should attend Airman Leadership School; at completion, 5-levels will be considered for appointment as unit trainers and prepare for Weighted Airman Promotion System (WAPS) testing (Department of the Air Force, 2015, pp. 9–10, sec. 5.2).

To become a 7-skill level (craftsman), airmen must complete 7-level training and meet 7-level upgrade requirements. Airmen at the 7-skill level are in supervisory and management roles, including NCOIC, quality assurance (QA), flight superintendent, and other management and staff positions (Department of the Air Force, 2015, p. 10 sec. 5.3). For award of the 9-skill level, airmen must hold the rank of senior master sergeant (SMSgt) and are required to have mastered all skills required of 7-level craftsmen. Positions at the 9-skill level include flight chief, superintendent, and various staff NCOIC jobs (Department of the Air Force, 2015, p.10, sec. 5.4). Those in a superintendent position are also expected to have "experience managing and directing AFE operations and training functions as well as evaluating, planning, and organizing AFE readiness activities" and must have completed the AFE Program Manager's Course (Department of the Air Force, 2015, p. 18).

Moving Between MDSs and Sections

At each base, AFE airmen are assigned to a specific *section* or *shop*, where they execute their work; there are typically at least two sections per base. These AFE sections are often located in different buildings at the same base, and, in each location, they are responsible for a different set of tasks. For example, there may be a flying squadron shop, such as a fighter shop, where helmets and G-suits are fitted, maintained, and repaired. This location is often colocated with the

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[15] According to AFI 11-301 (2017b, p. 65), AFE quality inspectors (QIs) are typically qualified 7-levels "who have been trained and certified via the AFE QA Certification Course." However, "highly experienced and qualified 1P051s [5-levels] may be appointed as QIs when approved by the AFES/AFE COR [Contracting Officer Representative]/AFEO [AFE Officer]." Per AFI 11-301 (2017b, p. 65, para 6.1.2.4), QIs "perform 100 percent QCIs [quality control inspections] of all equipment inspected/repacked by any AFE technician that is not signed off/certified on the task or equipment."

[16] MDS refers to the official designation for aerospace vehicles used to represent a specific category of aircraft that exist in the Air Force (e.g., the *F* in F-22 is used to designate a fighter-type aircraft). See AFI 16-401, 2020, for more specifics on MDSs.

customers. A single base may have multiple flying squadron shops serving different aircraft—all in different locations.

There is also often a main shop (also called a *back shop*) where parachutes are packed and aircraft life rafts and equipment that are loaded onto aircraft ejection seats are maintained. The main shop may also be at a completely different location on base. The main shop tends to align with the former survival equipment tasks, and the flying squadron shops tend to align with the former life-support tasks. Personnel are periodically rotated to a different section to help make sure people can get signed off on other types of tasks. Section rotation is currently used as one tool to ensure that personnel are certified in all career field tasks relevant to each base. This section rotation is necessary for personnel to satisfy their upgrade or qualification training requirements, which, in turn, increases overall utilization and maximizes resources.

A change in MDS happens when individuals have a permanent change of station (PCS) to a new base or are moved to work serving a different type of MDS on the same base. In the context of AFE, certain types of MDS changes are especially relevant to the proficiency problems, because AFE tasks differ in meaningful ways across certain MDS groupings, such as fighters, helos, heavies, and bombers.[17] Our participants explained that these differences mean that even when someone has developed a depth of skill and expertise in tasks tied to one MDS grouping (such as fighters), those skills and expertise do not fully translate to a new MDS grouping (such as heavies).[18] When we talk about MDS changes in this report, we therefore are most interested in changes across the specific MDS groupings of aircraft that are relevant to AFE performance. It is also worth noting that, when AFE personnel talk about *changes across MDS groupings*, they are including moves to sections and bases serving battlefield airmen in Guardian Angel units and not specific MDSs.[19] We also use the term *MDS changes* or *MDS moves* in the same way (i.e., to refer to MDS groupings, not individual MDSs and to include Guardian Angel units) throughout this report.

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[17] In the AFE context, the fighter grouping includes attack and fighter aircraft with the A and F prefix (e.g., F-22s), bombers include aircraft with a B prefix (e.g., B-52s), helos include rotary and tiltrotor aircraft with the H and V prefix, and heavies include transport and electronic warfare aircraft with the C and E prefixes (e.g., C-130s). It is also worth noting that there are other ways to group MDSs in this context, including, for example, ejection versus non-ejection seat aircraft—ejection includes fighters and bombers, and non-ejection includes tankers, transports, VIP airlift (e.g., Air Force One) and other airlift aircraft, special tactics forces, and training aircraft.

[18] This is not to say that personnel would be entirely unskilled in work relating to the new MDS grouping. However, they typically would not be considered proficient in work relating to the new MDS and have to relearn or learn many new technical aspects of the work that are MDS specific. That is, they need to be given new training and oversight for some extended period of time before they can be considered to have expertise in the tasks relating to that new MDS grouping and before others with that expertise would feel confident that no mistakes would likely occur when they are performing the work.

[19] Note that the 2015 CFETP for AFE defines *Guardian Angel* as a "[w]eapon system encompassing survival, evasion, resistance, escape (SERE), combat rescue officer (CRO) & pararescue (PJ) personnel" (Department of the Air Force, 2015, p. 4).

Some bases have only one relevant type of MDS grouping (e.g., at Langley, AFE are supporting fighters), whereas other bases service many MDS groupings (e.g., Davis-Monthan has fighters, rotary-wing aircraft, heavies, and Guardian Angel units). PCS moves are standard practice in the Air Force as part of the normal rotation of personnel. PCSs are often viewed as filling the needs of the Air Force, benefitting career broadening, and providing fresh perspective to a location. However, in the case of AFE, that career broadening is viewed as problematic from a proficiency standpoint. According to our participants, to develop proficiency in certain areas (e.g., parachutes), personnel need to perform the same tasks for years. In addition, when those tasks are not performed for some period, the skill is lost. Many of the most time-consuming tasks to learn and perform (such as parachutes) also differ significantly among MDS groupings. This means that, upon arrival at a new squadron serving a different MDS grouping, the individual must begin training in that task all over again.

Personnel moves across MDS types and shops occur in part because of career-development requirements outlined in the CFETP. Career development is necessary for personnel to learn the full range of tasks in their career field and to maintain skill currency across the various tasks. Because the number and type of tasks increased when the two career fields merged, this career-development burden on personnel is greater than it was for personnel in the two separate career fields prior to the merge.

Recent Use of Special Experience Identifiers

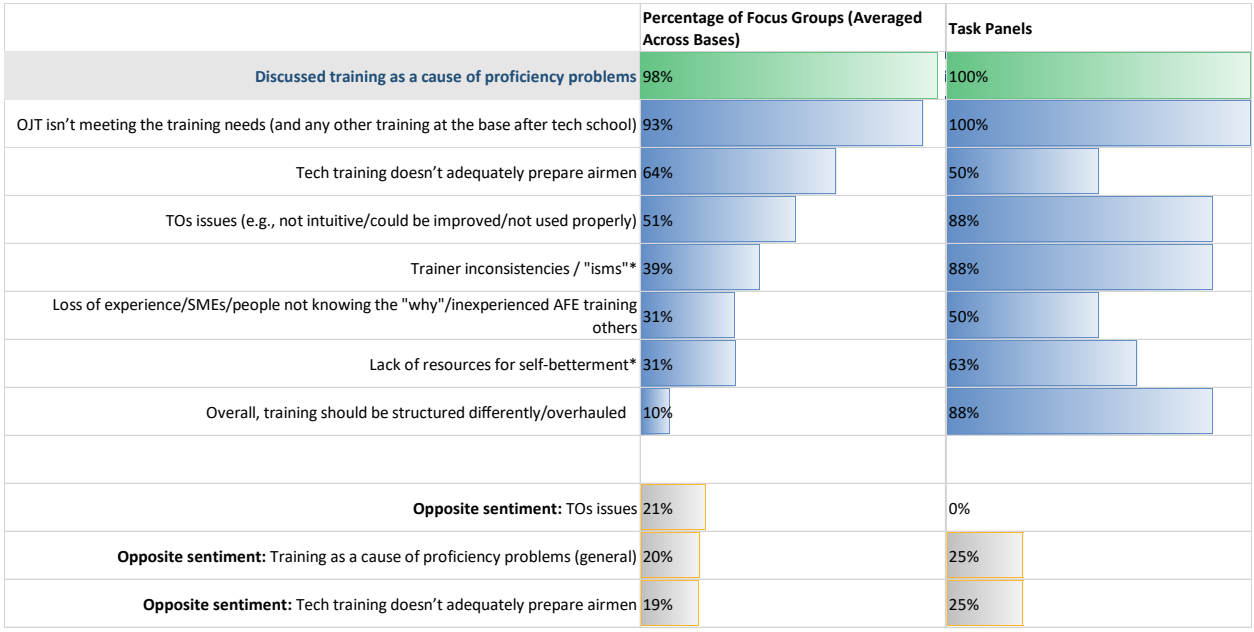
The career field recently introduced the use of special experience identifiers (SEIs) to help address concerns over the moves across shops and MDS types. More specifically, the career field has proposed that SEIs would not be guaranteed, but that they could be earned and awarded to a subset of personnel after IQT at the 5-level—that is, after personnel had achieved proficiency in a particular area. SEIs are currently slotted for 50 percent of funded billets in the continental United States and 75 percent outside the continental United States. Airmen who earn the SEI would be considered the most experienced in the weapon system and would be expected to train the next generation. Currently, AFE technicians can earn one of three SEIs (Advanced Concept Ejection Seat [ACES] II,[20] heavy aircraft, and Guardian Angel/special tactics squadron). The SEI award is being used in the assignment process to ensure that the proper amount of SEI-coded airmen are in place at each wing to train newly assigned airmen. In other words, the intent is for SEIs to be used to protect personnel from MDS moves for at least the initial part of their careers, with the intention of developing depth of expertise of skills in at least a subset of personnel and ensuring that personnel with that expertise are retained in locations where those skills are most needed. If used properly, this could help reduce the burden of MDS and shop moves described earlier. However, as we discuss later in this report, although the use of SEIs may be a useful interim solution to this problem, it may be an incomplete solution.

[20] ACES II is a type of ejection seat used in fighter and bomber aircraft.

Participant Views of Problems with the Training Pipeline

During the dozens of focus groups conducted at the eight bases we visited, participants—including AFE leadership, AFE workforce and training instructors, and AFE curriculum developers (i.e., the training SMEs)—described numerous problems with the training pipeline that could explain some of AFE's proficiency issues. As shown in Figure 2.1, nearly all 37 RegAF focus group discussions and in all eight task panel discussions explored training as a cause of the proficiency problems.

Figure 2.1. Participant Views on Aspects of Training as a Cause of Proficiency Problems



NOTES: Sometimes a topic was raised by one person, and an opposite view was expressed by someone in the same discussion group. In those cases, the same discussion would be reflected in both the topic frequency and the opposite sentiment frequency. For some topics, no opposite sentiment was expressed in the RegAF discussions. Where an opposite sentiment was expressed in greater than 0 percent and less than or equal to 5 percent of the RegAF focus groups, the category is marked with an asterisk. "Lack of resources for self-betterment" refers to such comments as trainers not having time to train trainees, lack of proper equipment to train on, and lack of funding to send people to formal classes. TO = technical order.

As shown in the figure, all of the training issues listed were raised in half or more of the task panel discussions; in contrast, focus group discussions tended to mention only a few of the training issues consistently across groups.[21] However, other than the more-consistent mention by the task panels of overhauling the structure of the training program, the task panels and focus groups broadly agreed on the types of problems with training. It is noteworthy, however, that the

[21] It is important to note that the task panel results consist of only eight discussions. As a result, what may seem like sizeable differences in the percentages across the categories (e.g., a difference of 25 percent) could just be the result of chance. Caution in overinterpreting differences in the task panel results is therefore warranted.

task panels commented about the overall training structure. This difference likely has to do with the fact that task panel participants were discussing very specific tasks and thinking about solutions to address the proficiency problems with those tasks. With that goal in mind, they sometimes commented that training as currently structured was a constraining factor in solving the problem; that is, the entire system of training needed to be overhauled.

In nearly all of the focus groups, participants indicated that OJT was not meeting the training needs of AFE airmen and was a cause of proficiency problems. Technical school, or IST, was also flagged as an issue in many discussions. Problems with TOs, trainer inconsistencies, and a wide loss of expertise across the career field were also stated as causes of proficiency decline in multiple discussions.

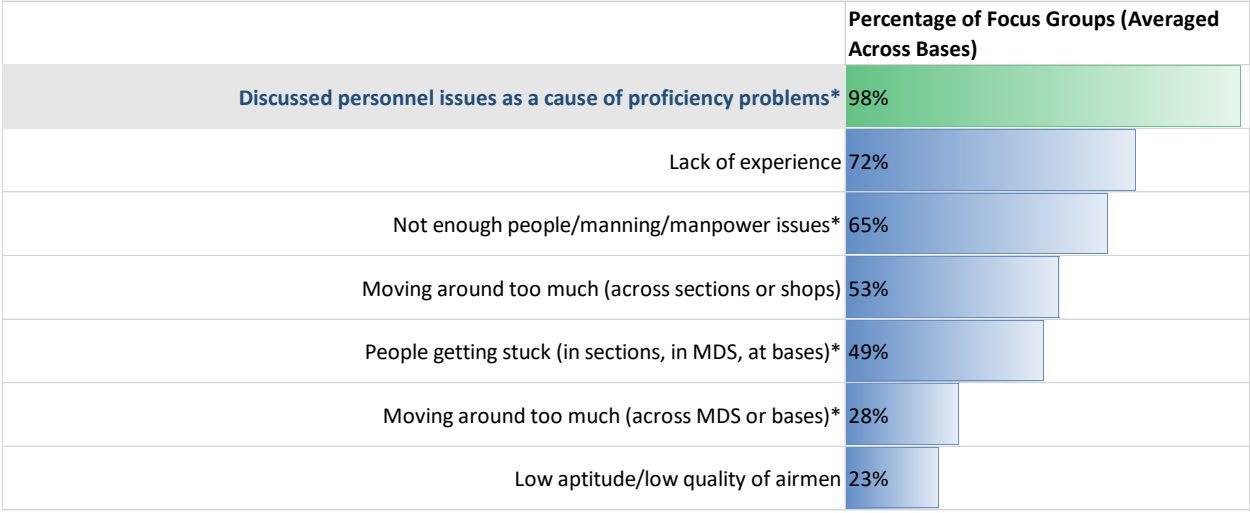
Not all participants agreed with the training problems identified. For example, in about 20 percent of focus groups, someone said that technical training does adequately prepare airmen, that TOs were not an issue, or that training in general was not to blame for a particular proficiency problem.

In addition, our participants raised a number of other topics with cross-cutting implications for training. For example, many talked about skill gaps stemming from moving people across MDSs and shops and the resulting training burden—time and cost associated with learning new systems before airmen are able to contribute to the mission.[22] We grouped these under the overarching heading of personnel issues, which are shown in Figure 2.2.[23] In addition, many talked about a need to better prepare and develop leadership in AFE (discussed in Chapter 4) and an overall loss of talent and expertise in the career field that has occurred over time.

[22] Appendix C contains an analysis of personnel movement between MDSs using Air Force personnel data.

[23] Participants also discussed morale and mental health issues, which we grouped under the heading of personnel issues. We discuss this issue further in Chapter 6, where we explore how morale and job satisfaction may be affected because of a perceived lack of connection to the OSS and the people who AFE serves.

Figure 2.2. Percentage of Focus Groups Commenting on Personnel Issues as Possible Causes



NOTES: Sometimes a topic was raised by one person, and an opposite view was expressed by someone in the same discussion group. In those cases, the same discussion would be reflected in both the topic frequency and the opposite frequency. For some topics, no opposite sentiment was expressed in the RegAF discussions. Where an opposite sentiment was expressed in greater than 0 percent and less than or equal to 5 percent of the RegAF focus groups, the category is marked with an asterisk.

Initial Skills Training

IST, also referred to as technical school, provides the foundation needed to successfully progress through the AFE career field and is airmen's first exposure to AFE tasks. However, during the majority of focus group discussions, airmen commented that IST does not provide the level of training they need to be successful in their first duty assignment and is not a sufficient foundation on which to build their skills through additional training. In our discussions, AFE personnel commented that most IST graduates are not prepared and need to be trained again once they arrive at their first base assignment.

Individuals we spoke to during focus group interviews said that the structure and curriculum taught during IST provided a good baseline introduction to the equipment that airmen may be exposed to throughout their entire AFE career (especially the variety that exists across the different MDSs, such as fighters or heavies [and special warfare]). However, from their perspective, the broad nature of the training and number of skills taught contribute to training deficiencies. Focus group participants commented that IST is generic and does not consider the skills that airmen will require at their first duty assignment.[24]

[24] This is not unique to AFE. Most first-term airmen arrive to their initial assignment requiring OJT and direct supervision. In general, Air Force technical schools are not intended to deliver qualified technicians to the field. They are instead designed to familiarize a recent enlistee with the job that the Air Force will ask them to do, and OJT is supposed provide the additional training needed. In the context of AFE, however, the level of training offered in IST is believed to result in a training requirement that many do not feel is being met adequately by the existing OJT.

Some believed that new airmen should be able to contribute from the first day they arrive in a unit after graduating IST:

> You have airmen after block 6, they are not touching heavies parachutes anymore because block 7 is strictly fighters and block 8 is ejection seat. I had about six or seven individuals going to [their first duty assignment to work on] C-130s or C-17s but this last whole month, they are not going to touch the equipment. They might not ever touch it again [during IST], so now they just went through training on stuff; I don't want to say it's a waste of time, it's good knowledge, but it could be more efficient.

Many discussions expressed the same sentiment; once airmen graduate from IST, they do not retain skills that were taught, and units must spend valuable time to train them once they arrive at the base. We heard this from participants at all levels, including from those who recently graduated:

> Tech school is, I don't want to say useless, but kind of. People are taking two weeks of recruiters' assistance and two weeks of leave directly after tech school. [We attend] a three-month tech school that's really just the basics, and then we take a month of leave. We brain dump [what we learned in tech school]; it's hard not to. As far as proficiency, tech school doesn't help. We need to be able to go to the base and learn what you have.

These factors place an additional training burden on the base receiving the new airmen. Bases are forced to spend additional time reinforcing the skills learned during IST because the current level of IST training alone is insufficient. Moreover, there is a disconnect between what is emphasized at technical school and what skills would be most relevant at an airmen's first duty station. At some bases, the most-important skills that 3-levels need to succeed receive little emphasis at IST. This further increases the training burden on receiving units, where they must take the time to impress the most-necessary skills on their new airmen.

Instructors also commented that the curriculum taught on some equipment is outdated. The MAJCOM chiefs are supposed to visit the schoolhouse to evaluate the curriculum every two years. However, at the time of our discussions, instructors noted that it had been more than four years since their past visit. The participants added that a rewrite of curriculum would occur soon (and an STRT that we attended was in fact held a few months after our discussions with them), but they also felt that a process needed to be established to incorporate equipment updates at the same time that changes were made in the field:

> We are teaching a lot of outdated stuff, and a lot of stuff that is unnecessary. First, in our oxygen section block one, we are still teaching the masks version 1 and 2 when in field they have already transitioned to version 4 and 5. The field transitioned to version 4 and 5 in 2012.

To provide some additional context for this example, according to career-field SMEs, the first Headquarters Air Force message to the field directing the purchase of the version 4 and/or 5 masks was in 2015, and most fielding began in 2018. Our study discussions took place early in

2019, suggesting that there may have been some lag time between when training changes and changes in the field.

Similarly, another participant noted that, at their location, back automatic (BA) parachutes were no longer being used and offered this comment:

> We are teaching BAs right now, and they are already doing low-profile parachutes out there. All the BAs that we just taught them are not going to do them any good. Teaching items that are outdated or about to be outdated.

However, it is also important to note that, although BA parachutes may not be used where they are located, they are still used at many other locations.

Initial Qualification Training, Certification, and Upgrade Training

Once AFE IST graduates arrive at their first duty assignment, they begin the process to complete IQT. IQT is supposed to provide the opportunity for new graduates to apply skills learned in IST and further develop their skills using the MDS of their first duty assignment.[25] If an individual's first assignment is a flight training base, their IQT would focus on tasks related to a flight training mission (i.e., noncombat, training aircraft platforms and their aircrew). Similarly, if the first assignment was an operational fighter unit, IQT would focus on combat-coded fighter-related tasks. During our focus group discussions, participants talked about similar sets of MDSs being relevant for training in AFE.

During focus group discussions, IQT accounted for a large percentage of negative feedback. Participants explained that the current IQT process does not meet the intent of proficiency standards and develops personnel in a way that limits their expertise throughout their career.[26]

To become signed off on all required tasks at a given base, AFE airmen complete a rotation plan that moves them between different AFE sections. AFE airmen move between sections most rapidly after arriving at their first primary-duty station. During this time as 3-levels, they are supposed to be trained to the 3c level on all tasks performed at that base.[27] After being trained to

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[25] AFE work differs in meaningful ways across MDS groupings, such as fighters, heavies, and bombers. See previous section, "Moving Between MDSs and Sections," for more discussion on this.

[26] AFE and OSS leadership expect that, upon completion of IQT, a first-term airman will be current in all tasks but not proficient in any. Nevertheless, participants noted that this contributed to the proficiency problems.

[27] Although IST training is at the 2b level, task qualification (getting signed off) does not occur until airmen reach the "go" level—3c. As explained in the CFETP (Department of the Air Force, 2015, p. 26):

- 2b = "Can do most parts of the task. Needs only help on hardest parts. (partially proficient)" and "Can determine step-by-step procedures for doing the task. (procedures)"
- 3c = "Can do all parts of the task. Needs only a spot check of completed work. (competent)" and "Can identify why and when the task must be done and why each step is needed. (operating principles)"

As stated in the CFETP (Department of the Air Force, 2015, p. 20):

this level, flight leadership will assign each individual to a specific section, where she or he will ideally work for a more prolonged period of time. Throughout the focus groups and task panels our team conducted, we heard numerous problems about this training structure. A common comment was that this rotation forces airmen to be a "jack of all trades, master of none."

Participants talked about how the focus on certifications has resulted in a lower bar for actual proficiency in the career field. We were told that young AFE airmen who are only trained to the 2b level in IST do not have the depth of experience in each section to become proficient 5-levels upon completion of their upgrade. We were told that many 3-levels are rushed through this phase of their development so that they can be upgraded to 5-level status as soon as possible. This rush is motivated both by manning shortages (an unmet demand for 5-levels to complete the daily workload) and unrealistic timelines from leadership directing how long it should take to create a 5-level. A participant said the following:

> Then the guidance came from MAJCOM, saying we're doing training. The training and certification levels kept being watered down. Lots of the training that we saw given was rushed and led to people not being as well trained as they were before the merger.

Some also talked about the process for upgrading to the next skill level:

> So, then you have to learn your 5-level CDCs to become a 5-level technician. Once again, our 5-level CDCs cover nothing that we actually do. Which later, that correlates to testing our WAPS scores to become a staff sergeant and tech sergeant. We still have to test on those same CDCs. So, I'm testing on items that I've never seen. I'm reading from a book, and you just have to know it. And it does no good for me to know it. Unless I were to go to main shop, which, if that were to ever happen, I'd go from 99 percent completed on all my core tasks—we currently have 326 line items that I'm completed on—if I were to go to the main shop, it'd be like starting over as a brand new airman. I would know nothing.

AFE personnel are typically provided a training plan to become certified, or signed off, on a task. Those we spoke with repeatedly emphasized that being signed off was not equivalent to being proficient. They talked about pressure from flight leadership to advance as many people as possible to 5-level status within the allotted window:

> We get new airmen in, and they are undertrained from the start. A trainer asked us to read through a TO and then wanted to sign us off on it right away.

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> For OJT, the tasks . . . are trained and qualified to the go/no-go level. "Go" means the individual can perform the task without assistance and meets local requirements for accuracy, timeliness, and correct procedures.

As stated in AFI 36-2651, 2019, p. 62:

> "Go" level equates to 3c in the Specialty Training Standard proficiency code key.

This requirement for OJT to bring personnel up to the 3c level is sometimes misunderstood because personnel complete IST and enter the career field at only the 2b level.

> When airmen get trained or signed off on stuff, like for parachutes, you get the quick training just so you can say you can pack parachutes. In the end, when you have to do a harness change or something like that, you have to go find somebody that knows how to do that to essentially get trained again on that process.
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> It's done very quickly just to get you signed off, just to get your [skill level] 5. That way, you can deploy because we don't have enough people to not worry about that. It seems like that [having enough people to deploy] is the issue with proficiency at this base. For me, certain taskers that I've been told to do, I don't feel 100 percent on my work, or I'm asking a lot of questions, or I'm trying to figure it out as I go. I feel like I wasn't given enough time to be trained on that task because of constantly moving around from section to section or the certain trainer that I had that day, he did the training really quickly just to get it over with.

AFE leadership rotate their personnel between the various sections to broaden their skills. Individuals sometimes spend several months or longer in each section before being transferred, but sometimes they are moved more frequently. Those we interviewed told us that it takes a long time to gain true proficiency with equipment and procedures. Then, right about the time they start feeling comfortable, they transfer to a new section with new equipment. Personnel are no longer familiar with the equipment they first worked on and have to be retrained if they return to work on that equipment. For example:

> We were training new airmen up, we were at what we call the "2b" level,[28] where we get them trained up to the point where they know just enough to do the equipment. Then they move on to the next section, where they can learn a different type of equipment. They'll leave our section in chutes not really knowing anything. Knowing enough where they can know the TO and get the job done. But there will definitely be discrepancies on their equipment. They know enough to pack, and that's it.
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> When I went through training, you had to prove your proficiency to get signed off on something. Once you get your 5-level, you are left on your own. When we train our 3-levels, it is just the bare basics, where the task can barely be performed. It's more of a familiarization, which they should have gotten in tech school. Now we have 5-levels that have to go back into shops and relearn that equipment; this costs more time getting them spun up. Just so we can meet the minimum requirement. This lets us push people through the system.

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[28] According to the CFETP, personnel cannot be signed off as proficient on a task unless they are at the "go" level—3c. This participant seems to be saying that, in many cases, they were unable to get personnel up to that level before they moved on to a new shop. We suggest that the career field explore whether some personnel really are leaving sections without having achieved a 3c level of proficiency both on paper (i.e., whether they are being signed off at the 3c-level before they leave a section) and in their actual abilities to perform the work (i.e., whether or not they really can perform the tasks at the level required to receive a 3c-level sign-off if they have been signed off at that level).

> We want these people to be proficient enough to pass a task evaluation to get signed off, and then they're going to be pushed off to the next area, and the next area, and then it's been eight months since they've done that helmet that they only spent two weeks on, and then they get sent back to that section, maybe. We are almost having to retrain people over again.

One AFE SME we met with also explained that the issue may include AFE having inadequate *master training plans* (master training plans are required by AFI 36-2651, 2019) and two-year first-term airman assignments and other activities that take time away from training when someone arrives at a base. He provided the following example of what can occur:

> An airman arrives at [a particular base] and should be immediately placed on an 18-month ejection-training track. However, at [that base], they need escorts to monitor non-U.S. citizen workers on the base, and the base uses FTAs [three-week first-term airman assignments] for this duty. Add to that time FTAC [First Term Airman Center, which takes one to two weeks] and inprocessing, and now we have lost two months upon arrival. Add the 18-month ejection training plan, and you know before you start training the airman, you will not award the 5-skill level before the 20-month point in the assignment. By that time, the airman has his or her assignment to the next base. Which could be a nonejection base . . . significantly limiting the return on investment for the ejection-seat training.

Technical Orders

Use of the TOs may be playing a subtle but important role in the loss of proficiency. According to some participants, AFE personnel are typically trained to the 2b level on tasks in IST and then expected to rely on TOs to assist during task completion to become proficient on the job. AFE personnel are expected to have the TO open and follow it throughout the completion of the task.

In our focus group discussions, we learned that TOs, which were previously printed volumes, had been transitioned to an electronic format. Although AFE personnel appreciate the document being available electronically and the convenience of the control-F find function for locating relevant material, they also noted that this new format has resulted in less depth of understanding of the TO material. Some said that although the shortcuts are efficient, using them creates bad habits because personnel do not fully read all sections of the TO to complete a task.

In addition, focus group participants noted that the TOs can still be hard to navigate. Once AFE personnel find the section they need to perform a task, they are then sent through different sections and sometimes different TOs to complete one piece of equipment. We heard other complaints about the slow Air Force networks and the frustration that the slowness causes when accessing the TOs. Some AFE personnel say that the solution is to download a copy; however, because the TOs regularly change, downloading copies may mean that personnel are not using the most up-to-date TO.

Participants also talked about how the TOs are, in many cases, not detailed enough, which leads to confusion over how to perform a task. Because of these gaps, participants noted that trainers have filled in the gaps in the TOs with their own idiosyncrasies about how they do it or

how they were trained to do it. This means that some trainers teach tasks one way, and others teach another way. They referred to these idiosyncratic differences in how trainers perform the same tasks as *isms*. These isms can often surface after someone has a PCS to a new location and is told essentially, "that is not how you do" it or "that is not how we do it here."

The following are some examples of comments about the TOs:

> [P]arachutes [are] . . . not straightforward. You have to jump from one to another for different components, and so you are jumping around all the time. It's not step-by-step, either. It's by chapter, and sometimes it's by paragraph, now I have to jump to this chapter, now I have to jump to this chapter and this paragraph.
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> When I was writing notes on how to navigate the TO, I was asking questions because I have never seen this gear before. When you click the hyperlink, it tells you to do steps A through G, but then I don't know what a PLD [personnel lowering device] is, and they tell me to skip it. You're just supposed to know to skip those steps, and it becomes confusing. Then you get to a new base, and PLD does matter, and you've never done it before, and it's like, oh, no.
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> Fixes on the sewing machine and stuff like that. If you've never done it, the TO will show you—it's very vague. It just gives you a dotted line, and it's like, Okay, what does this mean? The diagrams are pretty old school. And with the BA parachute—with certain taskings, we know how to do it because someone has taught us, but if you tried to do the tasking via the pictures, some of them are pretty questionable. You look at them and are like, "Uh, what are we doing?"
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> We have multiple times where you get in and the internet is down. [You] can download them but they are real time, so you need to make sure you have the right publication up and running. . . . It's often I'll ask, what are you working on, what page TO are you on? The computer has to be locked down and can't be up all the time, unless you're doing your gear, and you're able to jiggle the mouse.

Trainer Inconsistencies

Quality training demands high-quality trainers. Time and again, we were told that trainers in the AFE career field are ill-prepared and -equipped to deliver high-caliber training and often do not. AFE personnel often commented on the technical proficiency of their trainers and their trainers' ability to leverage that expertise into valuable training:

> When I got here, I started from knowing very minimal. When I was getting into the training, it felt like the people training me almost didn't know how to do it. There wasn't an organization or a method to doing it. It was just, here, is the piece of equipment, here is what you are going to look at, here is the inspection cycle. I could feel a lack of confidence in their own knowledge and I didn't realize until I got to the point where I am how poor that training was.
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> We are running into issues with the trainers not being proficient. We are pulling back to make sure they are good and the quality of training because we want deliberate, concentrated training from our instructors. . . . With the proper people in those positions, our training and proficiency will gradually increase because we will have certified airmen to carry that forward. But it will take some time because we are so behind on proficiency across the board from our airmen all the way up to junior NCOs [noncommissioned officers]. I've stepped away from the desk, and my life support experience, the things I'm a SME on. I'm training someone 18 years in on NVGs [night vision goggles]. I would expect an NCO to have that, especially that many years in; that's one of our core tasks. That's an issue. Post-merger, all these tasks that we are supposed to be proficient on now, I think you are going to find a trend on that.
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> Three-quarters of these people aren't even going to be proficient, so when they get out to the field, you have these not fully rounded trainers. It's an ugly cycle is really what's happening. You have the people that were training given rushed training, and it keeps piling on. When I was at another base, I could ask them questions about why they were doing what they were doing, and they weren't even reading a TO fully. Now that we have the laptops you can control-F, but it's a horrible form of training because people aren't being forced to learn all the extras.

Participants also talked about how trainers are saturated with many other responsibilities and how that potentially leads to trainer inconsistencies. The few who are tasked to train are also the few who can deploy, go temporary duty assignment (TDY), or run a shop, and, in many cases, training may have to be neglected in favor of some of those other responsibilities. As a result, AFE personnel may not be receiving the level of attention during training to gain the necessary proficiency that will assist them when performing a task after they are signed off. In addition, the personnel who are most qualified to provide the training (specifically the NCOs) are those who are most often removed from the AFE section to conduct full-time additional duties as directed by the commander. Participants noted that this may leave training to those who are less qualified to provide it, or it may be provided in piecemeal fashion and sporadically:

> In different shops, you may have different people who train you, but they may not be proficient themselves. This leads to a trickle-down effect. You can only get so much from this type of person. Not to say you shouldn't try to do things yourself, but you have questions they cannot answer, and when they don't have the answers, you're stuck. As you gain more responsibilities, you may not fully be comfortable with what you're asked to do. They're consumed with admin, training, and execution, so that makes it hard for them to train us properly.
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> The problem is we just got someone from tech school. We're supposed to spin him up. But all our 7-levels are gone on the road. The [apprentices] are getting mixed and matched training from a variety of different people. I would want to get trained from the same person for consistency.

Others commented that there is a large discrepancy in the way AFE personnel are trained. Some are trained to complete a task by following the TO step by step along with the trainer and then are quizzed at the completion to instill the skills learned, while others are directed by the trainer on how to complete the task without referring to the TO:

> Oftentimes, people take shortcuts. They will tell you how to do it and not read the TO. . . . "Here's how you do it; don't worry about the book, I'll teach that to you later." So, if I never look at the book as I'm going through my training, guess how I'm going to train? That same shortcut way.
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> Some of the people I had training me upstairs were just, "This is how I do it. I don't know if it's in the TO or not. I don't know if it's how you are supposed to do it but it's what I was told to do so that's why we do it." Then someone will come behind you and ask, what the hell did you do that for, it's not what you are supposed to do.

Although these issues of trainer inconsistencies could be viewed as the fault of the trainers, it is also clear that people believe that the root causes of the trainer inconsistencies may not be limited to individual negligence, and that, for much of it, the trainer may not be to blame. Instead, participants pointed to underlying themes of personnel not having sufficient time to teach personnel properly, and personnel being placed in positions of training when they themselves do not have a strong enough grasp of the content to be training others in it. This includes trainers possibly not understanding the proper use of the TOs or the value in enforcing the use of them nor understanding the why behind what they are doing (e.g., why one approach is superior to another or the consequences of not attending to certain details). Given these additional explanations for the trainer inconsistencies, it would be worth exploring the root causes of the inconsistencies further, with special attention to identifying those causes that cannot be explained away simply as trainer negligence.[29]

Lastly, some AFE personnel believe they have access to quality trainers and that proficiency issues stem more from the quantity of things they are trained on than from the quality of the training.

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[29] For example, is the cause a lack of standardization in the training process where trainers themselves were taught different procedures (i.e., is there a lack of published training standards)? Is the cause a lack of confidence by the trainers in their own skills (e.g., an inability to answer questions about why things are done a certain way)? Is the problem a lack of time needed to provide training the right way (e.g., using training shortcuts, such as teaching without consulting TOs)? Is the issue that personnel need better train-the-trainer courses to help ensure that trainers know how to provide quality training to others and the value of providing that training the right way?

Other Topics Relevant to Training

Ripple Effects from the Merger

Since its inception, the AFE career field has experienced a series of events that seem to have had long-term ripple effects that relate to training.

Multiple participants raised one example—cross-utilization training, which our participants called "CUT training." This refers to the training provided to members of the Survival Equipment and Life Support career fields that were supposed to give them experience in the other career field's tasks in preparation for the career field merger. CUT training was provided after the transition from the two Survival Equipment and Life Support career fields to the single AFE career field.[30] The training, however, was described by our participants as simply inadequate. Some explained that the inadequacy of the training was in part because of unrealistic timelines that were set for completing CUT training, which led to leadership rushing training to meet the deadline. What ultimately resulted was a career field full of more-senior airmen who lack a strong foundation in the entirety of AFE tasks. The effects of this inadequate training were later seen in inconsistent levels of expertise among trainers and an inconsistency in the training quality that AFE personnel receive today. It also resulted in some personnel leading sections without commensurate depth of knowledge of the tasks in the career field (discussed further in Chapter 4). These concerns were mentioned by several participants:

> During the merger, it was extremely rushed CUT training. No one wanted to do it, so everyone put it off. And then, at that point, everyone was up in arms realizing the deadline was looming. That's where I believe it all got started. Being behind was the norm, and people would be pushed through. That became the norm.
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> At the time of the merger, what happened in my opinion is a lot of the commands wanted to be the first to be fully merged and have all the CUT training done. People weren't getting the full in-depth training that you would get normally. When I went to Dyess, I got much better training and knew what I was doing. The CUT training was more familiarization training. So, they could report up to the MAJCOM. It really, really hurt, and we are starting to see the result of this. You see a lot of people that never got that full in-depth background. A lot of our chiefs don't understand that because they got much better training, and they still think everyone has that background. They never had to look at the big picture.
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> The CUT training was straight up a joke.

We also heard that the transition to AFE was particularly challenging for those coming from the Survival Equipment career field. We were told that conflicting work cultures, styles, and

[30] The officially combined training pipeline for new AFE personnel was not fully implemented until 2010, but CUT training started well before that.

expectations led many Survival Equipment service members to exit the service rather than transition into the AFE career field. This may have caused the AFE career field to lose a reservoir of Survival Equipment expertise before it even got off the ground.[31]

We heard about a second mass exodus of expertise that affected AFE mid-level managers that occurred during the 2012 early retirement offerings. We were told that, in 2012, frustrations were high within the career field because of the hasty merger. Former Survival Equipment and Life Support personnel were frustrated with the limited training they received and the lack of supporting guidance (AFIs, TOs) that was rolled out to support AFE, in addition to the additional tasks, responsibilities, and schedules that came along with the merger. When offered the opportunity for an early retirement in line with force-shaping efforts, many senior AFE personnel, particularly from the former Survival Equipment career field, jumped at the early retirement opportunity. We heard that their exit may have left the career field without the corps of Survival Equipment experts needed to train young AFE personnel. We were told that, to some extent, the blind have been leading the blind ever since.

Concerns About Moving Between MDSs and Sections

As shown in Figure 2.2, our participants offered three different comments about movement of personnel that, at first glance, might seem to be direct opposites. However, the three views are not incompatible, and, in fact, all three were expressed by many of the same individuals. We explain these views below.

Loss of Expertise When Personnel Are Moved to a New MDS or Shop

AFE personnel talked about how they struggle to maintain proficiency when they are moved across MDS types (this usually occurs during a PCS move). Moving between MDSs inherently forces airmen to broaden their skill sets, but when AFE airmen do a PCS to a new base supporting a very different MDS, a huge piece of their expertise may be rendered useless. When this happens, AFE personnel can find themselves in charge of sections in which they have no familiarity with the equipment. For example, if a TSgt were to transfer from Barksdale Air Force Base, where the TSgt worked on B-52s for seven years, to Luke Air Force Base, to work on F-16s, that airman would not have the technical expertise needed to properly lead their new section.

In this circumstance, airmen cannot leverage their years of experience to train younger airmen, nor can they distinguish between high- and low-quality work in their area of responsibility. Our participants explained that these conditions result in little expertise or few techniques being passed down, and everyone feels like they are all figuring it out together. If this

[31] Although we did not directly explore retention data to confirm whether a loss of higher-level Survival Equipment personnel actually occurred after the merger, our data in Appendix C show that the proportion of 9-levels in the career field was noticeably lower after the merger than it was in Life Support. It also shows a higher proportion of 3-levels right after the merger relative to the proportion of 3-levels prior to the merger.

phenomenon is experienced in many AFE flights across the Air Force, it could have serious negative ramifications on proficiency.

This same issue was raised about personnel moves across shops that regularly occur within the same base. Participants explained that personnel need to be moved from a flying squadron shop to a main shop for them to maintain or develop proficiency in the full range of tasks required in the career field. As a result, personnel are routinely rotated into and out of the different shops on base. However, like the MDS moves, this also serves to remove personnel who have achieved proficiency and needed depth of expertise from their current shop, leaving a gap in the capability of the shop, and it thrusts them into a new shop where they are once again not proficient and in a position where they need training and oversight before they can be capable of contributing to the work in that new shop.

Failure to Gain Expertise When Not Moved Enough

Some also commented that they fail to gain expertise when they are not moved enough. This comment reflects the fact that, unless a career field is separated into multiple shreds, the Air Force as a rule expects personnel to be trained to a certain level in all tasks that exist in their career field. As a result, our participants noted that, for personnel to be viewed as proficient in their career field for purposes of promotions, they needed to be rotated across shops and MDSs (i.e., promotion decisions are affected by someone's breadth of expertise in their career field). Participants therefore were pointing out the opposite concern; specifically, that people's careers could be affected if individuals were *not* moved, under the current way in which personnel proficiency is evaluated for promotions. In other words, participants were noting that the Air Force's check-the-box exercise of evaluating whether an individual had met the career field's proficiency requirements (which essentially requires demonstrating experience with and understanding of all tasks) necessarily forces these moves, or else someone's promotion opportunities are affected. If personnel are going to be judged as not proficient in the promotion process because they have not had experience with all of the tasks in the career field, then personnel will naturally continue to fear not being rotated enough.

Training Takes More Time Than Leadership Realizes

Participants noted that leadership needs to better understand the costs—in training time and resources—that result from AFE personnel being rotated or pulled for special-duty assignments. They also noted that leadership outside AFE may not have a sense for how the workload changes when people are not yet fully proficient on a task.[32]

[32] The 2018 manpower study ideally would have captured this issue; however, it is unclear from the report whether or how such information was captured and whether the estimates that could be used to account for it are accurate. This is discussed further in a section in Chapter 7.

> Every time senior leaders want to know about our problems, we'll spell out our problems and then they'll ask how long it takes to do parachutes. They would say things like "we'd do four before lunch." But proficiency levels have changed (like leadership doesn't understand). The inspection criteria have advanced so much. So, you can't even do three in a day. For me, I could do two in a day and I'm the most skilled on this base. Asking that from anyone else, you'd get trouble. We have two proficient airmen per section—they know the intricacies of the sections. That goes for the young staff, about one- to two-year old staff. It goes for them too. As soon as they make staff, they get thrown in a leadership position. Their work knowledge starts to go down. They start being able to trust new programs as new airmen. We really have to push them through these tasks. At one point, to sign someone off on parachutes, I want to do them for four to five months to feel confident. A leader came down, and they were wondering why it took so long to sign off. Then we trained them at 2b (i.e., with leader supervision),[33] but then they weren't proficient.

We heard that proper training takes time. And in all AFE flights, time is a precious commodity. We heard over and over again, especially from NCOICs and superintendents, that there simply was not enough time in the day to do all the training they wanted to do. In competition with everything that must be accomplished in a day, training is often pushed aside in the name of what is deemed more mission-critical.

Recommendations

Participants offered several recommendations for how to address some of the issues they raised about training. We discuss and elaborate on them here.

Improve Initial Skills Training

New AFE airmen do not arrive at their first duty assignment as contributing 3-levels capable of executing the work tasks, and a considerable amount of time is spent retraining the same skills taught in IST. This means that the workload burden has to be shouldered by other personnel while they get up to speed. Participants felt that this needed to be addressed and that one way to do it was to change the approach to IST. One suggested change was to use IST to give new recruits a firm foundation in generic AFE skills. Another suggestion was to use IST to provide training specific to an airman's first duty assignment. Participants explained that doing so would help limit the amount of retraining required for 3-levels arriving at their first duty station and equip them to quickly reach the proficiency of a 5-level technician once there.

We offer two suggestions about how this could happen:

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[33] According to the CFETP, personnel cannot be signed off as proficient on a task unless they are at the "go" level—the 3c level. In this example, the participant may be saying that personnel could only be trained to the z level on the job because of time constraints. We suggest that the career field explore whether this is a mistaken understanding about the level required for sign-off or whether some personnel are actually stuck at the 2b-level in some cases because of training time constraints.

- **Shorten IST and keep it generic, then conduct expanded duty training and MDS-specific training at Field Training Units (FTUs).** There is a set of skills that is relevant to every AFE airman, regardless of what MDS is supported. These skills—which could include basic tool use, how to read TOs, and similar fundamentals—could be taught in a shortened IST. We heard that some 3-levels are lacking these skills and would benefit from initial training that focuses on them. After abbreviated foundational training in IST, recruits can then be sent to their first assignment for more-detailed training that will familiarize them with the equipment and tasks that they will immediately employ at their first duty station. Some suggested creating an FTU as one way to operationalize this follow-on training. Establishing an FTU allows AFE trainees to still be in training and not count toward manning numbers of certified personnel available to execute the work. These trainees would instead be set apart, still in student status, learning the specific skills that would allow them to become contributing 3-levels at their first assignment. Once they are certified by the FTU, they can then be sent to an operational unit and immediately contribute.

  An FTU could be at each duty location or colocated with IST. One benefit of having it colocated with IST is that it might be harder to pull personnel from the local AFE units to man the FTU and easier to protect the training time of those in the FTU.[34] It also likely would require less manpower overall because some efficiencies could be gained by having it all centralized. However, there may be other arguments for having FTUs dispersed as well.[35] Regardless, the addition of an FTU would require increases in the Air Force manpower determinants (AFMDs) and changes to the manpower requirements documents (i.e., the analyses produced by AFMAA) to account for the addition of dedicated trainers and protected training time.
- **Shred IST or split it into MDS grouping–specific tracks.**[36] Separate IST into two phases: one that teaches generic AFE skills and another that teaches MDS-specific skills. Trainees could be partitioned during this second phase using their first duty station and given MDS-relevant training while still in IST. By shredding or establishing separate

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[34] As noted by one of our career-field SMEs:

> Protecting training time for new transfers is more difficult at some bases than others. For example, at some overseas bases, new airmen are required to attend two weeks of escort duty after FTAC [First Term Airmen's Course], essentially losing a month of upgrade training. This makes a stronger case for the FTU to be located at the IST.

[35] We did not systematically explore all of the pros and cons of where to locate the FTU. We therefore recommend that, if the career field does add FTUs, AFE SMEs be further consulted on the pros and cons of both options.

[36] AFSCs in the Air Force 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.

training tracks,[37] IST can help provide AFE technicians with a strong foundation that will better serve them throughout their career.

Both of these options offer clear benefits over the current approach to IST and follow-on training. Both would streamline the training that airmen receive, cutting out information not relevant to someone's first assignment. Trainees would be able to focus more deeply on a narrower set tasks and therefore might be better able to develop full mastery of those tasks, which in turn might help reduce mistakes and improve proficiency in the tasks they are expected to perform. Both an FTU and shreds in IST would also serve to shield bases that receive new personnel from having to take training out of hide. Both options also would help ensure that there were clear and consistent standards in the MDS-specific tasks that personnel were being trained in. The next recommendation addresses how similar improvements would extend into continuation training after an airman's first duty assignment.

Improve On-the-Job Qualification Training

Throughout the focus group discussions, participants provided comments about the full range of OJT, including that IQT and upgrade training are not meeting the training needs of the AFE career field. The following are suggested changes to OJT that could help increase the level of technical proficiency AFE-wide.

- **Formalize training and stick to a master training plan.**[38] We were told that formal training is constantly being put off to make time for other tasks. We were also told that personnel who are tasked with managing and delivering OJT are often saturated with their own job duties and responsibilities that are unrelated to their training role, and, as a result, they struggle to give their trainees the attention they need to become proficient 5-levels. Giving the trainee-trainer activities more structure to include a more clearly defined trainer-trainee relationship and training plan that is implemented and documented formally (rather than executed informally and without a predetermined official structure), could improve the quality and regularity of training provided to trainees.[39]
- **Prioritize cultivating 5- and 7-level trainers.** The development of high-quality trainers does not happen overnight, nor does it happen by chance. Local leadership should

[37] Various approaches could be taken to shred the AFE career field, such as shredding by ejection, non-ejection, and special warfare; shredding by other types of MDS groups or mission categories (fighter, bomber, tanker, etc.); or shredding by specific MDSs.

[38] We fully realize that AFE has worked in the past to improve training and that those improvements have not worked. The intention of this recommendation is not to put the burden and responsibility back on AFE for fixing themselves, but instead to point out to leadership inside and outside AFE that they need to support the training that AFE develops, in the form of both resources and time, and that AFE may need outside assistance in formalizing the resource and time requirements. AFE may also need outside assistance in conducting research to determine whether formalized training is having the desired effect and to identify ways to further structure the training to become maximally effective. For more discussion on development of a master training plan, see AFI 36-2651, 2019.

[39] This structure may exist in some locations provided by training managers and others in similar roles; however, the structure and consistency can vary, and, in many cases, training managers may find it difficult to execute because the numbers of personnel available cannot accommodate those plans.

identify those within their sections who have the potential to be effective trainers, and then invest in them to foster that development. This investment could take the form of formal courses or mentoring but should equip them to become capable trainers in the future.

- **Protect training time for new transfers.** As discussed in the previous section on IST, establishment of MDS- or duty-specific FTUs would offer a number of benefits. These include protecting new arrivals' training time to make sure they get the level of training needed and not counting personnel who are new or who recently moved from an assignment with another MDS grouping against the percentage manning of the receiving base until they have received sufficient training at that base in the appropriate MDS. If FTUs are not established, then some other process is needed that ensures sufficient numbers of personnel are available to train new arrivals and that the AFMDs are adjusted to account for the limitations of new arrivals (i.e., that new arrivals who are not able to execute the work at the same pace as others for some period of time and that some portion of their day would need to be set aside for training for some period of time). If MDS-specific training is left to the bases, as it is now, there could continue to be inconsistencies and deficiencies in the training received.[40]
- **Establish more-formalized training outside IST.** Another benefit of an FTU is that it could help establish consistency in standards and content for MDS-specific training. If MDS-specific training is left to the bases as it is now (especially if that training time is not protected), there could continue to be inconsistencies and deficiencies in the training received. One goal of establishing more-formalized training would be to standardize training across different bases and MDS types to ensure that all AFE airmen are trained in the same way. For example, AFE could develop a checklist for each equipment system to standardize the amount of repacks, modifications, and assemble and disassemble activities that must be done to become proficient. Formalized and standardized training across bases could also be developed that requires trainers teach the why behind the various approaches and steps in the tasks. This could help ensure that personnel develop the deeper subject-matter expertise that many have noted is so critical to the job but that may have been largely lost over the years. Another goal of establishing more-formalized training outside IST is that it allows for a clearer accounting of the amount of OJT training that is actually needed in AFE. This could help the career field advocate for additional validated manpower requirements in future manpower analysis studies by AFMAA.

Other Training Recommendations

Limit movement between sections. This could be accomplished by abolishing required rotation plans. It could also be done by loosening the timelines for 5-level upgrades. We heard repeatedly that different people learn at different paces, and, if the emphasis really is on developing proficiency, the training timeline should become more flexible to allow different people to develop at different speeds. We were told that proficiency will increase with

[40] It is unclear from the 2018 manpower study how training time is accounted for and whether transfers across MDS types or shops is specifically accounted for, and, if so, how. This is discussed further in Chapter 7.

specialization, and, by limiting movement between sections, AFE airmen will have the opportunity to develop local expertise through training and repetitions. The use of SEIs could help address some of these issues. We also discuss pros and cons about the use of shreds (e.g., Aircrew Life Support and Survival Equipment) to address this issue in the final chapter of this report.[41]

Account for loss of expertise due to PCSs. Meaningful expertise is lost when 5-, 7- and 9-level airmen transition from supporting one MDS to another. The training needed to bring them up to speed in their new MDS should be accounted for and provided at their new duty station. Shredding the career field (which is discussed more in Chapter 3) would alleviate some of this strain by decreasing the variation between an airmen's pre- and post-PCS MDS. The MDS-specific FTUs just described could also be used to provide this training to more-seasoned people who have a PCS to a new MDS. The use of SEIs or shreds could help address some of these issues as well (see more discussion of this in the final chapter of this report).

Introduce mobile FTUs. We heard repeatedly that really deep expertise in certain types of tasks, including some that are extremely valuable to the career field, now exists only in small pockets within the career field and, in the worst cases, has left the career field entirely. We were told that sewing is one example of this type of task. These types of skills will not regenerate organically and must be intentionally injected back into the career field. A traveling group of expert trainers forming a mobile FTU could be one way of reinvigorating flights with specific expertise.[42]

Eliminate or substantially rewrite the CDCs or place far less emphasis on them. The majority of focus group participants who voiced opinions on CDCs commented that they do not pertain to AFE's actual duties or equipment. They explained that studying for and testing on CDCs takes time away from relevant training and job duties, and that people are trying to meet the requirements to upgrade but not taking the time to learn the equipment and be proficient. As a result, some participants suggested eliminating or substantially rewriting the CDCs.

Given these comments, making major content revisions to the CDCs may help. However, it may also be possible that participants view the CDCs as less relevant simply because so many elements of the career field are MDS specific. In the latter case, if the career field is shredded by

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[41] We also discuss shredding by MDS grouping instead (e.g., ejection, non-ejection, special warfare) in this report. It is important to note, however, that if shreds by MDS grouping are created, it may be excessive to also limit shop moves. In that case, the career field probably could continue to rotate people across shops to develop a well-rounded set of skills in any of the MDS grouping shreds without seeing the same proficiency impact of rotation that is felt now. On the other hand, if MDS grouping shreds are *not* instituted, limiting shop moves may be an important stopgap measure to help address some of the proficiency issues.

[42] Like many of these recommendations, a mobile FTU would require an increase in the official manpower requirements for the career field (i.e., AFMAA's manpower determinants would need to be updated to reflect this new need), and those new requirements would need to be funded. If no such increase in manpower requirements is given to allow for the FTU, then manning for the FTU would necessarily have be taken out of hide, and that would likely put further strain on an already strained workforce.

MDS grouping, the CDCs would also need to be adjusted to reflect only the tasks related to a given shred. This might then eliminate the concern about the CDCs being not applicable to so many people.

It is important to note that, because airmen scores on tests of CDC knowledge are used as one element in promotion decisions, removal of the CDCs entirely (as some suggested) may not be advisable. At a minimum, it would require careful consideration of how that might impact promotions for AFE relative to other enlisted career fields. In addition, CDCs, like technical training, can be used to help familiarize the newly acquired airman with his or her new AFSC and are therefore an important tool for the development of enlisted personnel. Again, shredding the career field and updating the CDCs to reflect the narrow scope of shredded tasks may be a better solution.

Establish a process for incorporating equipment updates in IST at the same time as changes are made in the field. Instructors noted that much more frequent improvements to training were needed than had been made in the past. This was also raised at the STRT that we attended, and it was raised by some of our focus group participants.

3. Reducing the Number of Tasks

The merger of the Life Support and Survival Equipment career fields into the new AFE career field had a notable impact on the overall number of tasks that AFE personnel are required to know.[43] During our focus group discussions, participants in 19 percent of groups commented that the merger resulted in too many tasks, which contributed to proficiency problems. Participants explained that the number of tasks potentially impacts proficiency in two ways: (1) given the total number of tasks, staying current in all of them is simply unrealistic, and (2) finding time to maintain proficiency in tasks that are not performed frequently is especially difficult, given that additional duties consume available time that is not otherwise allocated to performing day-to-day work. They further explained that, as a result, training, core work duties, and additional duties end up as competing priorities, with core work duties and additional duties being prioritized over training.

Hundreds of comments from airmen at all levels and across the locations we visited reinforced both of these theories.[44] Airmen suggested that, to mitigate these problems, the career field could either decrease the number of AFE tasks required or find a way to better manage the current system.

Our discussions about this issue fell into two general areas:

1. discussion of proficiency problems associated with certain specific tasks and their causes
2. ways in which the overall magnitude of tasks erodes proficiency among AFE personnel.

Task-Specific Problems

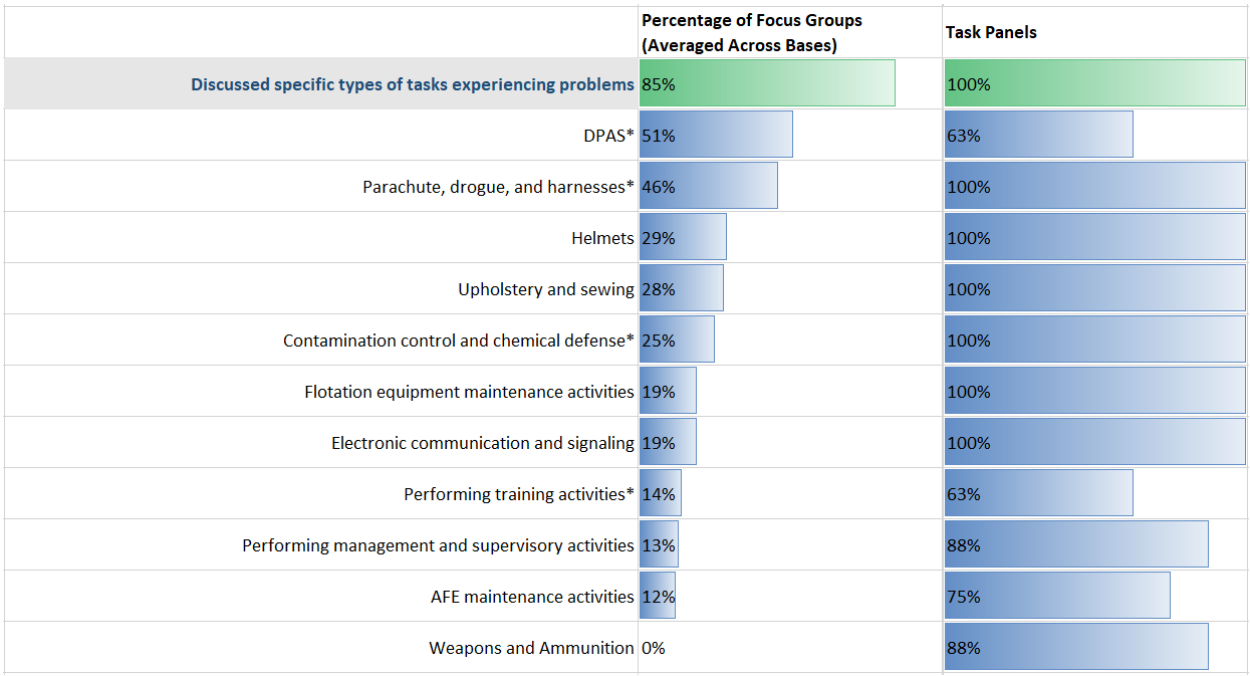
Figure 3.1 shows the types of tasks that participants in both the focus groups and the task panels tended to discuss most as experiencing proficiency problems. In coding the specific task issues, we grouped responses into the same ten categories used in the Air Force's most recent AFE OAR. We also added Defense Property Accountability System (DPAS) as an additional

[43] Appendix F contains a note about comparing numbers of tasks between the AFE career field and other maintenance career fields.

[44] Although these theories were reinforced by participants throughout our discussions in both the focus groups and the task panels, we did not collect additional data to verify the accuracy of this theory. That is, we have not conducted a study to determine the tipping point in number, type, and range of complexity of tasks that the AFE personnel can handle before the memory and practice requirements become unmanageable. We did look at the absolute number of tasks relative to that included in some maintenance career fields, but there are some methodological problems in making such comparisons that prevent us from concluding that the number of tasks for AFE is not a problem. Specifically, the quality, scope, and breadth of a single task may differ in how the tasks are articulated in each career field. If so, it would be essentially a comparison of apples and oranges rather than apples to apples. In this way, a simple count may be misleading. This is discussed further in Appendix F.

separate category, because proficiency issues with DPAS were mentioned by participants in more than half of our discussions.

Figure 3.1. Percentage of Discussions Commenting on Specific Tasks Experiencing Problems



NOTE: Sometimes a topic was raised by one person, and an opposite view was expressed by someone in the same discussion group. In those cases, the same discussion would be reflected in both the topic frequency and the opposite sentiment frequency. For some topics, no opposite sentiment was expressed in the RegAF discussions. Where an opposite sentiment was expressed in greater than 0 percent and less than or equal to 5 percent of the RegAF focus groups, the category is marked with an asterisk. The category of tasks covered by "performing training activities" refers to tasks in the career field that involve one AFE member training and developing other airmen.

As shown in the figure, in addition to DPAS, participants across many of our focus groups discussed proficiency issues with parachutes; chemical, biological, radiological, nuclear, and explosives (CBRNE); and sewing and upholstery. We also include the results for the task panels in Figure 3.1 because of the notable differences with the focus group discussions. This difference is largely because we asked task panel participants to consider every task in these domains and discuss any that have proficiency concerns. As a result, task panel participants are primed to discuss tasks that might be less critical or that might be less likely to come to mind, whereas focus group participants were not.

That said, we did additional analysis exploring task panel views on each of the tasks in the OAR. That analysis, found in Appendix B, confirms that some proficiency problems do likely exist across all of the OAR domains. But it also confirms that some task domains have more

problems than others. The OAR task domains in which the largest percentage of participants identified proficiency problems were again in parachutes, CBRNE, and sewing and upholstery.[45]

We provide examples of the types of comments that participants offered about issues with DPAS, parachutes, sewing, and CBRNE in the sections that follow. We also discuss some additional issues they raised about CBRNE-related additional duties in a separate section in the latter half of this chapter.

Defense Property Accountability System

DPAS is a U.S. Department of Defense (DoD) property-management system used by more than 32 DoD agencies and military services to track gear and equipment. AFE personnel consistently flagged the negative impact that DPAS had on proficiency because of the newness of the system and the time required for data entry. One participant stated, "Glitching. It's always glitching. It's always down. With DPAS, it takes 26 steps just to enter one thing." Another participant remarked, "Many just don't want to do DPAS and almost refuse to learn it." Similarly, another participant stated, "We haven't met any of our deadlines, and we really aren't prepared to use that system. It's very bulky, not user friendly, and is a challenge to what we do."

However, a few outlying perspectives claimed that, given time, receptivity to DPAS would grow. One participant said:

> The main purpose of DPAS is [to] get everything into the system so it makes our lives easier. Once we put everything into the system, everything is going to be a click away. The only bad thing about DPAS is some things are not going to be in the way that we need them to be.

Another participant from the same location optimistically remarked:

> I think we should have more sit-downs, so that everyone can be up to speed. For instance, DPAS. I don't know anything about DPAS, I'm pretty sure nobody in my shop knows about DPAS. I wanted to do a sit-down class, but none of our leadership will do it because they feel like nobody will participate. But I feel like if you open that door and say "Hey, let's have a sit-down class," I feel like a lot of people would attend. But they jump to conclusions and think that nobody would want to do it.

Parachutes and Harnesses

More than 70 tasks fall under the OAR category parachute, drogue, deceleration, and harnesses maintenance, and a wide range of them were discussed during the focus groups and task panels as having proficiency issues.

Specifically, many remarked on both the time it takes to become proficient in tasks related to parachutes and execute those tasks before and after someone has developed proficiency in

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[45] Although the focus group results shown in Figure 3.1 could be argued to be simply a result of certain tasks being easiest to explain or use as examples of the problems the ratings of proficiency problems, our task panels were designed specifically to further explore whether this was the case.

them.[46] In addition, some pointed to tasks related to parachutes as one of the most critical skill areas where proficiency is compromised. Some explained that the time it takes to assemble or repair a parachute leaves little room for other essential tasks; others remarked that parachutes are so difficult that some AFE personnel might look to avoid learning the tasks altogether. For example:

> I think it's just an intimidating thing . . . like this parachute is supposed to save somebody's life, and it takes all day to pack, and there are so many tedious things involved with it. I think some people just get intimidated by it, and they keep putting it off in their career to get trained on it, but you've got to have it done.

Several participants talked about how proficiency problems were closely aligned with the time it takes to develop proficiency in packing and inspecting of parachutes. This included the amount of training time that is needed to demonstrate the skill and perform inspections of trainees' work and the overall number of repetitions across months of time that are ultimately needed to develop proficiency. For example:

> Proficiency problems directly relate to parachutes only because it takes so much time to pack those and get signed off on those and that's usually the bottleneck of most flights is the parachute packing.
>
> ***
>
> But with a parachute, it takes about a year [to get proficient], then they can [fully understand] it and be able to read the situation. The key is time. Proficient people can do things quickly and correctly. With helmets, that's a little easier, but with [para]chutes not so much. Not everyone has the [time] to get proficient. It may not be their fault. Chutes is a proficiency issue.

Sewing and Upholstery

More than 40 tasks are listed in the OAR section "Performing aircraft cover, soundproofing, upholstery, thermal curtain, cargo net, and sewing machine maintenance activities." The bulk of the conversations about proficiency in this category were about deficiencies in sewing and sewing machine–related skills specifically, which are integral to the bulk of the tasks in this category. Sewing is a task necessary for repairing a range of AFE equipment, including parachutes, life rafts, tire covers, machine covers, and backpacks. Yet interestingly, some described the task of sewing as "useless." Others, however, readily admitted sewing was an important part of the job and raised it as a proficiency concern that needs to be addressed. Participants mentioned the infrequency with which they have to perform the task and their lack of familiarity as reasons for a lack of proficiency. For example, one participant stated:

> Sewing sucks but [recommended to] increase that block [during training] because it's a big part of the job.

Yet, at the same location, someone else remarked:

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[46] Participants noted that some types take much longer than other types to pack.

> We don't do a lot of sewing here. Maybe two people know how to sew. I've sewn once since I've been in. It may be different if I go to a different base, but we did sewing for three or four days in tech school. I just don't think it's needed, [the] time . . . could go to something else that would be more beneficial when you get to your first duty station.

Other participants (including those in the task panels) noted that sewing skills had atrophied. One participant explained that, since the career field merger, few AFE knew how to sew, and items are just replaced rather than repaired via sewing:

> We just don't have the expertise. Before, when you just had traditional life support and survival equipment, you didn't have 168 tasks that you had to be good at. But when you're proficient, and you work on something time after time, when it came to fixing sewing machines or sewing something, it meant that the guys knew how to do it. Some of the feedback I've received in conferences is, should AFE have a more robust tech school? Or specifically for special tactics? Because there's a lot of stuff that special tactics does, that they don't get at tech school or at Ft. Lee. How do we get these guys proficient in doing this? And one of the things was the sewing part. You get guys coming out of tech school that are like, "Yeah I saw that in a block of training for maybe five hours. I sewed a line, and they were like "great, moving on to the next thing."

Others mentioned outsourcing sewing to outside contractors as a trend that has occurred, in part because of the proficiency problems:

> There is a huge lack of knowledge on completely fixing a sewing machine, so contractors often do it. But it's more expensive to get a contractor to do it. And there is downtime because it takes time to send broken machines to the contractor, so it takes more time to have them fix it.

And they also talked about how outsourcing it was adding to the proficiency issues:

> That's a downside with the contractors having that stuff. We can use the sewing machines to sew, but we can't sew on the equipment. So, if we can't teach young airmen how to build up harnesses or modify flight-suits, what's the point of learning how to sew? That's specifically what it is for, to sew on the equipment in the AFE description. The contractors do everything.

Lastly, according to an AFE SME, sewing opportunities have been systematically eliminated by AFE leadership over the years:

> Most of the early AFE chiefs (if not all) were from the Life Support AFSC. Those leaders immediately removed AFE from the Aerial Delivery function and killed the Sewing Machine Maintenance courses previously offered to Survival Equipment personnel. Post-merger AFE leaders have made it a point remove opportunities for our airmen to gain parachute and sewing expertise.

Contamination Control and Chemical Defense

This section of the OAR, "Performing aircrew contamination control area (ACCA) and aircrew chemical defense ensemble (ACDE) activities," is one of the shortest, with only 26 tasks. Yet multiple participants pointed to proficiency problems with tasks in these areas. They raised

two general types of comments. The first was that dealing with the chemical defense equipment was consuming large portions of their time that could be better spent in other ways. In other words, they felt that that time should be recaptured and put back toward training in other, more-critical tasks (such as training people on parachutes or being able to take more time to execute work related to parachutes):

> They want to pull two people from every shop every two weeks to do the chem line. But every opposite week of that, they want to do a training, so they'll pull another two people. So, we lose them for half a day. So now I'm losing four people for half a day. And it's like, dude, that's kind of ridiculous.
>
> Chem line? Stop doing it every two weeks.

Participants also pointed to a number of specific chemical defense–related tasks that they felt personnel at their bases were simply were not proficient in, yet they were still being expected to be able to perform those tasks at a moment's notice.

> I guarantee people here don't know how to change out the filters on their gas masks. They shouldn't come to us, but they probably would come to us. It comes down to the entire Air Force not knowing much about chem. That would be our Achilles heel.
>
> ***
>
> Things like ACCA, that's not something I feel very confident about, just because it's not something we do very often. We do it very rarely.
>
> ***
>
> ACCA stands for Aircrew Contamination Control Area. It's a line that we put in case there's a chemical attack or something like that. Anybody who got affected has to walk through the line, and we have to decontaminate them. It's an eight- or nine-station line. We are the ones processing the aircrew or whoever's contaminated through that line. There are very specific steps that you have to do. I've been here for two years, and I've only done it four or five times, total. That's just something I'm not very confident on.
>
> ***
>
> Decontamination line, AFE doing it. We do know the equipment and how to take it off but everything that is in a decon line, we don't know the chemicals, and we've never really had the training to actually do it. If the aircrew go[es] through a chemical environment, and we have to decontaminate them, it would take us a very long time because we've only done training, and there is a part where you are supposed to pat them down with stuff, we just simulate it.

Breathing Equipment or Oxygen Mask

Like the comments about chemical defense tasks, participants also talked about quick-don oxygen mask tasks as consuming a large portion of their time, potentially unnecessarily.

> I feel a big problem in my section—we deal with the O2, which is the quick-don masks—[is] their inspection cycles [which] range from 30 days. Every month, they come in, and we see them, and it's tough at this base because we have 58

> aircraft and each one needs our equipment or masks in them. We are essentially inspecting equipment for each of those aircraft month in and month out, so we are constantly getting banged over the head with quick don masks. We are basically wiping them down, making sure they are not torn and functional, but it's very rare we find something with an issue.
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> ***
>
> Just masks, that's basically 60 sets of masks, and a set is about 15 to 27 masks, and all 60 of those sets have to be inspected monthly. They don't even fly every month.
>
> ***
>
> The time and effort we are spending to inspect these, which is our job, we get it, but for a base like this it is pretty overwhelming. We don't have the time when we have all these other programs and other sections that need help. Per set, we spend about an hour and five minutes to an hour and 20 minutes just inspecting them and wiping them down, making sure they are right. We rarely find discrepancies on them. We do about ten sets per week and maybe one or two masks that need to be swapped out. That's something I feel the aircrew, they have to precheck their equipment anyway so that's something that we could be called out to. I get they need to be wiped out, but we could find other routes to wipe them out. We have MTIs [mission termination inspections] we do before a jet takes off, they could be alcohol wiped during that time, and that would save us so much time, our time in O2 and also flight line because they have to take them down, bring them to the shop, we inspect them, they have to go back into the flight line, and reupload them. I find that is where our problems are as well because there is no real nice way to bring them down and put them into a bag, that's wear and tear in itself. Unhooking them, tossing them into a bag, putting them in the back of a truck, you can only be so gentle with it.
>
> ***
>
> [We are] wasting our time spending half a day, sometimes even more than half a day, inspecting these and flight line [is] wasting their time as well . . . every solution [that gets brought up] gets knocked back down because our AFI. The problem is our AFI and our regulations they have for us to clean them and inspect them. . . . [Maybe] O2 [could] go out to the aircraft and inspect them on the aircraft. The problem with that was it needs to be in a facility free from any particles, dust. In a facility where it can be inspected, fit, and checked.

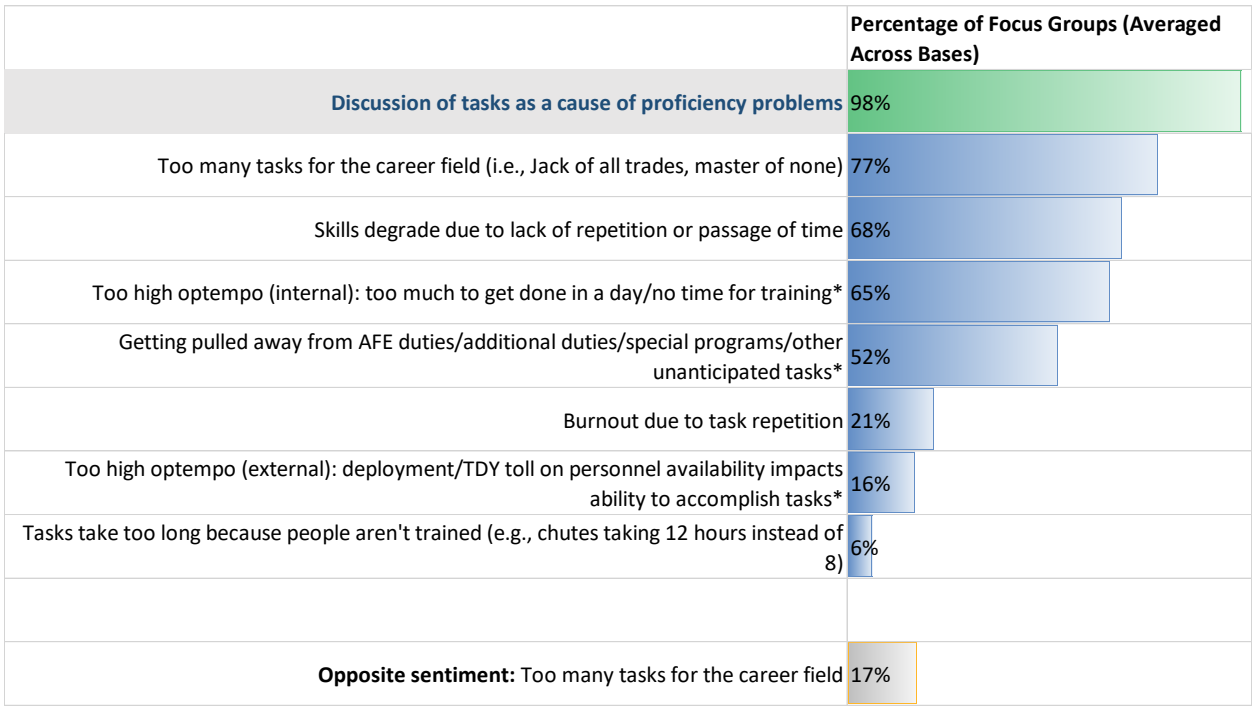
In addition, one participant also explained how limited supplies can complicate the time demands for the activities.

> The KC-10 takes different masks than the C-5 and C-17. We only have one turn around set. If two jets leave for two weeks and both their masks are bad, we would have to take the mask off that jet, bring it back to the shop, inspect it right then and there, take it back out to the jet all before it leaves because we have a lack of equipment in some areas.

Task Volume and Its Impact on Proficiency

Figure 3.2 shows the range of comments that were raised about tasks as a cause of the proficiency issues. Among the topics discussed by most groups were having so many tasks in the career field that someone could not possibly be proficient in all of them. Participants also talked about how operational tempo (OPTEMPO) might be driving some of the proficiency issues. Additionally, proficiency might be affected by getting pulled away from core duties to manage special programs, address unanticipated and unplanned-for tasks, and other additional duties. We discuss the implications of too many tasks, OPTEMPO, and the distraction of additional duties in the next sections.

Figure 3.2. Percentage of Focus Groups Commenting on Tasks as Potential Causes



NOTES: Sometimes a topic was raised by one person, and an opposite view was expressed by someone in the same discussion group. In those cases, the same discussion would be reflected in both the topic frequency and the opposite sentiment frequency. For some topics, no opposite sentiment was expressed in the RegAF discussions. Where an opposite sentiment was expressed in greater than 0 percent and less than or equal to 5 percent of the RegAF focus groups, the category is marked with an asterisk.

Signed Off but Far from Ready

An issue frequently cited by focus group and task panel participants is that AFE personnel may be signed off on tasks, but this does not mean that they are proficient or ready to perform them. There is a sense that people are moved around so that they can be signed off on tasks, and that moving is done solely for meeting paperwork requirements levied on them by the career field and Air Force promotion system. Moving people around quickly comes at the expense of

developing real depth of skill in any of the task areas. In other words, the overwhelming number of career field tasks and the pressure to demonstrate competency across the board, irrespective of whether personnel feel proficient, leads to people looking on paper like they are ready to perform the work, when in actuality they are not. This has resulted in a broad perception that many AFE are signed off on key tasks but, in actuality, remain far from ready and confident—as these remarks indicate:

> It's over 400 tasks that we have to get signed off on to be 100 percent proficient, I believe. When I talk to other AFE personnel across the Air Force, I'll tell them our workload, and they're blown away.
>
> ***
>
> I'd say that anything I'm signed off on, I feel comfortable working on. But I don't feel like I'm a master at everything I'm signed off on. I could work on anything, but that doesn't mean I'm confident.
>
> ***
>
> To level up, you have to get signed off on 100 percent of the tasks. Even if you're signed off, you're probably not going to be proficient in everything you're signed off on. Maybe at one time you were.

Some described rushed attempts to advance from the 3-level to the 5-level. As one participant explained:

> People are rushed to get their 5-level. There are people up in the [shop] right now working on T-38 gear. There's still other equipment not in the T-38 shop that they need for their 5-level. Instead, people say, "You are now signed off on this. We are going to move you over to this shop, where you're going to get trained on that other equipment that you need for your 5-level."

Along those lines, another participant observed:

> One of the section leads went on leave and left one of the new 5-levels in charge. He was trained to a 2B level and didn't know what was going on.[47] It's not his fault he wasn't trained on it. He just got signed off on that equipment last week and is now expected to jump in and run that section.

Operational Tempo

AFE personnel also described a nexus between the volume of AFE tasks and the high OPTEMPO at most locations, citing that the amount of work that needs to be done under unrealistic time frames is sometimes untenable. Our participants generally discussed two types of

[47] According to the CFETP, personnel cannot be signed off as proficient on a task unless they are at the "go" level—the 3b level. In this example, the participant is assuming that only the 2b level was required for sign-off. This is a misconception that seemed to occur with at least a few of our participants. We therefore suggest that the career field work to address this inconsistency in perception about the required minimum level for sign-off.

OPTEMPO that were affecting proficiency: one relating to on-base or garrison duties and the other related to temporary duty or deployments.[48]

Such locations as Hurlburt Field—home to Air Force Special Operations Command (AFSOC)—stand out because of their high-deployment OPTEMPO and task load in certain unique areas (e.g., lots of parachutes). For example, as one participant at Hurlburt remarked:

> It is really high tempo here. You deploy for three or four months, and you come back, and a lot of people will go on R&R [rest and recuperation] and then do another deployment. That's where I don't know if AFSOC could ever be 100 percent, to be honest.

During one focus group, an airman said:

> We take care of a lot of squadrons. And we have so many people that we take care of their helmets, and they request them in individual bags. This limits our ability to maintain our own equipment. . . . When I worked in aircrew ops, there were times when I wouldn't get out in time because of the volume of helmets I had to go through. This is the same reason we don't always get to our training. Because the ops tempo is so high, we simply can't finish all of our duties for the day in time to get to everything else.

Another participant in the same group added:

> We just don't have time. In every section that's the reality. We have various tasks. It's just not feasible to get everything done and train among the ops tempo.

Other airmen specifically talked about the links between OPTEMPO and proficiency and OPTEMPO and morale:

> Unless there is an uptick of manning and decrease in ops tempo, we are going to have proficiency problems.
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> A lot of the [problems with] morale seems to stem from the ops tempo. Having experienced overseas, this base isn't really that busy. But everyone is constantly burnt out, and they will tell you it's because of the workload. I'm like, it really is not that much. It's just all the extra crap that goes along with it.

Impact of Additional Special Duties and Unexpected Aircrew Flight Equipment Duties

In addition to core AFE tasks, airmen talked about the impacts of being responsible for a considerable number of "special programs" or "additional duties" that they must balance with

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[48] OPTEMPO is sometimes used with a very specific definition in mind. For example, Castro and Adler (1999) define *OPTEMPO* as "the rate of military actions or missions (e.g., deployments, training, or garrison duties)." Similarly, according to Title 10: "The term 'operating tempo' means the rate at which units of the armed forces are involved in all military activities, including contingency operations, exercises, and training deployments" (10 U.S.C. §991). In this report, however, we use the term more broadly to refer not only to the pace of deployments but also to the pace of the work (i.e., how many pieces of equipment need to be repaired, inspected, maintained, etc.; how many AFE tasks, special duties, and other work-related activities need to be accomplished each day; at what speed and by what deadline). This broader definition that includes daily workload is consistent with how our participants used it.

their normal workload. As explained by our participants, many of these special programs are mandated by the Air Force and may not be able to be circumvented. According to AFE airmen interviewed, these special programs include but are not limited to:[49]

- Safety program
- Hazardous materials program
- Computer program
- Equipment program
- Munitions program
- Explosives safety program
- Vehicle control program
- Government purchase card program
- Technical order program
- Precision measurement equipment laboratory program

Regarding these additional duties, one participant commented:

> The only thing that ever makes me feel overwhelmed is when I have a lot of things from AFE building up, and then I have my computer program. That's what makes me feel overwhelmed. It's like, I have to build up a harness, inspect this helmet, fit this pilot that's coming in. I have to do 120 things a day, and then [there's all this additional stuff]. That's when it gets overwhelming, when you've got additional duties piling on top of your normal, day-to-day work.

Speaking about task saturation and additional duties, several participants explained:

> One additional duty that I had to do while with the 355th was the GPC [government purchase card] program, and that occupied all of my time. I had no time to deal with anything else. I also had to manage ITEC [information technology equipment custodian], and that was very taxing, something that could have been handed off to someone else that is not as task-saturated as AFE.
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> Additional duties here are a whole job by themselves because of how big the base is. The PMEL [precision measurement equipment laboratory] program, I'm on that. And that is extremely overwhelming. We have nine UTCs [unit type codes]. We need torque wrenches, torque drivers, all these other testers in each section. It's just extremely overwhelming.

Participants also talked often about how AFE personnel get tapped more often than other career fields for these special duties and other staff assignments.[50] They talked about how this

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[49] These tasks likely have been accounted for in the 2018 manpower standard in some form, however, it is not clear whether the fact that these are falling more heavily on AFE personnel than on other career fields in the OSS has been accounted for. It is possible that a single generic plus-up factor is applied in the standard regardless of career field differences. We discuss this further in Chapter 7. We have not independently confirmed that personnel actually are tapped for these duties at a higher rate than other personnel. This is an example of something that could be confirmed through follow-on studies, however, it is likely that additional data would need to be collected on who is performing these duties force-wide to confirm it, because participation in some of the programs is not likely currently tracked or tracked consistently in official electronic personnel data files. For more on the value of gathering additional such data to confirm the beliefs of our participants, see Chapter 7.

[50] AFE is often one of the largest flights in an OSS, so it often has to fill more additional duties than other flights.

leads to the perception that AFE has enough people to do the AFE work (they look sufficiently manned on paper), but in reality, it leaves them consistently undermanned.

> I think, in general, that AFE flights, whether it's [in this squadron] or regular AFE, have a surplus of bodies. And because we have all these bodies, our leadership looks at us like, "Hey, task them out to do this, that, and the other." Whether it's leading a history brief for the squadron or showing around a distinguished member of the military. It's always tasked out, it's just nonsense. I feel like they have all these bodies because the workload is real.
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> Moves happen at flight level, but what happens a lot since AFE is one of the biggest flights within our squadron, OSS, the squadron likes to pull individuals from AFE to do jobs outside of their peripheral. They will be the training manager, the Unit Deployment Manager, they will do all those jobs. There is a continuity of AFE, now you're pulling them up just to fill a spot that an aircrew member could have done.
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> Limiting additional duties at home station as well—not taking people out of their careers. We have more people to pick from because we need those people to do our job. The commanders ultimately have the responsibility to pull people, but it hurts our manning and proficiency. They bring in things—weapons, SERE, etc.—that we are not responsible for.
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> There cannot be an AFE member outside of the career field for more than 180 days. If so, you have to notify AFPC [Air Force Personnel Center] that you are taking an AFE slot, but what happens is that they don't notify AFPC. They keep it under the rug and not say anything. But that member that is assigned to AFE is not being used. It's authorized to AFE, but it's not assigned. It's assigned in the squadron, now we lost that body, and somebody else has to make up that work. It happens all the time.

This last point—that personnel are commonly being taken from the career field and, in some cases, for extended periods without notification of AFPC—is important. If this is occurring, it likely is not reflected in the manpower requirements for the career field, and, because AFPC is not notified, there may not be any systematic way of currently tracking it. This is one area where additional documentation could be vital for the career field to ensure that it is properly manned to meet AFE-specific work demands.

Across multiple locations, participants mentioned that they were obligated to help provide CBRNE training to pilots, and they talked about the added burden it placed on them as a result.

> If we didn't maintain chem gear, I could give so much white space back. . . . I would be willing to lose manning if I could ditch CBRNE responsibility.
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> I think we won on teaching egress training. We used to teach pilots that, but now other pilots teach that. There are a lot of AFE people that teach the SERE

> (survival) items. But we are lucky enough to have a SERE person here, so we don't have to do that.
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> I didn't think about this until now, but we're also always called. There are sometimes guys who are just called to the chem line. We're often called just to help with that. Sure, it's good experience for us, but once in a while, when you have a buttload of work to do, you want to get that done, but you get called with that just so that the aircrew can get their own experience, get signed off and all that. It's really butting into your work time.
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> Even though the ACCA is part of our career field, I get tasked to do ACCA, but who's going to be at the shop running flight line? Yet that's part of my job, I still have to be proficient. I still have other work to do.
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> Decon, there's a whole other career field.
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> I really don't think AFE should be doing [the decontamination line], especially if we go to CBRNE, hands on, they even talk about decontamination line, but they don't do the aircrew, they just do ground crew.

Participants also talked about extra work that is unanticipated or unaccounted for, which is adding to their workload. This includes unanticipated AFE duties regularly popping up that consume their workday. It is possible that these extra work demands may not be adequately accounted for in manpower workload estimates.

> In the middle of the day, we have these things. . . . They're basically testers, and they're accountable items. And they'll be like, "We need to know how many you got. All the serial numbers by 1400." And it's like, "OK. Well, I'm the only one here right now." . . . So, I gotta stop my work and take two or three hours; now I gotta track all this stuff down. You do that, and then you'll have another task that comes right after, or the same thing the next day. It's always something. . . . That's a small example of the kind of stuff that happens on a day-to-day basis. And then they'll turn around and be like, "Well, how come your work performance is suffering?" It's like, "Well, we spent most of the day trying to take care of this task instead of the actual—get the gear good to go, get the aircrew ready or whoever ready to go to go fly and do whatever they gotta do.
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> I can load a trailer with ten parachutes easy, but if I have to do all those other [things], . . . that's where I'm suffering. It's easy to give you ten chutes all day. It's easy to load an aircraft with survival kits, body armor, whatever, for a desert jet that's about to go off downrange at two in the morning. That's easy. We can do that. We have 24-hour shifts. The mission side of it. Getting mission ready, getting mission capable, getting to do what the final mission is, that's where all of it is. Those ten helmets . . . I can give you your helmet. I can provide the helmet for you, but building the helmets, and training the guys on it, and gluing it, and building it, and the guy just cracked the one that he did because he's

> aircrew, and he just threw it in his trunk, and it broke. That's your problem. That's where it is. . . . There's AFE missions and AFE's role in the mission.
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> When we need to get rid of faulty equipment, it's not working anymore, we need to turn it in. With regular AFE, you would get with supply, and they'll tell you bring it in, turn it in. For now, with ST [special tactics], we have to schedule it, take it to another base to get it processed, do all the paperwork ourselves, without actually going in our squadron, going to supply, and letting them handle it. They don't handle it; we handle it. You're taking another two to three bodies, some 7-levels, out of the shop.
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> Headquarters dictates [what SERE training is required for everyone, not just us]. . . . It's our job to tailor it for our area. So, we have to teach the other portion. It could be an hour and a half to teach our portion; have to teach it three to four times per year, two people teaching it. Minimum of five AFE have to go out there, and it's a half day or more. We don't have manpower for [SERE]. This may not be accounted for in the manning.

Participants also talked about some AFE-specific duties that can increase their workload unexpectedly or that tend to add to their weekly workload that may not be being recognized formally in manpower calculations. In particular, incentive flights that are offered as rewards for aircrew and other military personnel, other types of orientation flights (e.g., flights for spouses), and flights by pilots who were visiting or temporarily assigned to the base were discussed as examples of unplanned-for AFE work that would add to their workload at that location. They noted that, although these may seem inconsequential because they are not supposed to be frequent or regular events, they do take a toll on the AFE's ability to manage the daily workload. For example, as explained by one participant:

> We usually have six to eight incentive flights per week, so about two hours a week, an individual would [do work relating to incentive flights]. There's also wear and tear on the equipment, so now you're talking about whole inspections, which is like an hour. Incentive flights are not in a manning document.

Although these extra flights may not represent a large part of the AFE workload, it is not clear to what extent the existence of this unexpected workload is accounted for in the AFMDs. If it is not adequately accounted for, the AFMDs and the manpower requirements documents should be updated to account for it.

Recommendations

Panel discussion and focus group participants suggested ways in which the number of tasks within AFE could be reduced with the intent of bolstering proficiency. Although the list in this section is not exhaustive, it includes commonly mentioned solutions. In addition, we expand on some of these with our own suggestions and insights for addressing the issues they raised.

Better Track and Manage Special Programs and Workload from Extra AFE-Specific Duties

As just noted, several of our participants talked about unplanned AFE work that encroached on their ability to accomplish planned AFE work. Incentive flights and flights by visiting pilots were some examples. In addition, our participants generally believe that they are more likely to be tapped for special or additional duties in the OSS than personnel from other career fields. To help further confirm this, and to better understand how much of AFE's time is being lost to these activities (both the extra AFE-related tasks and the special or additional duties), we recommend that AFE start tracking who is being tapped for these duties and how much time they are dedicating to them weekly. Once this information is tracked and collected for an extended period of time, it can be used to examine whether or not the AFMDs and the resulting manpower requirements have adequately accounted for these activities or whether changes need to be made to address them. It would also allow the career field to make transparent to leadership in the OSS and elsewhere when the career field is being unexpectedly stressed by these extra or unexpected duties and to advocate a temporary reduction in them when needed.

For example, at one location, participants described how the NCOIC had established a tracking system to manage additional duties performed by AFE and make the duties more visible to leadership. This system might benefit AFE at other locations that are also struggling to balance tasks with special programs. One participant describing the "additional duties tracker" stated:

> With the number of programs someone can have, it takes a lot out of someone managing [it]. I like what our new lead trainer is doing. . . . [A]ll the jobs are in the additional duty roster [and the] Superintendent and flight chief would say "this person has six programs; we can't give them anymore." If the commander is asking, "We need someone to take over security manager. Does someone have a top program right now, where they can take this other top program on? Or can we give it to somebody else?" . . . One page and one source to go find all the positions that you're in charge of. He puts Xs through the names, and it's reviewed by him. . . . Having really good organization on that position is key.

Similar tracking systems certainly could be implemented locally, however, an even better solution would be to establish a tracking system that could be implemented in a consistent form across all locations to help track and advocate these issues career field–wide.

Consider Decreasing Inspection Standards for Certain Equipment, If It Can Be Shown That Performance in Those Tasks Would Not Be Affected

The 30-day inspection cycle for parachutes remains challenging (as described in this chapter). However, few advocated making changes to the inspection cycles for parachutes because of their mission-essential nature. Instead, some participants suggested considering whether inspection standards could be relaxed for other, non-lifesaving or redundant equipment, such as survival kits, life rafts, and slides. For example, one participant proposed:

> As far as proficiency, a lot of the equipment we work on here, the aircrew are not using most of the time. If there's any way inspection cycles can get extended [for select equipment], because I know a lot of the stuff, like survival kits and rafts and slides aren't getting touched. I don't see why we're constantly having to inspect it if it's not getting touched from year to year.

Continual inspections also require data entry into DPAS, which is time that could be otherwise spent on essential tasks, such as packing parachutes and readying helmets. Thus, the suggestion to reduce inspections for less-critical items was often mentioned in concert with the DPAS requirements, because of the time-consuming nature of the process. A participant explained:

> I just [inspected] a chem bag . . . I've done chem bags my entire career, but it took me longer to do DPAS, the inspection record, than it took me to do the inspection. If it's taking me longer to [enter the results] than to do the inspection, there is something wrong with the inspection system. . . . Half the stuff we put into DPAS, we have to remove and build it up again because the system was never designed to accept it in the first place. We just pushed through as fast as we humanly could and know we are at the process where we are trying to fix the bugs and everything else.

Although some participants suggested considering reducing the inspection standards for certain equipment, we note that this recommendation by our participants may not be in the best interest of addressing AFE's proficiency issues. Decreasing the frequency that an AFE technician inspects a piece of equipment can further degrade the technician's proficiency. In other words, it would mean that the technician would get far fewer opportunities to practice the skill, making it more likely that one's skills in the area would decline. This recommendation should only be considered under two conditions: (1) if the career field cannot obtain sufficient manning, manpower authorizations, and manpower requirements to support the existing inspection standards could be considered as a last-resort option to help redirect human resources to other tasks that are likely to have graver safety consequences if performed incorrectly) or (2) if it can be empirically demonstrated that reducing the inspection standards would not impact the ability of personnel to maintain a high proficiency (meaning personnel can still perform the work consistently without errors and with the same speed and efficiency).

However, it is also important to note that under no circumstances should an inspection cycle be decreased if doing so would jeopardize the safety of the personnel relying on the equipment. Inspection cycles should be set by determining what inspection cycle keeps that gear ready to save a life, not by whether AFE personnel think it will be used or the impact that the inspection cycle has on technician proficiency. Engineers and manufactures should set the inspection cycles based on the needs of the equipment and that equipment's ability to perform if needed.

Lastly, it is also important to note that if *reps* are the problem—meaning the inspection cycle is set to occur frequently simply because personnel need more opportunities to practice on the equipment—then the career field should instead obtain more training gear for that purpose and establish separate training cycles for practicing on that training equipment. This would need to

be reflected as an official added training requirement in the AFMDs and the manpower requirements documents produced by AFMAA.

Create Career Field Shreds

Participants talked not only about how shreds can help to reduce the amount of training that needs to be covered in IST (as mentioned in the previous chapter), they also talked about how shreds can also reduce the breadth of proficiency that AFE personnel must maintain throughout their careers. AFE personnel at various levels suggested that additional specialization by MDS groupings might help reduce or better manage the number of tasks for which AFE are responsible. Currently, airmen move from airframe to airframe when they PCS, continuously having to learn and master tasks specific to each. Limiting the number of MDSs that airmen could work on during their careers might result in individuals building expertise with one or two airframe types instead of spreading themselves thin across many. For example, in an AFE shredded out to work on heavies, airmen might have to PCS with regularity, just as they do today, but when arriving at their new base, they would be assigned to another heavy airframe instead of to fighters or bombers. Examples of comments by airmen in support of shreds illuminate their potential value:

> We should be shredded. Then we should reduce the number of core tasks that we expect our airmen to get signed off. If someone has only 30 tasks (instead of 292), and they are proficient in those 30 tasks, they will be a better airman. If [an airman] is going to be great in helmets, why do they need to be great in everything else? Later on, they will be a better, more proficient trainer.
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> If I've got a guard person that comes to me in tech school for training, and he's only going to see fighter equipment, why am I spending 10–15 days on heavies? Especially if he's only going to stay here. Even if they do PCS, within a shred, it will be similar (not exactly the same at a different base, but similar). You should shred by [major air frame], so, like, heavies/fighters/special ops track.
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> There's so much equipment that it's bound to come up that you're expected to know it because you're signed off on it, but you haven't touched it in a while. If we had specific equipment that we were responsible for, or if we were split up to different airframes, it would be a lot easier to handle your situation. That way, in tech school, if you are going to a fighter unit, you can learn a little about fighter stuff or if you're going to a heavy unit, you're going to learn about heavies. At least have those two shreds versus putting us together and saying, good luck.

Some of the career field SMEs who reviewed these results also viewed this as a potential solution but noted that key details would need to be addressed carefully to prevent unintended negative consequences.

> We should also be careful about [shreds] hampering leadership opportunities . . . [you could] create ejection, non-ejection, and special warfare employment

> tracks/shreds, and then leave 1Ps in those shreds through the rank of MSgt. SMSgts and CMSgts [chief master sergeants] can be from any shred. You could take it a step further and keep SMSgts in the track they were raised in to serve as SME leadership oversight. That way, those SMSgts could fill key leadership positions and staff jobs. Currently, AFE assignments are not MDS specific. Again, if we establish ejection/non-ejection/SW [special warfare] tracks, the assignment process will have to keep those shreds moving to bases with MDS of those shreds.
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> Shredding the career field is a potential solution to addressing training proficiency challenges and timelines; however, lots of questions come to mind. If shredded, would techs stay in MDSs they're currently assigned to? Would there be future opportunities to cross flow, if desired? Additionally, promotion impacts need to be considered as well. Personal opinion, but I see those in fighters promoting at a faster pace, then heavies, and finally GA [Guardian Angel]. Execution of this would need to be thoroughly addressed.

Similarly, some SMEs noted that if the career field is shredded, a challenge for the career field would be determining how long individuals stay in a track, promotions within the tracks, and motivation of personnel in each track. As explained by a career field SME, promotions might occur in different rates in each shred:

> Fighter base 1Ps [i.e., AFE personnel] will probably promote slightly faster than the non-ejection seat 1Ps. Special warfare 1P would probably promote at the slowest pace. The biggest factor . . . would be the competition. At non-ejection bases, 1Ps would compete against enlisted aircrew. Normally, the senior enlisted leadership positions at non-ejection type wings are enlisted flyers, causing stiff competition for the other support AFSCs. For special warfare 1Ps, their competition would be TACPs & PJs [Tactical Air Control Party and Pararescue Jumpers]. Again, the senior enlisted positions in the special warfare bases are usually TACP & PJ types, which could skew promotion rates for certain positions.

An SME noted another unintended consequence that would be important to consider and address if moves across MDSs are limited: development of senior enlisted leadership within AFE. For example, reducing the breadth of knowledge by limiting the moves could have the unintended consequence of reducing the quality of senior enlisted AFE leaders because of reduced exposure to the varied aspects of the career field. Similarly, the AFE career field functional might have trouble working issues across the AFE career field if they have grown up in a single family of MDS.

As noted earlier, the career field is exploring whether the existing SEIs could be better used in making assignment decisions as a first step toward ensuring that personnel with specific expertise are retained in locations where they are needed to execute the work and train others. However, the use of SEIs may be an incomplete solution to address proficiency issues. In particular, SEIs are not currently available to be assigned to all personnel, and they currently exist only for a subset of the relevant skill areas that the career field may want to use to make

assignment decisions. In addition, personnel with SEIs are still expected to develop expertise in the full spectrum of AFE tasks over the course of their career, so, as noted earlier by the SME, there could be concerns about potential impacts on promotion opportunities for those who are locked into an SEI-specific track for an extended part of their career.

Re-Separate the AFE Specialty into Two

We were also told that separating the career field (i.e., reverting back to premerger conditions) into Life Support and Survival Equipment would reduce the number of tasks with which airmen are saddled. As one participant said:

> One way you can solve this problem is to split the career fields and then you're removing tasks. That's going to make your job easier.

A senior AFE leader also offered this as a solution:

> I do think the merger has negatively impacted the career field. I do think we need to be split. [There are] too many tasks given the limited resources. We took two very specialized career fields and put them in one and expected everyone to be proficient in twice as many tasks.

When asked about the feasibility of the career field split, a participant remarked:

> I agree with it. I don't want to keep beating a dead horse, but if you made chutes and drags their own thing, then you'd start seeing those people become 100 percent. You go in there and everyone in that shop can tell you everything there is to know about a chute, because that's all they [have to] worry about.

Although some participants did explain that this would be one way to solve some of the proficiency issues, participants were much more likely to suggest shredding the career field by MDS than they were to suggest returning to the old construct. In addition, some of the career field SMEs who came from those career fields provided some arguments against reverting back to the old split. For example, one offered the following concerns:

> As a former 2A7X4, Survival Equipment [SE] guy, I could not be more against separating back out into two AFSCs. When SE was in the MXG [maintenance group], an SE SNCO [senior noncommissioned officer] could not get promoted for simply being a great SE SNCO. You had to go run another Fab Flight section (i.e., Sheet Metal, Metals Tech) or work your way into the Pro Super role. You had to leave your SE world and become a 2A7XX MXG type. For SMSgt and CMSgt, you competed against all the other Fab Flight AFSCs. At least in AFE, you compete against only AFE.

4. Cultivating Capable Leaders

One important insight from our discussions was that the quality and expertise of local leadership within AFE flights may contribute to proficiency problems. Our team heard comments that flights led by superintendents and NCOICs who were viewed as having the appropriate experience and skill sets to prepare them for the job were better able to juggle the competing interests of completing the daily workload, facilitating ongoing training, and cultivating a healthy and supportive work environment for its members—but that many lacked such preparation. In this chapter, we delve more deeply into the comments about those leadership shortfalls.

Leadership and Proficiency

AFE's status as an entirely enlisted career field places the yoke of leadership almost entirely on the shoulders of enlisted personnel.[51] This responsibility falls most squarely onto the flight's superintendent and NCOICs. These personnel set the standard for work pace, training, quality, and climate. They do this partly through establishing plans for how regular work duties and competing interests, such as training and special duties, are managed. During our discussions, participants in 87 percent of the groups talked about leadership issues as a cause of proficiency problems (Figure 4.1).

Across the installations we visited, we heard comments from participants in 72 percent of the discussion groups that the lack of experience among the NCOICs especially (both technical and in leadership roles) is one important factor affecting proficiency across the AFE career field. Participants explained that the problem was not a criticism of local leadership per se but a force-wide concern that is caused by a failure in how the career field develops, prepares, and assigns its personnel to lead in these positions.

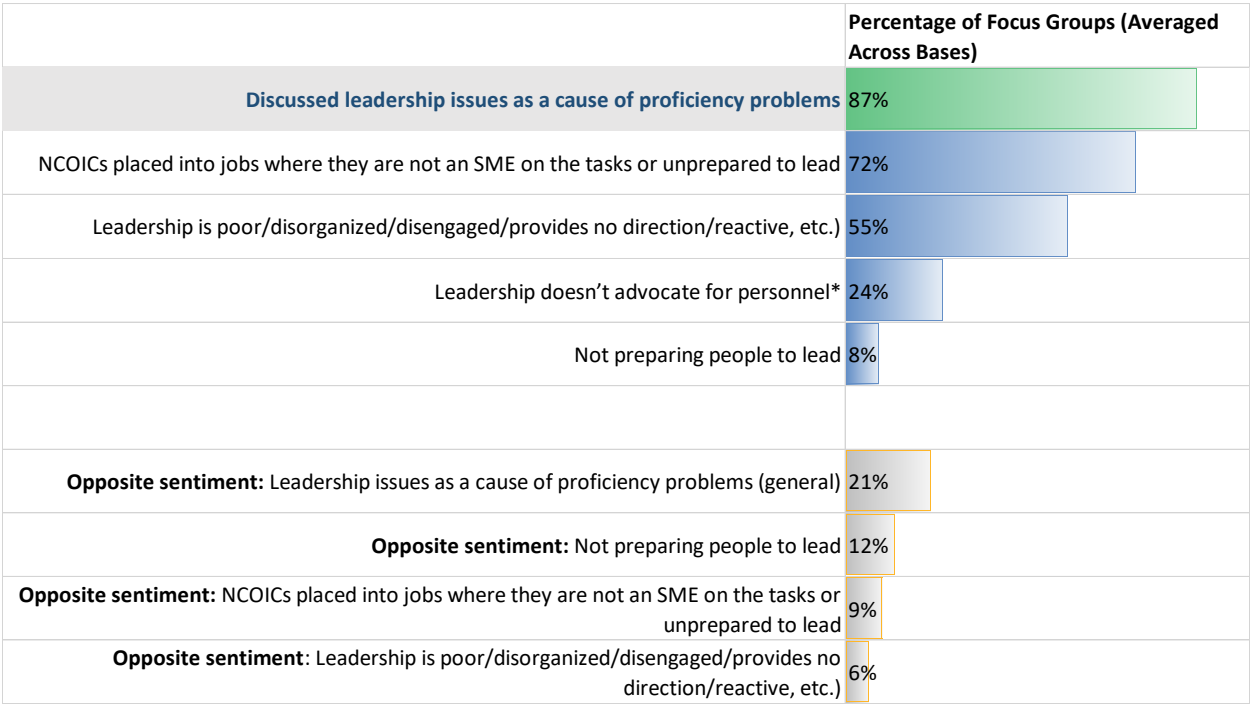
Participants at many bases observed a troubling contradictions among rank, responsibility, and expertise among their leaders. We were told that, as airmen advance through the career field, they receive more rank and responsibility. However, these advances do not always coincide with appropriate increases in *relevant* expertise. More specifically, many commented that senior members of the AFE flights often do not have the expertise with the local mission necessary to excel as leaders at that base. In addition to a lack of technical expertise, participants in a majority of the focus groups commented that the career field was not preparing them to lead. As they

[51] Although there is no officer career field designated as responsible for AFE, there are officers who are in leadership positions that are responsible for providing oversight and support of AFE personnel. These are discussed briefly later in this section.

described, the consequence of lack of preparation was that leadership was often disorganized and disengaged. They wanted more direction.

These comments about a need to improve leadership came from those in leadership positions themselves as well as members of the workforce.

Figure 4.1. Percentage of Focus Groups Commenting on Leadership Issues as Potential Causes of Proficiency Problems



NOTE: Sometimes a topic was raised by one person, and an opposite view was expressed by someone in the same discussion group. In those cases, the same discussion would be reflected in both the topic frequency and the opposite frequency. For some topics, no opposite sentiment was expressed in the RegAF discussions. Where an opposite sentiment was expressed in greater than 0 percent and less than or equal to 5 percent of the RegAF focus groups, the category is marked with an asterisk.

NCOICs

To be eligible to serve as an NCOIC, AFE airmen must be qualified 7-level technicians. In these positions, NCOICs contribute to the flight in two main ways: (1) supervising the training and work done in their section (i.e., managing the technical quality of the work and the associated training) and (2) being the frontline supervisor to subordinates (e.g., managing the people doing the work, their workload, and their career development). More specifically, in their role as lead supervisors of the technical aspects of the work, NCOICs have a substantial influence on the quality of the work and on training. As experts themselves, they are responsible for ensuring that all work is of high quality and completed in line with the TOs. They are also accountable for the training that goes on within their section, guaranteeing that 3-levels and 5-

levels are being trained appropriately. As frontline supervisors of personnel, NCOICs are responsible for managing their subordinates on a personal level. They are expected to lead in a way that supports their subordinates both professionally and personally, creating a healthy work environment that supports successful mission completion.

Lack of Relevant Expertise

According to participants, many NCOICs do not have the technical expertise needed to successfully lead their sections. Participants made multiple comments about how NCOICs were being set up to fail because of the lack of leadership preparation and lack of experience with the mission in which they were now in charge.[52]

> I have been thrown into leadership positions without any training knowledge about how to run programs, and then we are expected to show our NCOs how to run a shop. You just learn by failing. That is how my career has been.
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> As an NCO, we are expected to lead a shop, but we don't technically have the proficiency that we are supposed to have to be at that level. It can hurt us career-wise because it's difficult to lead and be in training at the exact same time. Granted, you should have a shop of qualified people, and your middle airmen and NCO should be able to hold down the fort while you become proficient. But, where our career field lacks, there is not as much of a middle tier anymore, it seems like you are either an A1C or an NCO. There really is no senior airmen core—that is supposed to be your SME. That's where the proficiency is lost, you are either in a leadership spot or you are a 3-level. If I switched to a different airframe, I would be lost. I know how to read a TO, so I would learn it as fast as possible, but if I'm expected to step in as a staff sergeant or tech sergeant and lead a shop, I would have no idea what to do. The ball is in my court to learn the job, but you still have to be a leader at the end of the day. If someone were to ask a question, I would be the last person that someone would want to refer to.

According to many of our participants, this lack of expertise can often be credited to an untimely PCS or even back to CUT training after the AFE career field was established. Many participants described a situation in which a competent 7-level craftsman could be assigned to serve as an NCOIC in support of an MDS in which they had no prior experience. The new NCOIC would then be in charge of a section where they knew little about the equipment serviced and the procedures employed and would be unable to supervise their section until they could be trained on the equipment. This lack of experience could have a direct impact on ensuring proficiency within a section because the person in charge of inspection programs and quality assurance would not have the depth of expertise necessary to recognize proficiency problems.

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[52] This can be either a cause or a symptom of the widespread proficiency issues. In other words, it is possible that this could get better on its own if the proficiency issues are addressed in other ways. This is an example of how the many potential causes outlined by personnel are likely interdependent, making causality difficult to determine. See Chapter 7 for more discussion on this issue of interdependence.

Similar to what we noted in previous sections, we heard that the consequences of this type of talent mismanagement are most severe when airmen transition between MDS types that are most dissimilar—such as transitioning from KC-10s to battlefield airmen versus transitioning from F-22s to F-35s, where there is more overlap in expertise. This same issue can occur when someone is moved into a section that performs tasks for which they have little recent experience even if the MDS is the same (e.g., moving someone to a lead role in a parachute section after being in a life support–type section). We were told that, when those major MDS differences or section differences are ignored in NCOIC assignments, a 7-level NCOIC can end up essentially possessing the same amount of relevant experience as a newly minted 3-level. As one participant explained:

> We could PCS to a bomber unit, a heavies unit, a rescue unit. We have someone right now going out to a special ops squadron in a month. Everything they do down there is entirely different; they don't have a single thing that's the same as it is up here. He's a 7-level, but he's going to essentially [have the proficiency of] a 3-level [in his new assignment], since he's essentially relearning everything.

Another participant shared their experience:

> Going from airframe to airframe. At my level, when I came here, I already had four airframes under my belt, and they threw me into a [new type of MDS] squadron. I had to train myself on everything, there was no training schedule. We are in a culture where, if you are a staff sergeant and you worked fighters and you go to a staff sergeant [job] at a heavy [base], we expect you to know all that stuff and be the lead trainer. If you've got a guy that has never worked on this equipment before, you should not be giving him a fraction of the time to become that SME on the equipment, then you make him the QC [quality control] person and then the IPI [in-process inspection] person, and it doesn't make any sense.

Inexperienced leadership can be backbreaking for a section because someone with the relevant expertise must serve in the supervisory role while the new NCOIC becomes familiar with the new equipment. In positive cases, someone else in the section with the needed expertise can pick up the slack. However, if there is no one else in the section capable of fulfilling that acting NCOIC position, many of our participants explained that either someone from outside the section (likely the superintendent or head of quality control) must intervene or the section will suffer. In all cases where the NCOIC is unable to fulfill their duties, the section commonly struggled to complete their daily workloads on time because fewer people were available to do the work—unnecessarily taxing a career field that many already feel is undermanned. This is another example of a training-induced work burden that the existing manpower studies might not be capturing.

Lack of Leadership Skills

NCOICs play a pivotal role in establishing the workplace culture of their section, developing their personnel, managing the section's workload, and ensuring the quality of the work and the proficiency of the people executing it. Despite the gravity of this responsibility, 7-level

craftsmen received seemingly little training or mentorship to prepare for taking on this responsibility, according to our participants.[53] In the most-distressed units, we spoke to many airmen who criticized their unit's culture. Many felt unsupported and that the units lacked a sense of camaraderie or oneness. These individuals said they felt distant from their chain of command and did not feel that they could count on their leaders or contemporaries for help with personal or professional matters.

Superintendents

As the leader of the flight, the superintendent is responsible for both representing the unit to OSS squadron leadership and managing the internal affairs of the flight itself. AFE 7-level and 9-level SNCOs are eligible to serve in allocated superintendent positions.[54]

The flight superintendent is responsible for serving as the OSS commander's most tangible access point to the AFE flight. In this capacity, a successful superintendent will work with the OSS commander to ensure that their flight is equipped and supported with everything necessary to complete the mission. Successful management of this relationship will facilitate the flow of information, support from OSS leadership into the AFE flight, and the movement of requests and updates from AFE to OSS leadership. OSS leadership needs to be informed and aware of what is going on within the AFE flight as much as AFE leadership needs to be in tune with OSS leadership's directives. A superintendent must also manage the numerous requests for additional manpower that come from other on-base organizations by protecting their subordinates from unbearable increases in workload in seasons of elevated OPTEMPO or offering their subordinates valuable exposure opportunities if the circumstances allow.

In managing the internal affairs of the unit, a superintendent's practical contributions hinge on three main responsibilities: develop and execute a rotation plan, effectively fill deployment billets with qualified personnel, and staff key AFE positions, such as the flight's chief of quality control, with the appropriate airmen. All of these decisions have an effect on the quality of the work and training that goes on in the unit.

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[53] To become a 7-level and NCOIC, personnel would have completed professional military education (PME) and skill-level upgrade training, however, this appears to be inadequate for the roles expected of AFE personnel. This in part may be occurring because there are few opportunities to gain leadership and management experience prior to taking on that role, whereas in other career fields, there may be more opportunities prior to taking it on. Therefore, the PME and upgrade training complements that prior experience by adding to it, whereas in AFE, it may be the first time they are getting exposed to it. Or it is also possible that, because AFE is an enlisted-only career field and because of the structure and positioning of AFE personnel in the OSS, they get less opportunity to observe, shadow, and get help and mentorship in their NCOIC duties from other seasoned leaders (including from officers). These are examples of questions that could be followed up on to help identify appropriate ways to better develop NCOICs prior to and after they arrive in the positions.

[54] The AFE superintendent is a title-only position and not to be confused with the Air Force superintendent 9 skill-level requirement. The AFE superintendent is typically the highest-ranking SNCO, as limited by the Unit Manpower Document, and may not include a SMSgt (9-skill level).

Managing the rotation plan for the flight requires balancing the need to perform the work in support of the flying mission and the need to train and develop young airmen. Developing a system that is robust enough to do both is challenging and requires an affinity for managing both people and workloads in a dynamic environment. Deployment decisions have meaningful consequences for maintaining the solvency of the unit because if a flight deploys all its most-capable trainers, training at home station will deteriorate. In selecting the right personnel to serve as the flight's chief of quality control, a supervisor must recognize which 7-level craftsmen are best suited to fulfill the middle-management roles of the flight, as their appointments will have lasting consequences within the unit.

Outside their practical responsibilities, flight superintendents also influence their unit through their general leadership of the unit. In lieu of any commanding officers within the flight, the superintendent has the unique opportunity to set the tone for the unit and garner the support of their subordinates in pursuit of a common mission. In this role, the superintendent must leverage interpersonal skills to motivate their subordinates and build a work culture that provides for the needs of individuals while completing the mission.

Participants commented that their flight leadership often struggled to appropriately manage their rotation plans, distribute deployments, supervise training, establish a healthy culture, and advocate for the flight at the squadron level. We heard a variety of explanations about why superintendents were frequently unable to fulfill the expectations of their office. These included being too busy, not being the right person for the job, and being unprepared for the leadership position.

Too Busy

Many airmen we spoke to believe their superintendents were simply responsible for too many things—that their day-to-day responsibilities were too unpredictable to allow for proper management. As a result, the superintendents had to spend too much time putting out the fires of the day and could not focus on bigger issues. Additionally, we heard a similar sentiment for NCOICs. For example, one participant described:

> It's usually they're on the computer or they have to go. They'd rather be able to do the work with us. But I know that everyone is doing their own part with helping with the mission.

We were also told by many participants that their leadership was burned out after carrying such a heavy workload for an extended period of time. At multiple bases, we heard stories about superintendents struggling to manage their stress levels, which only further complicated their work responsibilities. For example, one interviewee remarked:

> I have seen several superintendents get fired because they could not handle the stress, the amount of stress, or whatever it was. The current superintendent is doing well, but he's taking on a lot, and he's very stressed. He's probably going to retire.

Not Being the Right Person

Many of our participants attributed their leaders' failure to the idea that they never should have been leaders in the first place. They were either too junior (many superintendents were 7-levels instead of 9-levels), too inexperienced with the base's MDS, or simply not cut out for leadership.

Our participants were polarized in their views of superintendents. Many were quick to cite a list of failed leaders who had either been removed from their positions or forced to retire because of poor performance. However, numerous of those same individuals were quick to praise a superintendent who they believed was doing a good job. Several participants commented on how much better things had gotten since a new superintendent had taken control of the flight.

Being Unprepared for the Leadership Role

Comments were similar to those we heard about NCOICs. Participants talked about a need for better preparation for personnel in advance of personnel becoming both NCOICs and superintendents. Participants talked about how people were being placed into those positions without having the right expertise in a given MDS and without having had an opportunity for the right leadership development or amount of leadership development prior to taking on the positions.

Role of Officers in Leading Aircrew Flight Equipment Personnel

Although there is no officer career field designated as responsible for AFE, there are officers who are in leadership positions that are responsible for providing oversight and support of AFE personnel. For example, there is an AFEO (or a combat rescue officer or special tactics officer equivalent) who works closely with the AFE superintendent to help manage a range of AFE-specific issues (e.g., ACC has funded officer authorizations for AFEOs from the 11F/H/K, 12F/R, or 13B AFSCs at Beale, Davis-Monthan, Eglin, Hill, Langley, Moody, Mountain Home, Nellis, Offutt, Robins, Seymour Johnson, Shaw, and Tinker Air Force Bases).[55] Superintendents also report to the OSS commanders and rescue squadron leadership (including a range of battlefield airmen), and those leaders also can affect how an AFE flight is run and managed.[56]

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[55] According to AFI 11-301, 2017b, pp. 20–21:

> 2.10. Operations Group Commander (OG/CC) or equivalent will:
> 2.10.1. Appoint a rated officer who is qualified and current in their primary aircraft of assignment to serve as the AFEO. AFEOs are required to complete training as defined in Table 4.1. AFEOs should serve a recommended 24-month period but no less than 12 months in the position. The AFEO position is an earned authorization and must be reflected on the Unit Manpower Document (UMD). (T-2) Guardian Angel (GA) units may utilize non-rated Combat Rescue Officers (CRO)/Special Tactics Officers-(STO) to fulfill AFEO duties. (T-3)

[56] For more detail on the responsibilities of OSS commanders, flying squadron commanders, and AFEOs, see AFI11-301, 2017b.

Our participants did not provide many comments about a need for better leadership from AFEOs or OSS commanders; however, they did discuss some of the limitations of not having stronger officer advocacy to help address their needs. For example, some talked about how AFEOs were often blind to the issues that AFE was facing until they became an AFEO. Some participants also noted that OSS and flying squadron commanders wear many hats and oversee a wide range of personnel. As a result, AFE can receive less attention than other, more visible career fields in the OSS or the flying squadron. We discuss the potential limitations of relying solely on AFEOs and OSS commanders as advocates in the final chapter of this report.

Recommendations

To be successful, the AFE career field must develop a corps of capable and prepared NCOICs and superintendents with both technical and leadership expertise and make their development a high priority. Toward that end, participants offered a number of recommendations that reflect actionable steps that the career field could take to better foster its own crop of leaders. We discuss those and elaborate on them in the next sections.

Explore Whether Time in Grade Could Account for Some of the NCOIC and Superintendent Experience Issues

In this study, we did not examine whether time-in-grade differences over time accounted for some of the lack of preparation concerns that people expressed about NCOICs and superintendents. For example, it certainly is possible that time in grade before becoming an NCOIC or a superintendent is lower now than it was prior to the merger of the two career fields. If time in grade prior to holding these positions is lower, it would mean that personnel would now be afforded less time to become prepared to lead in these positions, less time to learn the technical skills, and less time to observe and model leaders holding those positions above them. If such analyses do suggest that time in grade has gone down, the career field might then want to explore policies to help make up for the loss of experience caused by that reduction in time in grade. We therefore recommend that future analyses explore this issue further.

Limit Superintendent and NCOIC Additional Responsibilities

Limiting responsibilities would allow NCOICs and superintendents time to more effectively lead their sections. Assuming that the views of personnel about the additional burdens being placed on them by OSS and rescue squadron leadership are accurate, AFE needs to establish a clear plan for how to educate and communicate to OSS and rescue squadron leadership about the impacts resulting from the additional workload being placed on AFE personnel. Special duties, management of special programs, extra unplanned and unmanned AFE tasks that consume time,

staff assignments, and other taskings account for this additional workload.[57] AFE also needs a way to protect the NCOIC's role as an SME trainer so the role cannot be usurped by other demands. Establishing formal requirements for continuation training and skill currency training that are included in the workload of the NCOICs and officially accounted for in the manpower estimates are some examples of ways that the career field could help protect that time.[58] Unfortunately, the latest manpower study report does not explain how the corresponding workload associated with training duties were accounted for in the 2018 career field manpower requirements, so it is unknown if the current estimates are likely underestimating the requirement.

Ensure That NCOICs and Superintendents Have Technical and Leadership Expertise

- **Do not allow NCOICs to PCS to a unit from a different MDS-grouping or SEI.** As explained previously, several participants described cases in which NCOICs lacked technical experience often because of a recent PCS. There are several possible remedies to avoid this situation. Creating shreds could increase an NCOIC's expertise because doing so would allow an individual to focus on a single type of aircraft. Thus, by the time a 7-level craftsman reaches the position of NCOIC, that person will have spent multiple assignments working in AFE sections supporting similar aircraft. An airman groomed through this process has a much greater opportunity to become an expert with the equipment that supports the airman's aircraft than does an airman who supported different aircraft in the last three assignments. NCOICs with relevant expertise are better equipped to lead their sections.[59] This idea of shredding the career field is discussed

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[57] This again assumes that personnel are correct that these burdens are levied on AFE at a higher rate than in other career fields. If the burden is the same, the case needs to be made to OSS that the career field needs a temporary reprieve from them to focus more time on training to bring the proficiency levels up. Both of these are areas where additional data collection to support or refute those beliefs by participants could be pursued, but both would likely require the collection of new data on these additional burdens across multiple career fields. The latter would require the design of an experiment to test whether additional protected training time (either temporarily or permanently) could help rectify the problem both in the short- and long-term. It is also worth noting that commanders may see these additional duties as not only helping the unit but also broadening scope of responsibility, which they believe will help with individual promotion. If that is the case, the AFE career field would need to either advocate increased manning requirements to better accommodate the broadening activities that commanders think AFE personnel need (assuming it is not adequately accounted for already) or make the case to commanders that the impacts on AFE's ability to perform its work outweigh any benefits that would be afforded to personnel through this type of broadening.

[58] We were unable to confirm how continuation training time was accounted for in the manpower standards. It is possible that this time is adequately accounted for. It is also possible that the continuation training that exists and is accounted for in the manpower standard is inadequate and that it needs to be bolstered to provide additional training. If so, that aspect of the manpower requirement would need to be adjusted accordingly and the manpower standards recalculated. Deeper exploration of what is and is not included in the manpower standards for AFE is needed and discussed in Chapter 7.

[59] As noted by one of the career field SMEs, limiting NCOIC opportunities in this way may also limit leadership opportunities. As they explained it:

> We should also be careful about hampering leadership opportunities. [One] solution would be to create ejection, non-ejection, and special warfare employment tracks/shreds, and then leave 1Ps in

further in Chapter 7. As noted previously, the career field is using SEIs to identify and track personnel with expertise in specific skill areas. SEIs therefore may also be useful in addressing this issue, at least as an interim step.[60] It remains to be seen, however, whether the use of SEIs is enough to address the problem of insufficient NCOIC experience or whether shreds (which would allow for even further compartmentalization of skill sets over one's career) would be better.[61]

- **Provide technical training and OJT for new leaders.** If it is impossible to avoid placing leaders in positions where they lack technical experience, another remedy may be to provide technical training and OJT for the new NCOIC before that individual assumes full NCOIC duties at a new base. This could be accomplished by having an NCOIC receive training from technical SMEs at that location or at other locations (including from civilian SMEs doing the work or from instructors at the schoolhouse).
- **Allow exiting and entering NCOICs to overlap.** If new NCOICs were given time to shadow the former NCOIC and at the same time were given the opportunity to brush up on and hone the specific skills needed in their new section, this planning would likely have a number of benefits that ultimately could help proficiency. It could help maintain continuity in how programs, including training, are handled in the section, make sure that gaps in the NCOIC's proficiency are addressed before they are in a position to oversee the work of others, and provide some additional mentorship and leadership development before the NCOIC is thrust into the position. This would likely help set NCOICs up for success in the new position and reduce the likelihood of inefficiencies, disruption, and possibly mistakes from occurring in the section after NCOIC leadership turns over.
- **Preemptively emphasize the development of leadership skills.** NCOICs and superintendents should be taught how to lead sections and flights before they are placed into leadership positions. Development options could include mentorship from current NCOICs and superintendents or formal courses that are mandatory before an individual is eligible to serve in a leadership capacity.[62] Because of the lack of oversight from OSS leadership and the absence of officers in the flight, it is especially important for NCOICs and superintendents to be well developed and prepared to lead and manage; their leadership and management of personnel performance can directly affect the proficiency

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those shreds through the rank of MSgt. SMSgt and CMSgts can be from any shred. You could take it a step further and keep SMSgts in the track they were raised in to serve as SME leadership oversight. That way, those SMSgts could fill key leadership positions and staff jobs. Currently, AFE assignments are not MDS specific. Again, if we establish ejection/non-ejection/special warfare tracks, the assignment process will have to keep those shreds moving to bases with MDS of those shreds.

[60] Having the correct SEI for SNCOs who show up at a new base would be one way to ensure that AFE does not put an SNCO who has never worked a certain type of aircraft (ejection versus non-ejection) in charge. This could then improve the chances of the SNCO leading an effective team because the SNCO has that SEI experience.

[61] The use of SEIs may be an incomplete solution to this problem, because SEIs are not currently available to be assigned to all personnel. They also currently exist only for a subset of the skill areas. In addition, personnel with SEIs are still expected to develop expertise in the full spectrum of AFE tasks over the course of their career.

[62] Targeted training courses for AFE NCOs and SNCOs to prepare them for these leadership roles could be beneficial. For example, having an NCO-level course for staff sergeants and TSgts that reviews key AFE programs (training, QA, mobility, supply) could be useful to prepare NCOs for the NCOIC role. It could also serve as a stepping-stone to a SNCO-level course, where AFE could then build on that foundation to prepare SNCOs for superintendent roles. This could help standardize developmental training for the next generation of AFE leaders.

of those below them. Although the goal of the NCO academy is to provide some of this leadership development, it cannot be relied on as the only leadership development that NCOs have received over the course of their career. Reliance on that course experience alone would be insufficient. Instead, the course should supplement in a systematic way other leadership development that has already occurred over the course of one's career. Additionally, given the concerns expressed by participants, this tactic appears to be especially important for the AFE career field to build into its workforce development plans. Enlisted development teams could also help better build this into the development pipeline; however, care needs to be taken to not assume that leadership is being developed in a given assignment when in fact it may not be. Instead, there may need to be supplemental development efforts to help provide these skills.

Establish Aircrew Flight Equipment Best Practices for NCOIC and Superintendent Management of Training, Work, and Personnel

Participants also talked about how programs and systems were developed by NCOICs on the fly, typically without the benefit of insights from other experienced NCOICs. Similarly, they talked about how superintendents were left having to figure out for themselves how best to move personnel around the various sections, how to address OSS commander and other demands. This could be addressed more systematically in the career field in two ways. First, the career field should develop a set of best-practice approaches for important aspects of the job, including the following:

- allocating sufficient time for training (this includes trainer time, trainee time, and facilities and equipment time) while still executing the work
- planning for how to balance moves for development to other shops against retaining expertise in a section
- conveying to OSS leadership an appreciation of limiting factors (extra duties, morale issues)
- tracking important metrics for demonstrating (or validating) a need for additional manpower requirements
- tracking important proficiency metrics (see Appendix E for a discussion of trend analysis).

These best practices should reflect a range of different ways that NCOICs and superintendents can handle these topics, keeping in mind that no single solution is likely to work best for all locations because the nature of the work at each base location is so unique.

Second, personnel should be trained in these best practices as part of their initial preparation for taking on a superintendent or NCOIC role. That is, the best practices should be intended as a tool for laying a foundation of good ideas in the local leadership but not prescriptive as "the way things have to be done." They should also be regularly updated as new ideas and solutions to the problems are explored by new NCOICs and superintendents or are needed to address new challenges that arise in various locations. To help facilitate this updating, a forum where AFE personnel can share ideas and recommended practices would be ideal.

As noted by a career field SME, some of the items listed above should already be covered in the biannual AFE Superintendent Development Course, which is required for all superintendents. According to AFI 11-301 (2017a, p. 11):

> The AFE Superintendent Development Course is intended to equip AFE SNCOs with the knowledge and skillsets required to lead and manage a wing level AFE function. This course was initiated, per direction from the HAF/A3 [Headquarters Air Force/Operations]. The course consists of in-resident training, certification and biennial recertification. MAJCOMs and NGB [National Guard Bureau] may conduct their own training course, provided they use course material approved by the CFM [career field manager].

If some are already covered in the course, it is possible that superintendents are not applying the best practices in their roles, or the practices that they are applying are not always seen as useful by the personnel that they lead. It is also likely, given the comments that we heard about NCOICs, that some of those skills and best practices may actually be relevant in the NCOIC role as well, and it appears that no equivalent training course requirement exists for the NCOICs to train them in those best practice approaches.[63]

[63] NCOICs are required to complete QA certification training, however, the bulleted list of items in this section are not likely covered in that training.

5. Retaining and Using the Best Subject-Matter Experts

Identifying and retaining top-notch AFE airmen, including those with considerable depth of expertise and skills honed over many years, was another topic that came up repeatedly during our discussions.

Loss of Experience After the Merger

Although attrition rates for AFE personnel might be unalarming, there was still concern that those with the real expertise—the full depth of knowledge and experience in specific critical areas—were being lost and that the loss of these personnel was partly caused by the merger.[64] Participants in half of the focus groups commented that the merger was a cause of proficiency problems, and participants in 25 percent of the focus groups specifically linked the merger to the exodus of expertise. This loss of expertise was expressed as a potential explanation for the decline in proficiency.

Retaining the Right Airmen

AFE personnel with whom we spoke thought more should be done to retain talented airmen and demonstrate their value. Although some spoke of this optimistically, others framed it as being too late, with morale past the point of repair and airmen on the brink of leaving. There is also a perception among some participants that those who are able to cross-train, commission, or leave the service do so.

Some participants who remember conditions before the merger spoke of retention problems in a then-versus-now context, explaining that retention dropped after 2007–2008 but self-corrected later. For example, one participant explained:

> Our turnover rate has improved. We used to have so many people get out. But nobody was staying in the Air Force. Retention was horrible. But we've had a lot more people decide to stay in the past. Here, I watched every NCO that met those qualifications put up to get out. If every person is wanting to get out, that is just wrong. It is just so exhausting. I've been in sections where I've had to go see mental help because I was so overwhelmed; I couldn't stand myself . . . if you think about the job, you will never find fulfillment. Eventually, it's too much for some people. We want to do well. We want to do good work. We [who are in heavies] work on equipment that people rely on in the case of emergency. It's rarely used. So, there's not a lot of instant gratification.

[64] We explored this in the personnel data files by examining the numbers of personnel at each skill level in the years prior to and after the merger. The results are located in Appendix C. Interestingly, we do see noticeably fewer 9-levels after the merger relative to the proportions of 9-levels in Life Support prior to the merger, suggesting that those personnel might have to in fact left at higher rates.

A participant also discussed the stress associated with post-merger conditions leading people to leave:

> The talk of us getting more personnel is even less. People are stressed out. That is why we lose so many people. . . . After the merge, we're really struggling for retention. Once you're coded for heavies, it's really hard to get out.

Perceptions about retention varied, however, with not all participants agreeing that turnover has improved:

> The amount of people I've seen get out since I've been here is crazy. Everybody gets out. They're trying to do something. Nobody is trying to stay. Especially here. Nobody is trying to stay here 20 years. . . .We all have our different stories here. On top of the workload, they expect us to volunteer. They expect us to have good EPRs [Enlisted Performance Reports]. They expect us to have good morale . . . to come to work with smiley faces.
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> That's the biggest thing. You mentioned job satisfaction. Since I've been in this career field—in the Air Force, honestly—that's the biggest thing I've noticed with AFEs. We're the ones getting constantly stepped on. We just have to keep taking it on the chin. That's why I have no job satisfaction, because we're always the ones catching the sharp end of the stick. That's just been my experience.

Importance of Aptitude Scores

It is well established in the personnel research literature that cognitive ability predicts performance, regardless of the job (Schmidt and Hunter, 2004). In addition, research has also shown that the relationship between general mental ability and job performance is stronger for jobs that have high information-processing requirements compared with those that do not (Schmidt and Hunter, 2004). In other words, as a job's tasks become more varied and complex, workers' abilities to comprehend information and problem-solve become even more integral to their success.

As an AFE superintendent noted in an interview, the AFE career field consists of a diverse set of tasks on which airmen are expected to be proficient:

> We were talking about the wide variety of tasks: trying to be an expert on chemical compositions; threats of chemical, biological, nuclear weapons; all the way over to packing a parachute or filling aircrew breathing systems. Tasks—the widest range, I think, of any career field. But then the people we take in, and we levy that on training or proficiency, are the lowest-tier aptitude for learning people. . . . The more tasks I add, the less repetition they're going to get, and it's going to be harder for them to become proficient on those tasks if they have a lower aptitude for learning.

Beyond the number of tasks and procedures for which AFE aircrew are responsible, the complexity of many of AFE's tasks has increased over the past decade because of advances in technology:

> When we look at our career field, the wide range of tasks, the evolution of technology in our career field—when I came in, it was putting a big raft in a little container or putting a big parachute in a little container. Now, we have things out here—joint helmet-mounted cueing systems. We're using laptops to test electronic devices. Our career field has evolved to become very technical.

Participants pointed to a perception that AFE attracts airmen who score lower on the Armed Forces Vocational Aptitude Battery (ASVAB) exam. This comment came up multiple times (see Figure 2.2 in Chapter 2) and from different types of participants, including civilians, airmen, and SNCOs alike. The following are examples of these perceptions:

> The only thing I'd emphasize is the front end of the whole process. Raising the ASVAB score up for the career field would be a major help to us. I think, what are we, 35, 40? Something like that? And you're not going to get a recruiter to just recruit anybody in the career field. Interviews would help or a better explanation of what the job is. Get somebody that knows what they're getting into and still wants to sign up to do it. It's a weird job. Let them know that it's the 1 percent out of the 99 percent Air Force jobs that are Air Force–specific—that you can't do anything outside of the Air Force with it.
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> So maybe it's not a proficiency-level problem with AFE. Maybe it's more of, who are these [people] we're letting into the Air Force? Maybe that standardization should be a little higher. Raise the minimum ASVAB score or something.
>
> ***
>
> You know AFE is one of the lowest ASVAB score career fields in the Air Force. I'm not going to say this stuff is rocket science, I mean, it's easy stuff. But to me, I'm very sports-oriented, it's like a playbook. There's just so much. And it's not even tasks—I mean, it is tasks, but the layers of stuff you have to learn about each aspect of each piece of equipment.

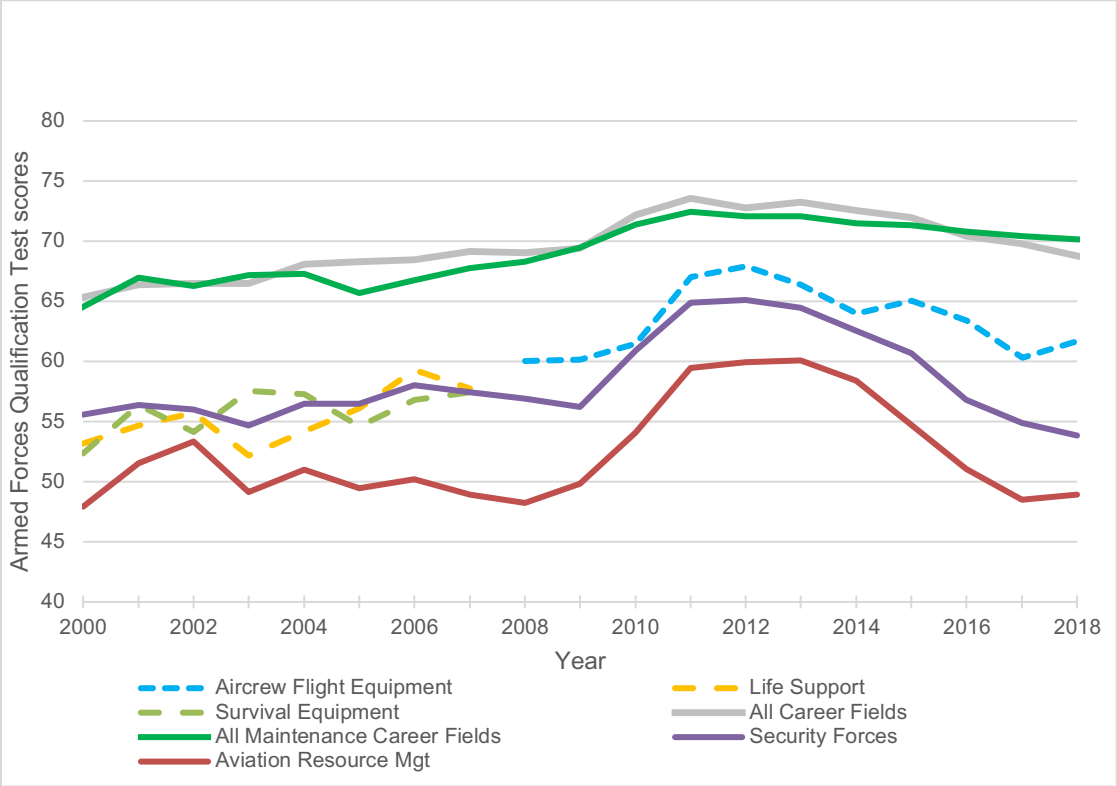
Finally, some talked about how ASVAB scores differed before the career field merger:

> Before we merged, there was a higher [minimum] ASVAB [score] to be in Survival Equipment and not necessarily super high to be in Life Support. When we merged, some of the caliber of airmen that I've seen come through in my career in general, even since the merger, would almost warrant a higher ASVAB score. Because now we are getting more technology into AFE (night-vision goggles, heads-up-displays). . . . Whenever I speak to my peers, we kind of kick it around to see how they vet what gets into our career field with ASVAB scores because of the things we deal with on a daily basis and how life-sustaining [they are]. I think one thing we need to adjust is the ASVAB score.

To better understand whether scores have in fact further declined over time, we explored ASVAB scores in the Air Force personnel data files from 2000 to 2018. Surprisingly, we did not see a decline as many had suggested. In fact, we saw quite the opposite. Scores have increased overall across the career field since the merger, as Figure 5.1 indicates. It is, however, also interesting to note that the AFE mean for the Armed Forces Qualification Test scores (a

combination of select ASVAB subtests) are noticeably lower than scores in the maintenance career fields in the Air Force as a whole and in aircrew egress systems, which includes some work on similar types of equipment (e.g., ejection seats).

Figure 5.1. Mean Armed Forces Qualification Test Scores over Time



NOTES: Mean was calculated for all 2AX AFSCs individually. Means were averaged to create the line shown here.

Recommendations

Use Civilian, Contractor, Reserve, and Guard Personnel Strategically

We heard from our participants about a number of downsides to using contractors, including that they cannot be used to do anything outside their contract—for example, they cannot stop and provide training to the RegAF personnel, even if they have deep expertise in an area where training and skilled trainers are lacking. In addition, their workspace may require dedicated facilities that cannot be shared with the RegAF staff, if it would be disruptive to the contractor's work.

On the other hand, we also heard that contracting out some of the work might help to take the burden off of the workforce, especially in areas where the RegAF personnel are lacking expertise. In addition, some personnel talked about how new equipment is sometimes better

repaired and maintained by contractors because AFE never received proper training from the manufacturer of the equipment when it was first introduced, in part because of budget cuts that can occur during the new equipment–acquisition process. That is, training for the career field on repair and maintenance is not included in the purchase of the equipment, or the training given is inadequate. Sewing and parachutes were two example areas raised during discussions of potential benefits and losses of using contractors. And in that context, some people talked about how it might be beneficial if contractors could be allowed to help train and develop the RegAF personnel. For example:

> I would think that the only way that helps us at the main shop be proficient at our job is the fact that we do have civilian contractors that are consistently here. Like, [Civilian 1] and [Civilian 2], they've been here a very long time. They know the equipment extremely well, and [Civilian 1] is probably one of the best parachute packers [at this base]. His training is pretty precise, and he does the job very well. Just having him here definitely helps us.
>
> ***
>
> Where there are civilians, there is more continuity. I think that really helps with sewing. I think adding more civilians with continuity in mind would help to ensure that some of these skills live on.

The civilian personnel were viewed by many as highly seasoned SMEs. Some talked about how civilians were often used to help train and develop RegAF personnel, but there was a sense that this could be done more strategically across the AFE workforce. For example, some talked about how they were lucky to have worked with a specific civilian who taught them a particular skill but noted that others at other bases were not so lucky, and that their time and availability to mentor more-junior staff was constrained by both their own workload and by leadership's decisions about who would be training with whom and when.

Some participants also talked about rehiring talent who had long left the AFE career field and having these individuals to serve as trainers at multiple bases as a way to reinfuse that deep expertise that was lost after the career field merged and many seasoned personnel left. Civilians could also be used to help manage programs, serve as surge capability, provide continuity when NCOICs and superintendents PCS, and help with task-proficiency oversight.[65]

On the other hand, some focus group participants also voiced concern over hiring civilians without paying careful attention to the circumstances and ensuring that the civilian's skills, background, and expertise were appropriately aligned with the need. For example, some noted that civilians would not be ideal technical school trainers, especially if they do not have sufficient prior exposure to working in an AFE shop, because some civilians lack the range of on-the-job experience from which they could draw as they train.

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[65] Executing any of these changes would likely require changes to the civilians' core personnel document and position descriptions.

Use Civilians to Run Special Programs and Perform Additional Duties

Because they do not deploy or go on TDY, civilians are useful for maintaining continuity in shops—particularly for running special programs.

> To help solve this problem . . . , our ops tempo clearly will not change, so why not hire civilian contractors [that won't deploy or leave] and leave them in the shop for continuity?

Raise the Minimum ASVAB Requirement for Aircrew Flight Equipment

Given the volume and complexity of AFE's job responsibilities, as described earlier in this chapter, it is critical that airmen have the ability to quickly learn and acquire new job knowledge to achieve and maintain full job proficiency. This need to learn and acquire new job knowledge is especially relevant to AFE, given the increase in tasks that resulted after the 2008 merger of the two career fields. And given that strong cognitive skills have been well established in the research literature as an important predictor of performance especially when jobs are complex (Schmidt and Hunter, 2004), personnel psychologists regularly recommend that cognitive ability screening be used as a lever for improving workforce performance. That recommendation may also be relevant to consider here. Therefore, raising the minimum ASVAB score requirement for AFE could be another avenue to address the proficiency issues. In addition, aiming to raise the overall average ASVAB scores in the career field by bringing in a larger number of higher-scoring individuals could help.

It is important to note that, if a higher bar is set for entry into the career field, it may be more difficult for recruiters to meet accession targets for the career field. The impacts of such a change on recruiting numbers would therefore need to be followed closely if higher minimums are instituted. And, if there is an impact on the ability to meet the targets, then incentives may need to be added to attract personnel to the career field.

6. Increasing Aircrew Flight Equipment's Connection to the Mission

During our discussions about proficiency, AFE morale came up numerous times. Across the locations we visited, it was discussed indirectly by a number of the participants in the context of a question we raised about whether being in the OSS had any impacts on proficiency. Morale was also raised explicitly and directly as a concern in its own right—in certain locations, morale contributed to proficiency problems. We discuss both of these circumstances in this chapter.

Being in the Operations Support Squadron

Our sponsors asked us to explore the impact of AFE being housed within the OSS. This topic was of specific interest because it reflected another major change that occurred as part of the merger. Some have speculated that it might be a contributing factor to proficiency issues. To explore this, we discussed the issues with some of our SMEs—including how the career fields were aligned in the Air Force organizational structure before and after the merger—and we asked about the AFE-OSS arrangement when it came up in conversation during our discussions.

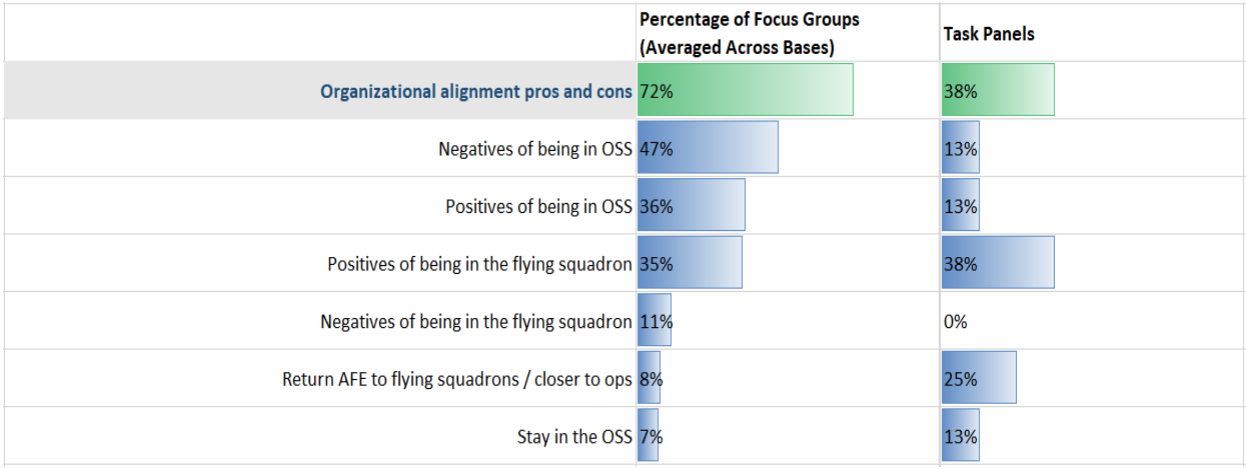
As a general rule, we asked about the nested arrangement in a subset of the discussions with 7- and 9-levels, but not typically when we met with 5- or 3-levels (unless they raised it themselves). We generally reserved this topic for higher-level personnel because they would have more visibility into the pros and cons of the current versus prior organizational alignment. In addition, because we were limited in time, we did not ask about it in all of the 7- and 9-level conversations. That is, in conversations where time was tight, we allowed the participants time to fully discuss the topics that they viewed as concerns and to explore their ideas for potential remedies.

In most cases, the topic was not raised by our participants when asked about problems or solutions. Instead, it was typically discussed only at our prompting for input. Interestingly, as shown in Figure 6.1, in the cases where it was discussed, participants often offered both pros and cons to the current and former alignments—in which case, the same focus group was counted in the pro-OSS count and the con-OSS count. Typically, this was not a reflection of disagreement among participants within the group, but rather the views on both pros and cons were often voiced by the same people, and others within the group did not express dissent on the various points. Instead, they often added to the points made by others saying, essentially, "yes, but on the other hand . . . "

The full range of pros and cons are discussed in more detail in the remainder of this chapter. But our overall takeaway from the conversations was that changes to the organizational

alignment were viewed as lower-priority changes and not as directly relevant for addressing the proficiency issues as other concerns raised in previous chapters.

Figure 6.1. Comments About Being in the Operations Support Squadron Versus a Flying Squadron



Support for Locating Aircrew Flight Equipment Under the Operations Support Squadron

Participants highlighted several reasons to keep AFE under the OSS and not place it under the command of the flying squadrons.

1. Splitting AFE personnel into multiple locations (i.e., going from one OSS into multiple flying squadrons) would require an increase in manpower. For example, AFE personnel within each squadron would need to complete squadron-specific and other duties typically performed by the main shop. Currently, squadrons can pull AFE personnel from the main shop when they need additional manpower for deployments because of a high OPTEMPO. Not having a centralized source of AFE personnel to pull from may make this process difficult.
2. Eliminating the buffer between AFE and the OSS may be difficult because AFE members may have to report to individuals who are less familiar with AFE's job duties and workload. Under the OSS, OSS commanders can advocate for AFE when necessary.
3. Moving AFE from the OSS to flying squadrons would likely have a detrimental effect on continuity. One frustration that we heard repeatedly across bases is that the same tasks are done differently at different bases. Participants explained that the exact same piece of equipment that supports the exact same aircraft may be maintained differently from one base to another base. We were told that this makes the accrual of expertise more difficult, because when an airman has a PCS from one base to the next, only a fraction of the airman's experience remains relevant at the new duty station. If AFE sections were placed under the command of individual flying units, the same drift could happen between sections on the same base. This would likely compound at Air Force–wide levels.

Support for Locating Aircrew Flight Equipment Under Flying Squadrons

Benefits of placing AFE personnel under the command of the flying squadron include a simplified chain of command that reduces the possibility of role conflict, improved communication flow between AFE and aircrew, and increased connectedness between AFE personnel and aircrew members. AFE and aircrew would be more likely to see themselves as part of the same team rather than working at odds with one another. For example, increased personal interaction between AFE and aircrew may allow AFE personnel to find more meaning and importance in their work. Additionally, aircrew's treatment of AFE personnel may improve if AFE are part of their squadron, which, in turn, would improve morale among AFE personnel. Additionally, AFE personnel may have more ownership over their tasks.

Perception That Morale Is Low and Aircrew Flight Equipment Is Not Valued

Focus group participants described a widespread feeling of underappreciation that may begin early in an airman's career. Some AFE hinted at a malaise that begins when first entering the career field, given views of low test scores and aptitude. However, feelings of underappreciation may continue over the course of one's career, eroding morale along the way.

Participants in 77 percent of the discussion groups identified poor morale, job satisfaction, and mental health as contributing factors to proficiency problems (Figure 6.2). Participants listed such factors as overburdened work schedules, low quality of life, and being mistreated or marginalized by pilots and others as symptoms and signs of underappreciation (Figure 6.3).

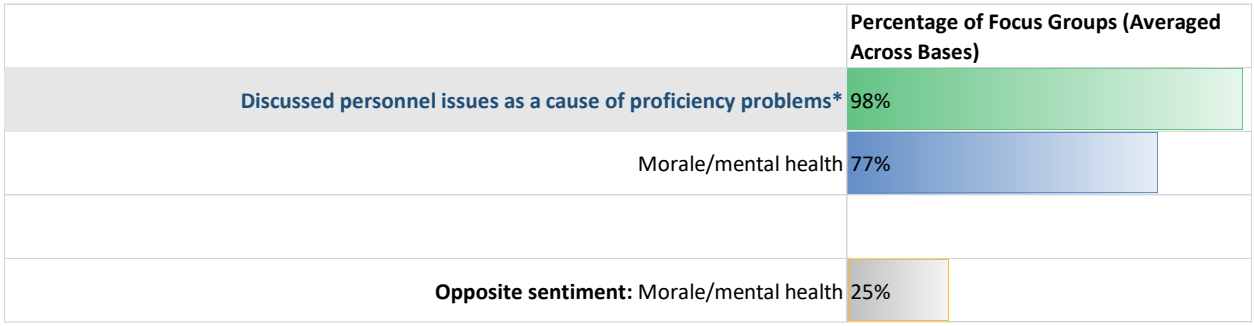
The following are examples of participant perspectives on feeling underappreciated:

> I feel like AFE as a whole is always getting the short end of the stick. Some shops will acknowledge you, will accept you, and all of that. But other times, you're being treated like a servant or something.
>
> ***
>
> Sometimes we can see that the customers don't really value our work because the masks are strewn everywhere. Most of the aircrew will never appreciate the work we do because they will never need what we give them.

In relation to leadership reportedly being in the dark about AFE's role and value, a participant said:

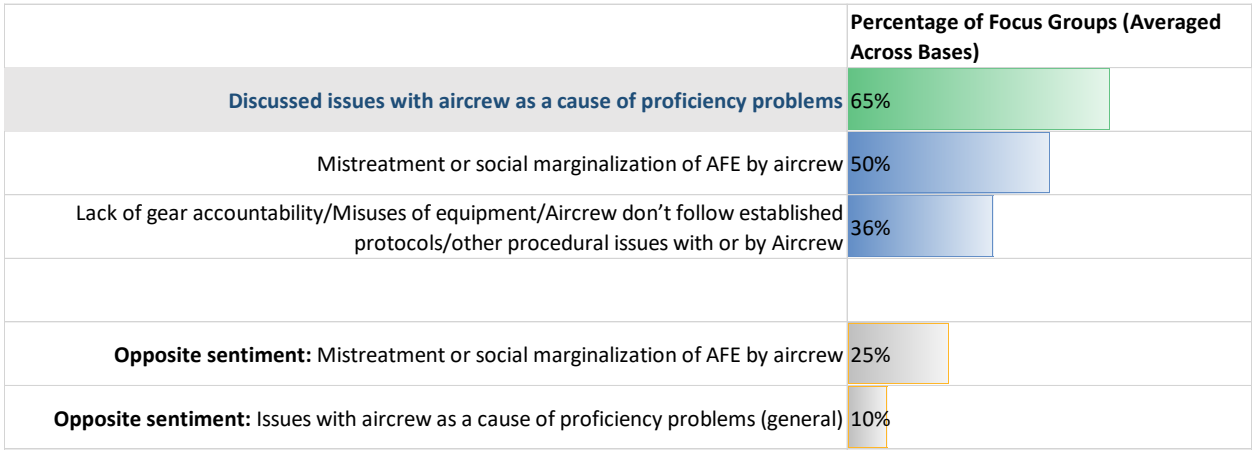
> On a different note, our leaders don't really understand what we do. They're all flyers. They don't always know what we do and how long it takes us to do it. They're unfamiliar with our processes, and if they were in the know, it would be better. At AFE, we're the stepchildren. As long as we don't have any issues, no one cares about us. We have the most people, we directly affect the flying mission, and our concerns tend to fall on deaf ears. So, when issues arise, we're seen as the problem children, but we've been asking for help the same way.

Figure 6.2. Comments About Morale and Mental Health



NOTE: Sometimes a topic was raised by one person, and an opposite view was expressed by someone in the same discussion group. In those cases, the same discussion would be reflected in both the topic frequency and the opposite sentiment frequency. For some topics, no opposite sentiment was expressed in the RegAF discussions. Where an opposite sentiment was expressed in greater than 0 percent and less than or equal to 5 percent of the RegAF focus groups, the category is marked with an asterisk.

Figure 6.3. Percentage of Focus Groups Discussing Issues with Aircrew as a Cause of Proficiency Problems



NOTE: Sometimes a topic was raised by one person, and an opposite view was expressed by someone in the same discussion group. In those cases, the same discussion would be reflected in both the topic frequency and the opposite sentiment frequency. For some topics, no opposite sentiment was expressed in the RegAF discussions. All of the opposite sentiments that were expressed about aircrew issues are displayed in the figure.

One of the NCOICs we spoke with mentioned trying to "lighten the mood" to help counteract the sense that AFE's job does not have a big impact:

> Yeah. I mean, I'm a pretty positive [person] most of the time. I try to lighten the mood, or make something better, or do something like that. I've seen how shitty it is when everyone's down. And nothing will get done. And you will grind to a halt. And nobody cares. Especially if nobody's been off the base. They don't know what our job is. That's a big problem with AFE. They don't know what their job is. What does it mean? It means something.

Some participants discussed morale problems directly:

> We've all taken people to mental health [because of morale]. . . .We have a need for a very fine skill of knowing our people and being able to hear what they're really trying to say. You have to hear them cry for help when they don't want you to know they need it.
>
> ***
>
> Morale comes in waves of task saturation. When it builds up and people get frustrated, you have to be sensitive and aware. The number of inspections can turn people into robots.

Others described it indirectly. For example, some described a tension and frustration that resulted from holding aircrew responsible for their gear, and its impact on people's morale in AFE:

> It's bad here for aircrew members keeping their helmets or gear. You'll email them constantly, like "You need to bring your helmet in, it's overdue and needs to come in." And they won't bring it in for months.
>
> ***
>
> It feels like we jump through hoops and bend regulations to appeal to the aircrew a lot. They'll say, "Hey, can I take my helmet to do this?" And it's like, "No." A lot of the times, it's that somebody needs to step out of the door right that second, and it's like, your gear is not safe because you didn't bring it in to be inspected. And they're like, "I'm stepping out right now." And you're like "No." Then they get mad. And they're like, "Hurry up and inspect it."
>
> ***
>
> They're always pissed off at us. They get attitudes. When they get attitudes with me, it's like, "I can't do anything about it." "Hey, I need batteries." "Well, we don't have any." "Well what are you guys doing?" "We ordered them. We can't help you guys. I'm sorry, but I can't."

The loss of SMEs was also raised as a factor affecting morale. For example, participants talked about how perceptions of low proficiency that stem from training deficiencies, task saturation, and leadership deficiencies can lead to low morale, with some AFE personnel feeling undervalued and professionally marginalized. The resulting impact on morale also has the potential to influence readiness.

Comments about retention and morale came up in multiple locations. Sometimes, it was discussed in the context of how AFE views itself or how customers (i.e., pilots and others) perceive AFE and the behavior and treatment that ensues. But it was clear that personnel felt that there was a need to demonstrate that talented AFE airmen matter and should be retained, and that the career field is a desirable assignment. For example, according to one participant:

> There's no current structure to motivate people like that [with low job satisfaction]. . . . Mend the personal relationship between pilots and AFE.

Lastly, it is interesting to note that Air Education and Training Command's (AETC's) 2017 OAR provides a slightly different picture of morale than what we heard when talking with members of the AFE workforce. The OAR report states that "overall, the majority of the sample

population find their jobs interesting, agree their talents and training are well utilized, and have a positive sense of accomplishment from doing their jobs" (AETC Occupational Analysis Division, 2017, p. 5). In contrast, some of our participants described their work as boring, their workload never-ending, and the likelihood of the situation improving minimal, as many of the previous comments illustrated. Some participants expressed being stressed out, unfulfilled, and, in some cases, actively pursuing a path out of the career field or military at large to find relief from their current situation. Because this contrasts with the picture presented by the results in the OAR, leadership needs to stay abreast of morale issues across the workforce, including regularly exploring it in ways other than a survey alone.[66]

It is worth noting that if morale and mental health of personnel are being affected, it can lead to a downward spiral of increasing strain on the workforce. That is, if personnel have to take leave because of mental health issues, other members of the shop are forced to fill in the personnel gap that results from that leave. Similarly, if personnel are more likely to call in sick (which often occurs when personnel are depressed or have lowered immune systems because of stress) or if they are less motivated to complete work in a timely fashion because of morale issues or low job satisfaction, the burden falls on others to pick up the slack. For this reason, low morale and mental health issues in the workforce may be important drivers of proficiency that should be considered.

Recommendations

Overall, we do not recommend placing AFE within flying squadrons because it would require increases in the career field's manpower requirements. Additionally, our conversations with AFE personnel and aircrew do not provide conclusive evidence that separating AFE into

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[66] The OAR data are likely more representative of the overall population than a set of focus group participants who come from a subset of bases, as was the case in our study. In addition, it is always a potential criticism of focus groups that the people who chose to attend are the ones who have someone to complain about. Although that may be a valid potential criticism, it is worth noting that our focus groups and task panels included nearly all 7- and 9-levels that were stationed at the bases we visited. So, it is unlikely that only disgruntled people participated, unless disgruntled 7- and 9-levels were disproportionally and overwhelmingly allocated to those specific bases relative to other bases. In addition, participants did not seem angry about the issues when discussing them, as is often the case with personnel who are especially angry and frustrated. Instead, they offered views that were measured and thoughtful throughout the discussion. That said, it is interesting that there were differences in the conclusions that resulted from both methods. It is possible that a survey, because it sacrifices detail and depth, may not be well suited to capturing some of the morale issues that were uncovered in our in-depth discussions. For example, morale was mentioned only by a subset of people in the focus groups, which could indicate that it is viewed as a problem for only those few. A survey looks at averages across the entire workforce and therefore may mask views held by a minority of the workforce. If a minority does, however, view morale as a problem, it may still be relevant for the workforce as a whole to monitor and address. In addition, it is also possible that, when asked on a survey about morale in general, people may pencil whip the response by saying morale overall is fine. But when discussing a specific topic, such as proficiency problems, morale issues may surface in ways that may not have been considered on the survey. Priming about certain topics may raise awareness of pain points that respondents otherwise disregard. These explanations are purely speculation, which is why additional exploration and monitoring of morale is recommended.

squadrons will improve proficiency problems more than if AFE stays in the OSS. However, participants offered several recommendations to elevate AFE within the Air Force to boost morale and increase interaction with AFE and aircrew, both of which may have similar benefits to separating AFE into flying squadrons. We discuss those and elaborate on them in the next section.

Increase Exposure to the Aircrew and the Mission

We know from focus groups that, in some cases, the relationship between airmen and aircrew has eroded. We also heard that the relationship between airmen and aircrew affects proficiency and morale. One benefit of placing AFE within squadrons is that AFE airmen can build relationships with the aircrew they serve, thus increasing trust between airmen and aircrew. It is also possible that AFE airmen may feel more ownership and responsibility for the work they do, thus boosting morale.

One of the bases we visited divide equipment (aircrew lockers) between airmen. One airman said this process

> does a couple things—it creates ownership for the individual, they get to take pride in how it's done. Second, you don't have to worry about scheduling. They can do it early if they want; the only rule is it can't be overdue. Third, there is a lot of equipment that someone needs to know, so it helps with proficiency.

The operational needs at any given base may not allow for this structure; nevertheless, it may be worth exploring other ways to increase personal interactions and build relationships between airmen and aircrew. One way to address this would be to organize workflow so AFE airmen work with the same aircrew.

Consider Formalizing Incentive or Familiarization Flights for AFE Personnel

Some focus group participants mentioned that incentive or familiarization flights (flights for personnel who are involved in the mission but who do not typically get to fly) could be used to help build morale for AFE airmen. These types of flights may be a way to increase the visibility of AFE airmen among the aircrew and help AFE personnel see the value of their work to the mission and to those they support.

Such flights are already established as an official Air Force program. According to AFI 11-401_AFGM2020-01 (2020, pg. 17), the Air Force conducts *familiarization flights* to "[f]amiliarize individuals who normally have aviation-related responsibilities with Air Force aircraft and missions." It also conducts *incentive flights* to "[p]rovide a visible reward to USAF active duty and Air Reserve Component military personnel for outstanding service and motivate other military personnel to similar performance levels." Both of these types of flights serve as what the Air Force calls *orientation flights*. Currently only the MAJCOM/A3 can authorize incentive and familiarization flights, or they can delegate the authority to someone else at the wing commander (or equivalent) level or higher.

Although these flights are available to AFE personnel, and they may be used occasionally within AFE, they are not currently institutionalized within AFE as a formal, regularly used tool for development. Given this, participants noted that taking steps to make these flights more routine for AFE personnel and creating a system for ensuring that personnel have access to them as part of their formal development could be beneficial. However, for this to be implemented successfully, either AFE would need to ensure that AFE leadership are establishing buy-in from all of the MAJCOM/A3s for these types of flights and using them regularly and strategically to support their airmen, or the Air Force would need to establish a separate AFE-specific policy regarding the use of these flights by the AFE career field. The Air Force could then formalize these flights as part of the AFE career field development process.

Encourage AFE Airmen to Make Suggestions and Improvements

It is important that AFE airmen feel empowered to come forward with suggestions or voice concerns. Based on our discussions, we heard that this is not always the case. One aircrew member said:

> Sometimes, I feel like the AFE airmen don't feel empowered to make suggestions to change something they know would make things better. That would be a culture change within their community.

7. Where Do We Go from Here?

In the previous chapters, we explored various topics that participants raised over the course of our study about the cause of proficiency problems in the AFE career field and included a number of recommendations for resolving these problems. In this chapter, we discuss the recommendations that we believe warrant the greatest attention from policymakers. This includes recommendations that were mentioned repeatedly by our participants and courses of action that, in our assessment, reflect the ones most promising for addressing the proficiency issues. It also includes ones that, if unaddressed, are likely to continue to exacerbate the issue. But first, we present some summary results of how participants view the proficiency concerns, which reinforce the notion that performance issues need to be addressed.

Views on the Magnitude of the Problem Within Their Community

We started our discussions with participants by asking whether they saw any proficiency problems in AFE, and, if so, what they were and what might be causing them. This question was asked and directly answered by participants in 86 percent of our focus groups. In three of those discussions, someone said there were no proficiency concerns when we asked. However, in the overwhelming majority of discussions (all but two of them[67]), participants talked at length about the career field as being much less proficient than the ideal.[68]

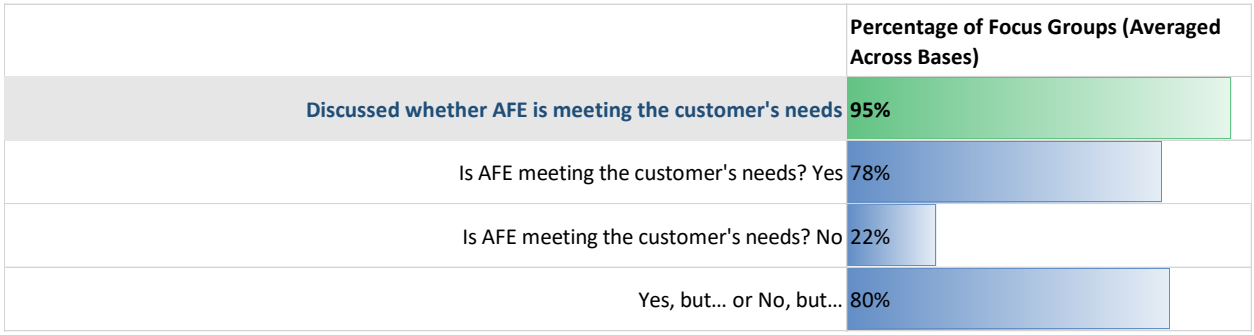
Toward the end of the discussion, we asked participants two additional questions about proficiency. The first was whether they felt the career field was meeting their customers' needs. As shown in Figure 7.1, most said, "Yes, they were meeting the customer's needs," however, it was often followed by "but . . . ," and they added caveats, including the following:

- It was at the expense of training.
- It was at the expense of their people (e.g., staying late, overworking them).
- It was not sustainable.
- Safety was something that could be a real concern if this continued.

[67] In one of the three discussions where a participant said there were no concerns, one participant said there were no problems, but the other participants in that same discussion said that there were.

[68] As a reminder, our participants were not a random sample from the workforce, so we cannot say for sure whether or not this view is held similarly at other bases. However, a large portion of the workforces at the bases we visited were participants suggesting at least at these locations, the view is widespread. In addition, participants talked about their experience in prior assignments at other bases and discussed proficiency problems that existed at those assignments too. And, in general, their comments did not suggest that these more concerns about proficiency were localized at just these bases. Our initial comments were very broad and about the career field in general, so we are fairly confident that, if the proficiency concerns were localized on only a few locations, that would have been raised and discussed.

Figure 7.1. Percentage of Focus Groups Discussing Whether Proficiency Is a Problem



The second question we asked at the end of the discussion was intended to allow us to get a sense for participants' views about the severity of the proficiency problem in the career field. We asked the following:

> In an ideal world, AFE personnel would be performing at 100 percent, meaning that they knew how to execute tasks without errors (as appropriate to their skill level) and with complete confidence that they were doing things at the level they should be. If that ideal (where 3-levels, 5-levels and 7-levels are all performing at the level they should be) is 100 percent, what level is AFE performing at here at this base? (100 percent? 80 percent? 60 percent? 40 percent?)

Some participants resisted giving a number and instead talked about their answer more conceptually. But in 63 percent of the 37 RegAF AFE focus groups, at least one person in the group gave us an estimate of the percentage of AFE's overall proficiency, along with an explanation of why they chose that number. In many cases, multiple participants in the same focus group gave estimates, for a total of 63 individual answers out of 101 total participants (or 62.4 percent).

Answers to our question covered the full range (from as low as 0 percent proficient to 100 percent proficient) but the mean response to our question of AFE's general level of proficiency was 61.52 percent (standard deviation = 27.72).[69] Participants also offered comments to explain their answers. The following are examples:

> I would say 65–70 percent, we are meeting all the needs. Nothing is wrong for the aircrew. Our main objective is keeping the aircrew safe, I think we meet that 100 percent. It's just the little tedious stuff that is wrong, additional duties. That's all the stuff they say is wrong. It's not our gear per se, it's all the other stuff that we deal with.
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>
> Five people out of 20 are proficient.

[69] Fifteen people reported a range instead of a discrete number (e.g., "AFE is operating at 40 to 60 percent proficiency"). For these instances, we took the average of the range's high and low and counted it as the participant's response.

> Out of proficient people, I think they would rank 30–40 percent overall. On their specific forte, I think they'd be about a 90 percent.
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> ***
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> For our squadron, it fluctuates. I've seen it where we're like 40 percent. I've seen it where it goes up to 80 percent. It depends on if everybody's on the same page. All it takes is one bad apple to take the whole group down.
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> Zero percent, together we can do everything but independently we can't. Keeping all the programs in mind like HAZ [hazardous material], supply, inventory, nobody can do that. All that stuff and having to do equipment and train—nobody can do all of it.
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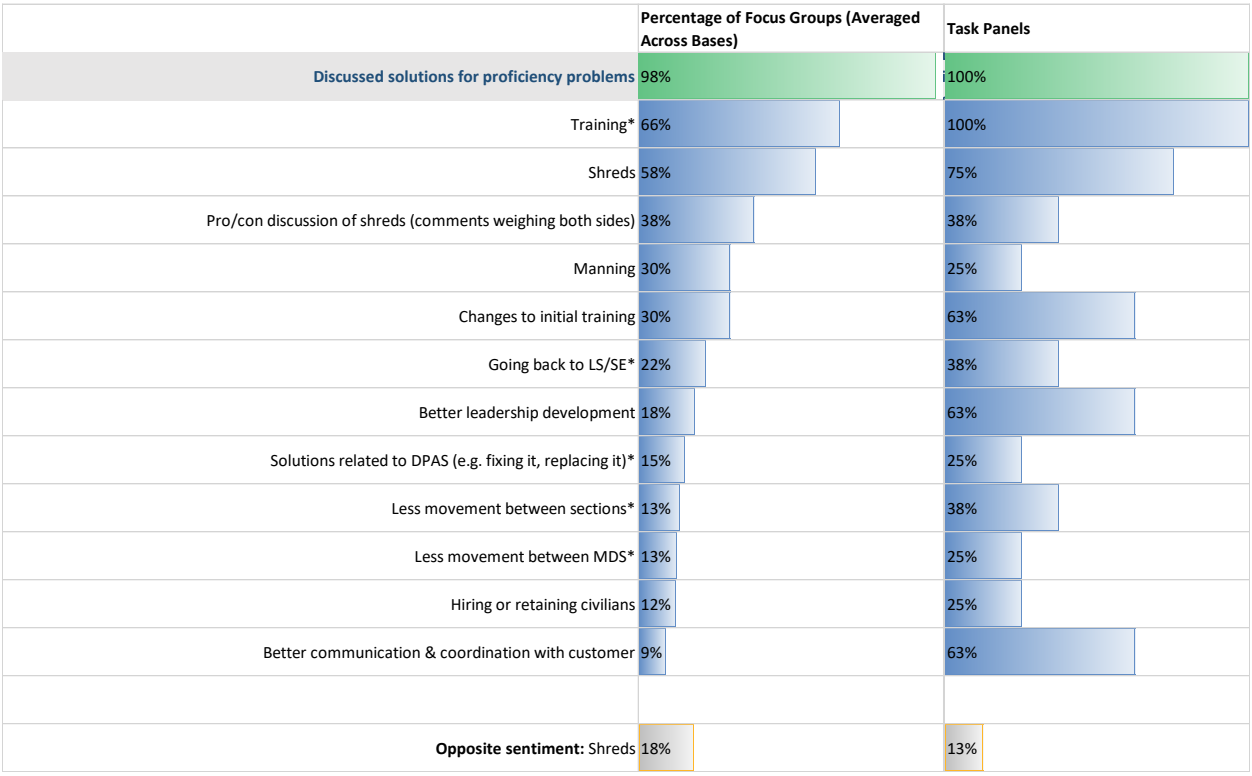
> ***
>
> The only reason I say we can do 100 percent in my section is that those three pieces right there are the only things that we do.
>
> ***
>
> I want to say below 50 percent. We get the planes up, we're flying, but we're also tasked with so much extra stuff. It just kills what we have to do.
>
> ***
>
> At [my location], 65 percent to 70 percent because [there are] staff sergeants that can't do IPIs. They are 7-levels, but they are not proficient enough on parachute systems that they can go back and check other people.

Solutions Suggested by Our Participants

Our participants offered a number of solutions to address the proficiency problems they discussed. Those solutions are summarized broadly in Figure 7.2. As shown in the figure, training and shreds were at the top of the list of topics mentioned by our focus groups and task panels. Both the range of suggestions from our participants and the suggestions raised most frequently are reflected in many of the recommendations we offer in the following section.

Figure 7.2 Solutions Suggested by Our Participants



NOTE: Sometimes a topic was raised by one person, and an opposite view was expressed by someone in the same discussion group. In those cases, the same discussion would be reflected in both the topic frequency and the opposite sentiment frequency. For some topics, no opposite sentiment was expressed in the RegAF discussions. Where an opposite sentiment was expressed in greater than 0 percent and less than or equal to 5 percent of the RegAF focus groups, the category is marked with an asterisk. LS/SE = life support/survival equipment.

Courses of Action That May Have the Biggest Impact on Proficiency

In what we just described of the results and in prior chapters, we summarize both the recommendations and views on potential causes offered by our participants and our judgment on effective solutions that may not have been identified by participants but that are intended to help address factors they believe may be causing some of the problems. The specific recommendations identified throughout the report are summarized in Table 7.1. Looking across these many recommendations and in the context of our findings, we highlight those recommendations that, in our judgment, are most likely to have the biggest impact on proficiency and that may cut across a number of the causal factors that were discussed in previous chapters.

Table 7.1. Summary of Detailed Recommendations Discussed in the Previous Chapters

Improving the training pipeline

Improve IST.

- Shorten IST and keep it generic; then conduct expanded duty and MDS-specific training at FTUs.
- Shred IST or split it into MDS-specific tracks.

Improve OJT qualification training.

- Formalize training and stick to a master training plan.
- Prioritize cultivating 5- and 7-level trainers.
- Protect training time for new transfers.
- Establish more-formalized training outside of IST.

Other training recommendations

- Limit movement between sections.
- Account for loss of expertise due to PCSs.
- Introduce "mobile FTUs."
- Eliminate or substantially rewrite the CDCs or place far less emphasis on them.
- Establish a process for incorporating equipment upgrades in IST at the same time as changes are made in the field.

Reducing task-related proficiency problems

- Better track and manage additional duties related to special programs and workload from extra AFE-specific duties so that they are more visible to leadership.
- Consider decreasing inspection standards for certain equipment (equipment that is nonlifesaving, infrequently used, or redundant) if it can be shown that performance in those tasks would not be affected.
- Create career field shreds to reduce the breath of proficiency that must be maintained by AFE airmen (specialization by MDS groupings).
- Re-separate the AFE specialty into two.

Cultivating capable leaders

- Explore whether time in grade could account for some of the NCOIC and superintendent experience issues.
- Limit superintendent and NCOIC additional responsibilities so they can focus on leadership duties.
- Ensure NCOICs and superintendents have technical and leadership expertise before assuming new duties.
  - Do not place personnel who have recently PCS'd or transferred from an assignment into NCOIC roles with a different MDS grouping, shop type, or SEI (creating shreds could help).
  - Provide technical training and OJT training for new leaders.
  - Allow exiting and entering NCOICs to overlap.
  - Preemptively emphasize the development of leadership skills (mentorship, formal courses).
- Establish AFE best practices for NCOIC and superintendent management of training, work, and personnel.

Retaining and using expertise

- Use civilian, contractor, reserve, and guard personnel strategically.
- Use civilians to run special programs and perform additional duties.
- Raise the minimum ASVAB requirement for AFE.

Increasing connection to the mission

- Increase exposure to the aircrew and the mission.
- Consider formalizing incentive flights.
- Encourage AFE airmen to make suggestions and improvements.

However, as we note in the next section and discuss further in the sections on the limitations of the work and next steps to pursue, these recommendations are based solely on the ideas and issues expressed to us in this study. That is, we summarize here the suggestions that, using our expert judgment,[70] we view to be the most logical and most likely to address the causes that participants believe are driving the proficiency problem. We do not, however have concrete data to back up the ideas offered by participants or our views on courses of action that seem most promising.

Reduce the Training Burden and Skill Gap Resulting from MDS Changes

Actions that can be taken fairly quickly:

- **AFPC assignment personnel should start tracking numbers of MDS changes (i.e., moving personnel from one MDS grouping to another) and limit them.** Guidelines for how to limit them would need to be established. Vetting moves with the local superintendents, AFEOs, and NCOICs would be one way to begin the process. Having an AFE SNCO manage assignments for AFPC to ensure that an adequate number of SEI-coded personnel are at each location could be another.[71] In addition, local AFE leadership should track and AFE career field leadership should monitor the frequency of MDS-grouping moves that occur within the base, because those numbers are not associated with a PCS and would not be visible to AFPC.
- **AFPC should man the career field to address the training bill caused by personnel moves across MDS groupings.** Establish a manpower cushion with AFPC that is paid along with any PCS moves. That is, for every person moved to a new MDS type, there needs to be some period of overlap between the addition of a new person and the removal of an experienced person so that the new person can get trained by the person leaving. Accounting for this training bill will very likely require an increase in the manpower requirements for the career field overall.[72] This increase could be partly mitigated by moving personnel less.

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[70] This judgment uses our professional understanding and knowledge of the psychological job-performance literature (including research and theories on what drives performance; how to measure it; difficulties in measuring it; key predictors of performance; and principles of learning, training and education) and our experience in assessing, researching, and addressing these types of issues in a variety of organizational contexts, including in the Air Force and other military services.

[71] Requiring AFPC to use the AFE SEIs in making assignment decisions may be one way to help with these issues; however, it is likely that this is an incomplete solution in that only a subset of personnel is currently permitted to receive an SEI. Additionally, SEIs are only currently available for three skill areas (ACES II, heavy aircraft, Guardian Angel/special tactics squadron).

[72] It is unclear from the 2018 manpower requirements document how training needs resulting from MDS and shop moves were accounted for or if they were accounted for at all. However, from our own attempts at tracking MDS moves of personnel in the personnel data files, it became clear that such tracking was not possible with the current personnel data file records. We are also not aware of any external record-keeping process that currently accounts for these moves. In addition, the actual training time needed after someone arrives at a base prior to starting work is not officially documented either. As a result, the manpower analysts would likely have a difficult time estimating the training burden that results from the moves and justifying it as a manpower requirement.

- **Monitor AFE promotion opportunities and protect them if they are affected by reductions in MDS changes.**[73] If MDS changes are reduced, some AFE personnel might be viewed as less competitive for promotions.[74] If this occurs, they would need to be protected somehow in the competitive promotion process and credited for any loss in competitiveness that might result.[75]
- **Monitor unintended impacts on ability to develop senior leadership in the career field.** As noted previously, ability to develop senior leadership in the career field may also be affected if experiences become stovepiped by shredding personnel by MDS groupings. Ways to address development of senior leaders also need to be considered (e.g., requiring specific career-broadening assignments in more senior ranks), and the impact on senior leadership capabilities needs to be monitored as a potential consequence.

Actions that will take longer to execute and realize benefits:

- **Shred the career field by MDS grouping.** For example, some suggested Guardian Angel units/helos, fighter/trainers, bombers, and heavies as separate shreds.[76]

Reduce the Training Burden and Resulting Skill Gap from Shop Moves

Actions that can be taken fairly quickly:

- **Change the CFETP requirements that force shop moves.** This would necessitate a rethinking of what is necessary for upgrade training and certifications. It would also require a shift in focus to developing depth of skill rather than breadth of skill.

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[73] Shreds would be especially beneficial to help reduce the career development burden by narrowing the number and type of tasks that people are expected to be proficient in. A reduction in MDSs would also reduce the number of PCSs to new MDS groupings and shop changes that would be required to gain exposure to the full range of tasks for which personnel are responsible.

[74] Promotions use such factors as promotions testing scores and medals. Therefore, AFE personnel are in direct competition with others in their own career field who may have more medals or higher test scores. It is very possible that if MDS changes are reduced, some personnel will be working with MDS types and missions that are less likely to garner medals and recognition. In addition, personnel will necessarily be less proficient in tasks across the career field broadly as a result of the reduction in MDS-type changes. People serving certain MDS types, however, may get exposure to a broader set of tasks than personnel serving another MDS type. In those cases, they would have an advantage on the promotions testing relative to their peers serving other MDS types. In addition, to the extent that promotions test scores factor into the total promotions score without the distributions being standardized across AFSCs, mean and standard deviation differences could lead to advantages or disadvantages for certain AFSCs in the total promotions scoring process. If the average score for AFE is 50 percent, for example, whereas for other AFSCs the average is 90 percent, AFE would be at a disadvantage in the overall scoring process.

[75] Ensuring this type of protection from promotion impacts may not be workable in practice. If protection cannot be ensured, then efforts should be taken to work with promotion policy experts and evaluate how the changes could be designed so that promotion opportunity is not affected.

[76] As a reminder, there are other ways of shredding the career field that could be also considered (e.g., ejection aircraft, non-ejection aircraft, special warfare). In addition, as noted by one of our SMEs, although shredding the career field is a potential solution to addressing training proficiency challenges and timelines, additional details of how shreds would be implemented need to be worked out, and impacts on promotions would need to be explored as well.

- **Develop a formal strategy for how to manage shop moves.** Educate superintendents, NCOICs, AFEOs, and OSS commanders in how best to manage shop moves to accommodate and plan for the training burden.

Actions that will take a longer time to execute and realize benefits:

- **Add manpower requirements (i.e., revise the AFMDs) to allow additional time for training**.

Change How Training Is Managed and Resourced

- **Formalize OJT.** Build a formal process for onboarding personnel who enter a new MDS, return to an MDS after an intervening assignment, or move shops into a new task domain. That training may need to be the same whether they arrive straight out of technical school or are a seasoned 7-level who has just switched MDS. It also, however, should allow for flexibility in training content, depth, and length when personnel arrive with some prior experience. The length of time needed for this training under a range of circumstances (prior experience in the task in the same MDS months or years prior and skills have atrophied, prior experience in a different MDS, no prior experience in any MDS) should be specified and verified periodically to ensure that it is accurate.
- **Resource OJT.**
  - **Deeply skilled experts are needed to serve as instructors.** Retired Survival Equipment and Life Support personnel, including some who are already working as AFE civilians for the Air Force, could be hired as members of formal instructor teams to bring back some of the expertise that AFE believes has been lost. This would help address concerns expressed by participants that people who are training others are not themselves sufficiently deeply trained (e.g., during CUT training).
  - **Extra equipment and facilities are needed to support training.** For example, parachute packing requires specialized tables. Those tables are currently all needed for executing the daily work. Additional work rooms would be needed, along with dedicated tables where parachutes could be left out for students to inspect and practice on. In addition, packing parachutes results in wear and tear on the parachute itself. The act of packing, unpacking, and inspecting them for training would significantly reduce their lifespan. As a result, additional training chutes would be needed for that purpose, and the more training that is done, the more chutes would be needed.
- **Use SME expertise for formalized training and to address the lingering CUT training problem.** Deep expertise among SMEs likely exists piecemeal among the 7- and 9-levels, with many individuals having expertise in a specific narrow skill set that differs from that of another 7- or 9-level. In addition, many people who left the career field took that expertise with them when they left. Some brought it back in a small way when they were hired back as a civilian. These individuals could all be leveraged as expert trainers to build back that training. Former AFE who are not currently working for the Air Force could be recruited and hired back, current civilian workers could be tapped to do more than their current work duties, and AFE personnel across the force could be

asked to contribute. From this pool of people, teams could be assembled and sent around to various bases to provide targeted training to raise the level of proficiency force-wide in the areas in which they specialize. It is important to note that AFE personnel and civilians with these skills would also still be needed to execute and oversee the day-to-day work in their shops, so any effort to use them for training would need to recognize the impact of removing them from the workforce to provide training. For that reason, recruiting former AFE who are not currently already working as civilians would be especially important to help back fill civilians or AFE personnel who are sent out to provide training.

Set NCOICs and Superintendents Up to Succeed

NCOICs and superintendents need to be:

- assigned to sections and flights that align with their recent MDS experience
- taught AFE-specific planning skills prior to entering an NCOIC or superintendent position
- developed as an AFE leader prior to entering the positions.

In addition, increases to the manpower requirements would be needed to help cover the gap when NCOICs and superintendents turn over, especially if someone is moved across MDS groupings or across sections where their past experience does not apply. To explain, when people are moved across MDS groupings, there is a big training bill that must be paid out of hide by the AFE shops that receive that individual. That training bill is much smaller when someone is moved to a different base but kept within the same MDS. Many of the participants who talked about PCS moves noted that AFE does not have control over the number of MDS moves that AFPC levies on the career field, and AFPC currently does not have the ability to manage it or even track it in a formal way.

Section rotation also produces a training bill that is levied on the shops, but that training bill can in part be planned for and managed locally by AFE and the OSS leadership. However, our participants noted that planning and managing the shop-rotation training bill is not currently explicitly taught to AFE personnel in or before people enter NCOIC and superintendent roles.

Added Costs May Bring with Them Some Cost Savings

Nearly all of these recommendations cannot be executed without more personnel being allocated to AFE. There are, however, a number of ways in which the increase in manpower requirements will likely result in some saved resources in other ways.

- If shreds are implemented, more personnel will be needed because personnel will no longer be able to fill multiple roles at a single location. Thus, some efficiencies will be lost. However, the training bill should be smaller within the shreds because personnel will be able to develop more expertise. The number of personnel needed to execute the work will also likely be reduced in some areas, such as parachutes, where it might take someone who is deeply experienced eight hours to pack a chute, whereas someone less experienced might need 12 hours.

- Repacking and redoing work that has been found to be flawed is currently costing the career field work time. If fewer mistakes were made, the work burden for everyone may go down.
- Personnel talked about how expensive equipment that could be repaired (and for cost reasons should be repaired) is sometimes simply being tossed out and replaced because the personnel at that location simply do not have the appropriate skills to repair it. One example mentioned several times was sewing. People talked about not knowing how to use sewing machines or how to apply the proper sewing technique to repair certain things.

Advocacy May Be Critical to Fixing the Problem

AFE is one of a few enlisted-only career fields in the Air Force. And historically, enlisted-only career fields have sometimes lacked effective advocacy, to their overall detriment. There appear to be so many different needs for this AFSC that are potentially going unmet that a lack of advocacy among the officer force may be especially problematic. This may be another contributing factor in the AFE proficiency problems. More specifically, it is unclear who among the officer force is currently responsible for advocating for this career field. Who has the big picture? Neither the OSS commanders nor the AFEOs are in positions to truly understand AFE needs and advocate solutions. AFEOs are not steeped in the career field issues until their AFEO assignment, and, after that assignment, they are no longer responsible for it. OSS commanders oversee many different AFSCs and therefore have far less depth of understanding of AFE-specific concerns than the AFEOs. There are enlisted personnel who do their best to advocate for the career field (e.g., the CFM and chiefs), however, they have struggled for years to get the message about needed changes to those in positions to authorize the changes and convince them of the need for it. Given all of this, the career field might benefit from more consistent and structured officer involvement than it currently has. For example, the career field needs someone who is the functional lead—not only organizationally but who has this career field on their radar and is in a position to navigate the organizational challenges required to support real and substantial changes. This issue of lack of advocacy may well be fundamental in addressing AFE issues. The Air Force typically does a good job selecting high-potential O-3s to serve as AFEOs, but, at the field grade officer ranks, there is no direct officer engagement at the execution level. This lack of engagement leads to a disconnect at the programming level and a lack of career field advocacy from higher-ranking officers.

Although the Air Force could consider standing up an officer force to help manage the enlisted workforce, that is likely not the best approach. Such an officer force would likely be small and personnel would not fare well in their own career-development opportunities or for promotions when competing with other officer AFSCs. And a cadre of officers without much career potential would then be ill-suited to advocate effectively for the AFE career field. A much more promising approach would be to provide SEIs to a select set of officers who are already well situated as advocates. The intent would be to develop effective officers who both identify

with the AFE career field and could ensure a long-term investment in AFE beyond the tactical level of leadership and execution. The customers that are already being served by the AFE community (the special tactics aircrew and pilots, specifically) are natural candidates. This would be akin to political-military affairs strategist and regional affairs strategist officers who receive specialized training and fulfill follow-on staff positions that leverage their expertise. Alternatively, an officer track within maintenance for Life Support/egress systems could also be considered.[77]

The current model of installing an O-3 as the AFEO for a year could be improved by identifying high-performing operational company grade officers and putting them in charge of the flight but providing them deeper training than they already receive in the Life Sciences Accident Investigation Course. That training does not position AFEOs to handle the budgeting, personnel, and operational issues that face them once they become AFEOs. The result is an underused resource in the form of an officer, leaving administrative duties to fall inequitably on the flight superintendent when they could be shared more effectively.

Under the current model of installing an AFEO for one year, that officer will likely never again be in a position to affect AFE operations unless she or he becomes an OSS commander, operations group commander, or wing commander. Amending this construct to identify, develop, and leverage AFE-fluent officers will ensure advocacy beyond the E-9/O-3 level.

Some Caveats and Notes of Caution

Limitations to Our Study Results and Any Resulting Recommendations

Although our participants offered a number of potential causes of the proficiency problems and discussed a range of potential solutions or fixes, the data we have gathered to support any recommended changes are limited in a number of ways.

First, it is important to note that our results are based solely on opinions of the workforce. Such opinions are not without utility. The opinions should be viewed as having credibility in that they reflect collective knowledge and experiences gathered from multiple members of the workforce across multiple bases and multiple MAJCOMS and at multiple experience levels. Members of the workforce can be considered appropriate sources of information for gathering insights into proficiency problems because they are uniquely positioned observe obstacles and problems that may not be visible to others. Therefore, these types of job incumbents are commonly relied on as experts in a variety of established data-collection processes that are regularly used to inform policy decisions. These data-collection processes include some used in

[77] As noted by a career field SME, these example officer tracks might be even more effective if AFE were realigned under the flying squadron or the maintenance squadrons, which might also address the issues from Chapter 6 related to morale and distance from the mission. This realignment would have a second-order effect of allowing a flight commander to serve as raters on enlisted performance reports, which is beneficial for leadership development.

the Air Force, such as regularly collected occupational analysis data that is used to inform changes to IST and for developing promotions testing materials. In many cases, use of job incumbent views as a primary source of data is considered best practice.[78]

On the other hand, it is also worth noting that judgments we gathered from AFE job incumbents have not been independently verified using other data sources. In addition, we have not directly confirmed the existence of policies or other administrative obstacles that our participants cite as problems. We did not obtain participants from all bases or from a random sample of bases and thus our participant views may not be representative of the views held across the entire career field. Lastly, we obtained participation from the core set of MAJCOMs that AFE serves, but we did not include sufficient sample sizes to tease apart whether there are distinct issues faced by only by some MAJCOMS and not others.

Many of the Potential Causes and Potential Solutions Are Interdependent, Making Direct Causality Very Difficult to Determine

The inherent interdependence of the various potential causes and solutions is an important complicating factor in establishing recommendations for changes. It means that direct causality for any single factor, independent of all other potential factors, may be difficult to ascertain. This issue of interdependence is important to understand when interpreting our and other study results exploring the causes of the proficiency problems. For example, manning issues (i.e., the perception that there are insufficient numbers of skilled personnel to complete the work) seem to permeate many of the problems raised by participants. However, some of the solutions we offer may partly negate the need for additional manpower requirements if they are successful. For example, if participants were grouped into shreds, it is possible that additional manpower requirements to address a need for additional training time may no longer be needed. Along the same lines, there may be no need to reduce the number of tasks if training or proficiency shortfalls are addressed by other recommended means (technical school modernization, shreds, FTUs).

This interdependency therefore makes confirming causality difficult (i.e., maybe the problem is being caused by insufficient manpower requirements, maybe the problem is too many tasks, maybe the problem is inadequate training, and maybe it is some combination of all three). Interdependency also means that execution of one recommendation may render another recommendation moot (e.g., shredding the career field may eliminate the need to add extra training time).

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[78] Job-analysis methods commonly rely on interviews or surveys of job incumbents (see, for example, Society for Human Resource Management's [undated] description of typical job-analysis approaches), and job analysis serves as the foundation for a number of human capital management decisions, including identifying selection and assessment tools; developing and refining employee training; assessing employee performance in annual performance reviews; and developing promotions criteria.

In addition, it is possible that one policy change may not result in an improvement in performance because another cause is suppressing any potential improvements that could be achieved with it. For example, if new training is implemented at a base, but additional manpower requirements are not provided to account for that training, the training may lead to a reduction in the amount of time that personnel have to complete the actual work, which could lead work to be completed hastily to still meet demand. The increase in haste could result in new careless errors that mask any improvements that could have resulted from the improved training.

Similarly, one policy change that coincides with another change could lead to the false conclusion that the first change was effective when in fact it was the other one that led to the improvement. For example, it is possible that new training could be rolled out at a base at the same time that OSS leadership begins reducing the amount of staff assignments filled by AFE personnel, increasing the amount of direct contact that AFE personnel have with the aircrew and reminding aircrew to take better care of their equipment. If performance at that base improves, it would not be possible to determine whether that improvement was as a result of the improved training or the other changes implemented by OSS leadership.

The best way to tease apart causality is to systematically vary one factor while holding all other factors constant. This is certainly possible to do in a workplace environment, but it is neither practical nor advisable in such cases. Recognizing that multiple causes are likely operating, multiple suggestions for changes have been offered that could help, and the issue is possibly an urgent one (personnel are concerned that proficiency issues, if left as is, will eventually lead to a safety incident), it does not seem prudent to wait to see if one approach is effective before implementing others. That said, we do not discourage the Air Force from pursuing studies designed to collect additional data to determine causality. We do note, however, that the interdependence of these issues may make conclusions about causality difficult to determine even under the best of circumstances. We therefore suggest careful consideration of all possible explanations for the results (including the possibility that positive results of one change could be being suppressed or enhanced by another factor).

This interdependence is also important for policymakers to consider carefully when deciding which steps to pursue first and which to pursue simultaneously. Courses of action that are costly—either because they require major changes to the management of the work or the personnel or because they are resource-intensive—may not be worth pursuing simultaneously if, when pursued individually, they may negate the need for the other (e.g., the shreds and increases in manpower requirements to bolster training when moves across MDS types occur). However, some approaches may also be complementary and may need to be implemented in tandem (e.g., shredding the career field will likely require a reevaluation of the AFMDs and the resulting manpower requirements). Staffing, training, and other career field structural changes will likely result in different manpower needs than the current career field construct without shreds. If that difference is not accounted for at the same time, the shredded career fields may face new challenges and performance decrements as a result.

Lastly, a number of the suggestions may not require extensive resources or complex changes (e.g., helping OSS commanders understand the needs of AFE, better protect AFE time, advocate for greater involvement with the aircrew, and help ensure that aircrew are respecting their equipment). Suggestions that are less complicated and less resource-intensive are good candidates for immediate and simultaneous implementation because not much is lost if they are ineffective. Plus, the potential immediate gain is worth the effort even if some of the suggestions are less effective than hoped.

Next Steps for Solving the Aircrew Flight Equipment Proficiency Problem

As noted in the previous section about limitations, there are a number of issues that personnel believe are contributing to the proficiency problem. However, our approach cannot definitively confirm whether those issues are in fact the causes of the proficiency problems or just perceived as such. In addition, we cannot determine definitively whether our solutions or those offered by our participants would actually have the desired result of improving AFE performance. For some suggestions, views by the workforce may be support enough for leadership to consider taking action. For others, leadership may want more evidence. In the cases where leadership is not willing to act on the views and suggestions of personnel alone, additional research could be pursued. The goals of that research could be to:

1. **Confirm that the issues identified by personnel are in fact real issues.** For example, training equipment, such as sewing machines, may be available at a base, even though the people at the base believe they are not. Or moves from one MDS type to another may occur very infrequently, even though they are believed to occur often. Or it may take very little time for someone to become proficient in parachute packing, even though it is believed to take weeks of practice. The factors identified in this study may have been accurately accounted for in the latest AFMAA manpower study.
2. **Confirm whether factors that are believed to cause proficiency problems are in fact causing them.** For example, MDS type or shop moves may not actually lead to a need for retraining, even though it is believed that they do. An example of confirmation is following personnel and measuring whether or not those who have just moved do in fact perform more poorly and lack requisite knowledge on an MDS. Similarly, another example is observing whether or not the training time and content allocated to personnel after the move is consistent with what is allocated in the AFMAA manpower study and is adequate to get people up to speed.
3. **Pilot test a policy change on a small group to see its impact on their performance.** For example, a test would be to reduce the number of MDS type and shop moves for a subset of personnel and measure whether performance improves for that group relative to those who continue to be moved at the same rate as in the past.

To the extent that leadership does not yet feel comfortable acting on these views, some of these would be worth pursuing as important next steps. One that we strongly advise pursuing as a next step is further exploration of the details of the latest manpower study.

Further Exploration of the Latest Manpower Study's Underlying Methods and Data Is Needed

It is worth noting that AFE manning concerns (i.e., the perception that there are insufficient numbers of skilled personnel to complete the work) could stem from a few different types of manpower shortages, some of which were discussed briefly in Chapter 1. The first could occur when the actual number of personnel in the career field falls short of the funded manpower requirements. For example, the career field may be operating at only 93 percent of the funded authorizations (i.e., the positions they are officially supposed to have filled). This type of manpower shortage can occur for the following reasons: schoolhouse constraints (not enough training capacity), a poor *forecast* of retention (as opposed to poor retention; if retention, good or bad, is properly forecast, and if the training capacity exists, accessions can be set to approximately equal losses plus any existing shortages), unexpected increases in manpower requirements (e.g., when a new manpower analysis shows a need for a higher number of funded number of personnel, the percentage of personnel allocated relative to the funded requirement will decrease accordingly).[79] AFE is not currently fully manned to its funded requirement, so this could be one possible explanation for why comments by personnel suggest that there is a need for additional personnel. Actual manning percentages fluctuate over time, but it is well established that the career field is not currently operating at 100 percent.

A second reason people may perceive shortages in personnel is because some number of the manpower requirements is going unfunded. As discussed in Chapter 1, when funding is tight, the Air Force typically identifies certain positions as unfunded to address budget constraints. As a result, manning when examined relative to the overall manpower requirement may be even lower. For example, if 93 percent of the funded authorizations are filled, but 5 percent of the manpower requirements were unfunded, then the career field would be operating at only 88 percent of the manning that was deemed necessary for the career field to accomplish its work.[80] This underfunding of the career field's requirements could be adding to the proficiency problems in the career field. Certain career fields that are deemed critical (e.g., some maintenance career

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[79] For example, suppose a career field had a funded manpower requirement of 1,000 people. And suppose manning was at 100 percent (i.e., the number of personnel in the career field divided by the funded requirement = 1,000/1,000 = 100 percent). Now suppose that AFMAA conducts a study showing that the real requirement should be 1,200 personnel, so the next day, they change the official funded requirement to 1,200. Now, the career field would be manned at only 83 percent (1,000/1,200 = 83 percent). So, the day before the change, the career field would look fully manned, yet the day after the change, they would look greatly undermanned. That undermanning would persist until new personnel could be accessed into the career field, and the addition of new personnel takes time (e.g., recruiting and training new personnel takes time).

[80] As discussed in Chapter 1, *percentage manning* is often calculated as the number of personnel who are assigned to authorized positions divided by the total funded authorizations. However, this percentage does not account for the fact that some number of the manpower requirements typically go unfunded and are therefore unfilled as well. When looking at the number of personnel who are in authorized positions relative to the overall manpower requirement (which includes both the funded authorized positions as well as the unfunded requirements), the percentage manning estimates would be even lower. For more discussion of this issue, see Chapter 1.

fields) are protected from having unfunded requirements; however, to our knowledge, AFE is not currently one of those protected career fields. Until such protections are offered to AFE, unfunded requirements may continue to stress the career field.

A third issue that may lead to the perception that there is a shortage of personnel is that there may be a mismatch between the types of personnel needed in certain assignments and the types of personnel who are actually available, even if overall percentage manning for the career field appears to be good. For example, the career field could be 100 percent manned, but if there are too many 3-levels and not enough 5-levels or 7-levels in the career field, many 5-level positions may go vacant or they may have to be filled with personnel who lack the requisite experience for the 5-level assignment. Similar mismatches can exist for grades, skill sets, or leadership experiences. If the grades, skill sets, or leadership experience levels of the people available for key assignments are not commensurate with those assignments, there will be a perceived shortage in personnel to do the work. Some of our participants spoke at length about such a mismatch between people's skills,[81] grades, and leadership experiences and the impact on their ability to accomplish the work.

A fourth reason people may perceive that there are insufficient numbers of personnel could be because the manpower requirements themselves are incorrect. That is, AFMAA's estimates of the number of personnel needed to accomplish the work across the career field and at specific AFE locations could be underestimating their true manpower needs. This is also a possibility worth exploring further. If the manpower requirement is underestimated, then the percentage manning estimates (i.e., the number of personnel assigned to the job relative to the number of funded and unfunded authorizations) may not be telling the whole story. That is, even if AFE's percentage manning is equivalent to that of most other AFSCs (e.g., many are at 98 percent), it would be more problematic for AFE to operate at 98 percent than other AFSCs whose manpower requirements are correct.

Although we reviewed the latest manpower study report, the details of that report were not sufficient for us to determine whether or not the factors we identified in this study were adequately captured in the manpower analysis. Our study timeline and resources did not permit us to do in-depth follow-up interviews with AFMAA, which would be a critical next step for exploring this issue. To accomplish this, we recommend a multistep process.

Step 1: Hold interviews with the AFMAA personnel who conducted the latest AFE manpower study. The goals of these interviews would be to

1. understand how the underlying data were collected (including from whom and where it was collected)
2. inventory the data elements that were gathered for the study

[81] The skill mismatches they discussed included mismatches between people's MDS- and shop-specific skills and those needed in the assignment. Some also discussed how skill-level upgrades seemed to be being rushed because there was a need for more personnel at a higher skill level to fill those higher skill-level assignments.

3. identify data elements or information that the AFMAA team wanted to gather but were unable to and find out why they could not.
4. outline in detail the complete set of data elements that contributed to the updated elements, how they were used, and why.

Step 2: Compare the data elements and factors included in the AFMAA analyses with the factors identified as potential issues in this study. The goal of this step would be to identify places in the manpower study where there could be gaps in what was accounted for or a potential for the data to lead to a mistaken conclusion. This process would involve comparison of the details gathered in Step 1 with the range of issues that could affect manpower requirements that were raised by our participants and discussed throughout this report. The following factors are examples but are not an exhaustive list of what should be considered:[82]

1. **Amount of training time needed after moves from one MDS type to another and one shop to another and the frequency of those moves.** How did AFMAA account for the additional training that was required after a PCS to a new MDS grouping or after a shop move? What amount of training time was allocated for that retraining and might the amount of training be insufficient? How many such moves did they expect to occur per year at each location? Might these have been underestimated? Did they use a generic estimate applied to AFE, or did they use data gathered from AFE?
2. **Amount of time that tasks take when people are new to the task versus when there are seasoned veterans performing the work and how long it takes to become seasoned at them.** For some tasks, the length of task performance was said by our participants to be much higher for those who had not been performing the task for long or who performed it infrequently. They also noted that it could take an extended period of time before someone would be able to perform it at the intended speed. AFMAA ideally would need to have estimated the number of people new to the task or performing it infrequently, the length of these longer task durations, and the time it would take for these less-experienced personnel to get up to ideal speed. Did AFMAA account for this, and, if so, how? Might the information they gathered or considered have been an underestimate of the training time demands, and, if so, why?
3. **Actual amount of training time spent on tasks at a location versus the desired or needed training times outlined by base personnel.** Does the amount of OJT training that personnel appear to be getting align with the amount of time that AFMAA has allocated for training? That is, perhaps AFMAA is allocating the correct amount of training time, but that time is being usurped by other pressing duties. Did AFMAA examine this? And if so, what did they do with that information? Does the AFMAA training time appear to be underestimated in any way?
4. **Extra time needed to redo work that was inspected and found to be deficient or incorrect (i.e., extra work resulting from less-seasoned personnel making mistakes).** Participants noted that the proficiency problems were creating additional workload. It is

[82] These factors were ones that we identified as important to explore further with AFMAA to make sure they were in fact considered and the data they have as inputs were accurate. We fully acknowledge that these factors may in fact have been already well considered by AFMAA, and the data they have may be accurate and appropriate. See Air Force Manual 38-102 (2019) for more on AFMAA's manpower analysis process.

possible that AFMAA has not accounted for that additional burden in their manpower requirements. This, in theory, would require that AFMAA plan for a temporary increase in the manpower requirement at least until the proficiency problem is solved. Was this accounted for in some way?

5. Special assignments (e.g., staff assignments) that are potentially falling more heavily on AFE's shoulders than on other enlisted career fields. It is possible that AFMAA applies a generic plus factor to account for these special assignments that are the same for all AFSCs. If it is true that AFE is tasked with special assignments more frequently than other AFSCs, then a generic plus up factor would not be adequate. If there was one calculated specifically for AFE, it would be good to explore what the calculation was using.
6. Additional unexpected tasks not planned for. For example, at some locations, our participants described tasks that were clearly AFE tasks that commonly came up but that were not part of the workload that they were expecting for the week (e.g., supporting additional pilots who were visiting the base). These tasks represent additional unit-specific duties that the AFMDs are supposed to account for as within-unit workload;[83] however, these unexpected duties may not be being adequately represented.

Step 3: Further vet the AFMAA analysis by convening a panel of AFE representatives to further analyze any potential gaps. The panel members could include the CFM, members of the AFE workforce who would be considered SMEs (ideally, this would include a range of both 7- and 9-levels and personnel from a range of different bases and MAJCOMs), and a team of AFMAA manpower analysts. The panel discussion would, ideally, be led and moderated by someone independent of AFMAA and AFE who has an understanding of the role and process of manpower analysis, an understanding of AFE issues, and an understanding of what the panel needs to achieve. The panel should proceed as a structured, guided discussion exploring the following topics:

1. **Are the gaps identified in Step 2 consistent with any gaps that the SMEs suspect could have occurred?** SMEs should review the Step 2 factors identified and weigh in on whether they agree that are potential gaps in what AFMAA accounted for and whether they believe that the data that AFMAA have are accurate. They should also review the overall inventory and lists gathered in Step 1 to determine whether any other gaps seem to have occurred (i.e., that were not identified in Step 2).
2. **What data would AFMAA need to fill any potential gaps identified in Step 2?** AFMAA representatives should explain the approach used to measure the factors identified in Step 2 to the SMEs. SMEs should consider whether the potential gaps and inaccuracies identified in Step 2 are in fact places where manpower needs may have been undercounted. In cases where the AFE SMEs believe needs may have been undercounted, they should discuss these with AFMAA and identify what data or evidence would need to be provided to AFMAA to help fill the gap or produce more-accurate information for the manpower model. Once those data are identified, a plan for how to ensure that AFE personnel are collecting, verifying, and providing those data to support AFMAA's

[83] That is, these are not special assignments or special-duty assignments.

analysis should be established and communicated to the appropriate AFE leadership levels AFE-wide.

3. **If no gaps are identified in Step 2, what else might be leading personnel to feel the time available for proper training and skill maintenance is insufficient?** It was clear from our discussions that personnel felt that there was insufficient time dedicated to training and that training time was being sacrificed to complete other necessary tasks. Participants wanted more training time and felt that there simply was not enough time available in the workweek to allocate to it. If no gaps in the manpower analysis are identified in this process that could explain why people believe time is tight, additional explanations need to be pursued. SMEs should weigh in on why else that perception might exist.
4. **What are the manpower requirement impacts of some of the other possible courses of action to address the proficiency problems that were identified here, and what data would AFMAA need to estimate those impacts?** Many of the suggestions our participants offered to address the performance problems would lead to an increase in manpower needs. To help leadership understand the resource implications of those changes, the panel could begin the process of outlining those additional manpower demands. For example, if shreds by MDS type were considered, there may need to be additional manpower to support deployments. There may also be additional staff requirements and additional instructor requirements. There could be some reductions in training times and training needs resulting from the shreds leading to reductions in some of the manning factors. The panel could begin to explore these issues, and the AFMAA representatives could help guide the discussion and explain what data or information would be needed from them to produce new AFMDs and manpower requirements for each policy change scenario.

Discussions with Assignment Personnel at AFPC Could Provide Additional Insights

We were also not able to follow up with the assignment personnel at AFPC to better understand the extent to which MDS type is already considered in assignment decisions for AFE, the reasoning behind placements of people without recent experience in an MDS type into NCOIC positions that require it, the frequency with which that occurs, and other obstacles assignment personnel face in placing personnel that might explain some of the issues. These questions should be pursued and explored, because they could help inform leadership decisions about assignment policies for AFE.

Begin Tracking and Analyzing Several Key Quantitative Metrics Consistently Across the Aircrew Flight Equipment Career Field

As we noted at the outset of this study, we explored whether quantitative data were available at each of the bases we visited that could provide us with additional insights into performance issues. We also considered ways that we might explore specific issues in the personnel data files that AFPC regularly collects. What we discovered by exploring both the data available at the bases and the data available in the Air Force's personnel data files was that the information available was insufficient.

We found, for example, that the trend-analysis information that was available was not reported consistently across locations, and, in most cases, the information reported in the trend analyses either was ambiguous (meaning not enough information was given to determine the meaning of the data), or it provided insufficient information to address important proficiency questions (see discussion in Appendix E).

We also found that the Air Force personnel files were not set up well to examine how frequently individuals were moved across MDS types or moved between shops and to track some of the special duties that personnel are asked to perform that fall outside their AFE workload. The AFE career field should start flagging and tracking these going forward. Moves across MDS types could be tracked by AFPC; however, AFPC is not well situated to track shop moves, extra duties, and other factors that we identified that may be impinging on workers' ability to accomplish their tasks. The addition of the SEI that AFE had just started to implement may help with some of the tracking across MDS types and shops; however, additional tracking information may still be needed to fully understand these moves.

Information that could inform future manpower analysis studies and other policy changes would be important to collect systematically as well. For example, total training times for all personnel (both how much training is given and how much is needed to achieve a certain proficiency level,) if collected force-wide, could reveal a specific need for longer training times or additional training resources.

These are just a few of the examples of the types of quantitative data that could be collected and retained to help inform future efforts to understand and monitor the proficiency issues. However, if the career field is expected to track this type of additional information, it will necessarily require some additional training for personnel to ensure that tracking is consistent across locations, and it will add an additional administrative burden on AFE personnel who are already feeling overburdened by their current workload and proficiency issues.

Begin Systematically and Regularly Collecting Measures of Proficiency Using Direct Measures of Individual Task Performance to Be Used for Research Purposes

Currently, measures of performance are also not collected systematically across AFE and not retained for purposes of conducting research on the proficiency problems. IPIs do occur for some tasks, and those records of performance in IPIs could be gathered to study performance of personnel over time; however, the records are currently in paper form only, and there may be some proficiency issues that are identified and addressed in other ways well before an IPI is completed (and would therefore not be captured in the IPIs). Lastly, IPIs indicate whether someone's work passed the IPIs, but it does not provide ratings about level of expertise that goes above and beyond the basic minimum requirements outlined in an IPI. Considering that SME expertise was an area that participants believed has been degrading since the merger of the career field, capturing information about expertise that goes beyond minimal competence and instead grades a range of competence in a variety of aspects of the task that go beyond just those

included in the IPI (e.g., troubleshooting or spotting unusual problems) is important to include in the performance measurements. In addition, task-performance information is not collected from personnel who are doing tasks that do not require IPIs. Performance on those types of tasks needs to be captured as well.

This process of developing performance measures is best guided by researchers experienced in the development of performance measures. Those experts are well versed in the best-practice approaches to ensuring that the measures demonstrate good validity (i.e., construct validity) and reliability and that they are not construct-contaminated (accidentally measuring irrelevant information) or construct-deficient (failing to capture important aspects of performance). These best practices are summarized in a set of well-established professional guidelines for developing and validating performance measures (see the American Educational Research Association, American Psychological Association, and National Council on Measurement in Education, 2014; and Society for Industrial and Organizational Psychology, 2018).

The development of performance measures that are standardized, valid, and collected across AFE is critical for supporting three key types of AFE proficiency research efforts. First, such measures can be used in research designed to explore and further confirm the views and ideas offered by our research participants to lend further credibility or debunk some of the ideas they expressed. For example, this could be used to directly correlate performance with frequency of moves across MDS types and shops, and it can be used to explore decrements in performance that occur immediately after an MDS move to help identify whether performance is really hampered by it and, if so, for how long and in what ways.

Second, they can be used to identify pockets of performance problems. Such identification is important for catching issues early, before the problems expand and become widespread. It is also important for diagnosing locations where problems are especially of concern and tasks where proficiency is of greatest concern. This diagnosis can be useful in developing targeted efforts to eradicate performance problems in a cost-effective way. For example, if one base has problems, it would allow resources to be put toward extra specialized training at that base rather than across all locations. Similarly, if data suggest that additional training time is needed to address a training issue in one location, it can be used to justify a temporary manpower requirement increase at that location.

Third, they can be used to determine if a change implemented to address a proficiency problem has had any effect. If performance is measured at baseline before the change and then for some period of time after the change, we would hope to see improvements across those measurements. Or if a control group and a treatment group design is used—where one group receives a change (e.g., additional training) and the other group does not—it can be used to equate and compare the performance of the groups before and after the change.

Appendix A. Focus Group and Task Panel Participants and Methodology

In this study, we sought viewpoints and insights into the proficiency issues from a range of experts, leaders, and members of the workforce. To identify the full range of potential causes of the proficiency problems, we cast the net widely when considering whom to include in our discussions.

Participants

As shown in Table A.1, the bulk of our results comes from discussions we held with 3-, 5-, 7-, and 9-level AFE personnel in a focus group format with a semistructured discussion protocol. We also held discussions with 5-, 7-, and 9-levels in a different format that we refer to as a *task panel* and describe further in this appendix. We also held focus group–style discussions with the following additional groups to help round out our understanding of the issues:

- AFEOs and superintendents at each location for AFE leadership views
- a few members of the local aircrew (including pilots and special tactics aircrew) for customer insights into performance in AFE
- OSS leadership or an equivalent in the Guardian Angel units, when available
- civilians, reserve, and guard personnel working alongside the RegAF AFE.

Table A.1 contains additional details on the numbers of participants and discussions by discussion type. Table A.2 shows how these discussion groups distributed across the eight bases visited.

Table A.1. Total Numbers of Participants and Numbers of Discussions by Discussion Type

Type of Discussion	Number of Discussions	Number of Participants Across All Locations	Number of Participants per Discussion		
			Mean	Minimum	Maximum
AFE RegAF Focus Group					
3-level	7	17	2.83	2	4
5-level	13	38	2.92	2	4
7- and 9-level	17	43	2.53	2	4
TOTAL	37	98	2.64	2	4
Task panels*	8	47	5.88	3	13
Other focus groups					
AFE guard/reserve	7	12	1.71	1	3
AFE civilians	3	10	3.33	2	4
AFE RegAF and civilian mix	3	18	6	3	11
Aircrew (AFE customers)	8	21	2.63	1	5
AFE and OSS leadership	20	~42*	3.62	1	17
Training SMEs	2	6	3.00	2	4

NOTES: AFE RegAF and civilian mix = Combination of AFE RegAF and civilian participants in a single focus group. AFE and aircrew leadership = AFEOs or superintendents; OSS CCs or Guardian Angel equivalent. Training SMEs = curriculum developers or instructors/CDC writer.
*Exact numbers of participants were not recorded for all leadership discussions. This number is approximate.

Table A.2. Number of Aircrew Flight Equipment Discussions by Air Force Base

Discussion Type by Participant Makeup	Barksdale	Davis-Monthan	Fort Wayne	Hurlburt	Langley	Robins	Sheppard	Travis
AFE RegAF focus groups								
3-level	1	2	--	2	--	--	1	1
5-level	3	2	--	2	3	--	1	2
7- and 9-level	2	4	--	3	3	2	1	2
TOTAL	6	8	--	7	6	2	3	5
Task panels*	1	1	1	1	1	1	1	1
Other Focus Groups								
AFE guard/reserve	--	1	3	--	2	1	--	--
AFE civilians	1	--	--	--	--	--	1	1
AFE RegAF and civilian mix	--	--	--	2	--	1	--	--
Aircrew (AFE customers)	--	2	1	1	1	1	1	1
AFE and aircrew leadership	2	4	2	3	2	2	3	2
Training SMEs	--	--	--	--	--	--	2	--

NOTES: AFE RegAF and civilian mix = combination of AFE RegAF and civilian participants in a single focus group. AFE and aircrew leadership = AFEOs or superintendents; OSS CCs or Guardian Angel equivalent. Training SMEs = curriculum developers, instructors, or CDC writer.

Discussion Goals and Approach

In designing our approach to these discussions, we recognized that if any important source of the proficiency problem was missed in this effort, it might not get the relevant attention needed to address it. Thus, we set out to approach the discussions in two ways.

Focus Group Discussions

One way we set out to ensure that we captured the entirety of the issues was by asking a range of very broad and open-ended questions during our focus group discussion protocols. In doing so, we invited participants to generate their own thoughts and ideas about the proficiency problems that were not primed by any a priori notions we had or that our sponsor had about the issues. We focused on the following questions:

1. Are there proficiency problems in the AFE? If yes, explain.
2. If yes, what do you think are the causes?
3. What are possible solutions? Are there any obstacles or downsides to those solutions?
4. Are there certain tasks that have more proficiency problems than others?
5. Are there tasks that you do not feel confident performing?

However, before asking any of those open-ended questions, we offered the following definition of *proficiency* to frame the discussion:

> When talking about *proficiency*, we want you think about where AFE personnel should be *ideally*, not the bare minimum of competence. So, someone who you have full confidence that their work is always correct (i.e., 98/99/100 percent error free) and not going to lead to a safety incident, and someone who understands the "why" behind what they are doing—this is someone we would call "proficient" in an ideal AFE world. In an ideal world, you would have a sufficient number of proficient SMEs (true experts who would be the ones you want training everyone else so that core knowledge and expertise is not lost). In this ideal world, 3-levels, of course, would not be error free, and 5-levels might still make mistakes, and everyone is human.

After reading the definition, we asked if this definition was a good way of thinking about proficiency in AFE and discussed any feedback. Once we had discussed the definition and answered any questions, we asked the questions listed above. After we had exhausted all discussion of the above open-ended topics, we then asked the following, more-targeted questions:

1. Do you think AFE is able to fully meet the customers' needs? Explain.
2. In an ideal world, AFE personnel would be performing at 100 percent, meaning that they knew how to execute tasks without errors (as appropriate to their skill level) and with complete confidence that they were doing things at the level they should be. If that ideal (where 3-levels, 5-levels, and 7-levels are all performing at the level they should be) is

100 percent, what level is AFE performing here at this base? (100 percent? 80 percent? 60 percent? 40 percent?)

Although the majority of the discussion surrounded these broad open-ended questions, we also included one more specific question soliciting people's thoughts about being in the OSS because it was among the topics that ACC had specifically expressed an interest in and that participants were not typically raising on their own. This question was covered most often in the 7-level discussions.

Task Panel Discussions

Although our intent in the focus groups was not to prime participants to think about specific topics that we thought might be an issue, we did include a separate, more structured discussion format (one held at each base we visited), which we called a *task panel*, that was meant to prime participants to think about every task in the AFE domain. In those discussions, the panel members reviewed the Air Force's official list of AFE tasks performed at each base, identified those tasks where proficiency was a problem, completed a form to provide additional information about those tasks identified, and participated in subsequent discussions of any tasks flagged as having proficiency problems.

The task-list form presented participants with the full list of 420 tasks identified in the most recent OAR representing the entire list of tasks that AFE airmen may be required to complete (AETC Occupational Analysis Division, 2017). On the form, we asked the following questions:

1. **How FREQUENTLY do AFE at your base complete this task?** (Options were: Not applicable/never, 1 = daily, 2 = weekly, 3 = monthly, 4 = a few times a year, 5 = yearly.) If never, no additional questions were completed.)
2. **Are there PROFICIENCY PROBLEMS with this task?** Yes or no
3. **On average, how LONG does it take to complete this task?** (Five-point scale: 1 = zero to 1 hour, 5 = more than eight hours.)
4. **How DIFFICULT is this task to complete?** (Five-point scale: 1= very easy, 5= very difficult.)
5. **How well are AFE TRAINED in this task?** (Five-point scale: 1 = very poorly trained, 3 = adequately trained, 5 = very well trained.)

The form was broken into five sections. Participants completed one section at a time and then discussed the tasks from that section as a group. In those discussions, we asked them to name the tasks in which they believed there were proficiency concerns and to explain what the concerns were. For each task they identified, we asked what they thought might be causing the proficiency problems and solicited ideas for how to remedy the problems.

At each location, we invited several 7- to 9-levels to participate in the task panels, along with two 5-levels. On the panels, 7- and 9-levels were considered a critical target group to ensure we had input from those who would have the expertise, years of experience, and overarching view of the AFE performance at that base. We specifically requested participation of two people with former Life Support experience and two people with former Survival Equipment experience.

Two 5-levels were also invited to the task panel discussions to ensure that issues that might not be readily apparent to senior-level personnel were not missed in the discussion. Because of their limited time on the job and therefore limited exposure to the entire task list, 3-level airmen did not participate in the task panels. Exact makeup and numbers at each skill level varied, but at all bases, 5- and 7-level airmen participated in the groups; and, in all cases, the majority of participants were 7-levels. In all cases, there was at least one person with Life Support experience and one with Survival Equipment experience.

At some bases, the quantity of 7-levels with Survival Equipment or Life Support experience was limited. As a result, in a few cases, 7-level participants contributed to both task panels and a focus group. In addition, at a few bases, civilians participated in the discussion because they were viewed as having relevant 7- and 9-level SME experience and expertise to contribute to the panel.

Coding the Qualitative Comments from Our Discussions

Using the information obtained from these discussions, we sought to understand the frequency of certain viewpoints among our participants and identify which topics or ideas tended to be identified repeatedly across multiple groups as problems or solutions. Identifying the frequency of views gave us insight into which topics were of greatest concern to participants, which ideas were most obvious to participants, and which views were most widely shared. This type of frequency data helps to determine which types of comments are single anecdotes or one-off concerns versus systematic views representing themes, commonalities, and patterns of problems that should not be ignored.[84]

Put another way, comments and views that are shown to be shared by multiple individuals in a career field who sit in positions where they have a direct view of the topic of interest in their own workplace can be especially useful quantifiable data on which to base policy decisions. In essence, the qualitative information from our discussions can be quantified and treated as evidence that SMEs in the field are thinking similarly about certain issues. We therefore included

[84] Because we did not randomly sample personnel, these frequencies cannot be assumed to be representative of the frequencies of the viewpoints across the entire career field. But what they can show us are issues that come up repeatedly when talking to a subset of the workforce, including many who have served at multiple locations across the Air Force over their careers. Our participants, while not random, included many personnel who had been in the career field for many years and who had served at a variety of locations. In addition, the bases we selected included those where a sizeable portion of the AFE workforce are stationed and included personnel serving the core set of MAJCOMs, types of aircrew, and MDS types served by AFE. This way, although we cannot with confidence say that the topmost frequent comments in our groups are also the topmost frequent comment that would occur in the entire population, we can say with confidence that topics that were raised frequently are held by multiple people in at least a sizeable subset of the population. We caution against an overemphasis on the ordering of the comments and instead suggest attending to the general findings that some topics came up quite often in our subset of participants. For those that came up far less often in our sample, it is possible that they would come up more frequently in other groups that were not represented in our sample. For that reason, we cannot definitively conclude that infrequently mentioned comments are less relevant to attend to than those mentioned more frequently.

figures throughout our report illustrating the relative frequency with which certain topics were raised by the participants. Collectively, this information has contributed to the findings and recommendations described in the main body of this report. In the following appendixes, we describe how we analyzed this range of information.

Our interviews, focus groups, and task panel discussions all generated a wealth of qualitative data. Discussions ranged in length, but most focus group or interview discussions were about 90 minutes, and most task panels included around two and a half hours of discussion. To the extent possible, we took transcription-level notes during the discussions; however, many discussions were transcribed at a later date from audio recordings.

To analyze this wealth of data, we coded the comments that people made by sorting them according to topics or themes. The goals of this analysis included

- establishing a sense of the frequency with which a comment or sentiment was repeated across locations, experience levels, and MDS groupings
- identifying quotes to provide examples and clarify the concepts
- providing a complete accounting of the details and ideas discussed.

We developed our coding rubric through an iterative process. The process started with an initial list of either frequent or important comments that we remembered hearing mentioned during the discussions. Following that, we read through discussion transcripts and added, revised, and further clarified codes using additional comments or points we noticed. Once an initial list of comment categories was identified, five of us test-coded the same focus group transcript using the initial draft of the codebook. We then discussed the coding discrepancies that emerged and revised the code book to address them.

To estimate the level of agreement between coders, we double-coded four focus group transcripts. We used this information to calculate two agreement ratios; the first serves as a more lenient estimate of agreement and the second is more conservative. For the more lenient agreement ratios, we consider agreement as having occurred in two ways: Either both coders coded a topic as being mentioned or both did not code a topic as being mentioned. We then counted the number of times in each transcript that the raters' codes agreed in this way (i.e., instances in which the two coders made the same decision to either apply or not apply a given code) and then divided that by the total number of codes in our coding list (i.e., 86 codes). This gave us an overall percentage agreement for each transcript. Averaging these ratios across the four transcripts, we got an inter-coder agreement ratio of 0.92.

To estimate agreement more conservatively, we focused only on codes that were applied to a given discussion by at least one coder. That is, we divided the number of codes that both coders agreed on in a given transcript by the total number of codes that at least one coder applied to that transcript. Averaging these ratios across the four transcripts, we got an average inter-coder agreement ratio of 0.78.

Appendix B. Task Panel Findings

Analysis of the task panel forms provides insights into workforce SMEs' views of proficiency, training, and task difficulty at the bases we visited. The figures in this appendix represent task panel form responses from 36 AFE service members gathered across the eight bases we visited. Each cell summarizes participant responses to questions at each base for each section of the task list.

Proficiency

Going through the task list, participants were asked if there is a proficiency issue with each task. Respondents could answer yes, no, or not applicable (if the task was not performed at their current base). The numbers in each cell in Table B.1 represent the total number of yes responses divided by the sum of yes and no responses for each section at each base. For example, at Travis Air Force Base, five individuals completed the task list form. For example, section A in Table B.1 contains 76 tasks. Of the 380 responses, we received 84 yeses, 69 nos, and 227 not applicables. Eighty-four divided by 153 equals 0.55. So participants there indicated proficiency

Table B.1. Proportion of Tasks in Each Task Subsection Performed That Have Proficiency Problems, by Base

	Travis	Sheppard	DM	Hurlburt	Robbins	Barksdale	Langley	Ft. Wayne
A. Parachute, Drogue, Deceleration & Harnesses Maintenance	0.55	0.21	0.59	0.23	0.58	0.42	0.26	0.61
B. Flotation Devices	0.25	0.08	0.21	0.02	0.27	0.52	0.09	0.55
C. Helmet, Optical Accessory, Oxygen and Breathing Equipment Maintenance	0.10	0.05	0.09	0.06	0.31	0.50	0.12	0.48
D. Weapon, Ammunition, Pyrotechnic and Explosive Device Maintenance	0.29	0.00	0.02	0.14	0.20	0.56	0.05	0.63
E. Electronic Communication Equipment and Signaling Device Maintenance	0.39	0.00	0.19	0.22	0.55	0.64	0.15	0.68
F. ACCA & ACDE	0.57	n/a	0.41	0.59	0.50	0.84	0.37	0.80
G. Aircraft Cover, Soundproofing, Upholstery, Thermal Curtain, Cargo Net, and Sewing Machine Maintenance	0.93	0.56	0.96	0.75	0.82	0.82	0.28	0.38
H. AFE Maintenance	0.44	0.00	0.05	0.05	0.21	0.58	0.12	0.38
I. Training Activities	0.59	0.00	0.26	0.23	0.55	0.81	0.06	0.53
J. Management and Supervision	0.60	0.01	0.24	0.03	0.42	0.69	0.10	0.41

NOTE: Color coding ranks the values according to whether they are closer to 1 (red) or 0 (green), with 1 meaning that participants reported proficiency problems with 100 percent of the tasks performed at their base and 0 meaning no proficiency problems.

problems with 55 percent of the tasks associated with parachute, drogue, deceleration, and harness maintenance performed at their base. Table B.1 shows the proportion of the tasks that respondents identified as being performed at the base and having a proficiency problem.

At five of eight bases, the tasks identified as having the most proficiency issues are associated with aircraft covers, soundproofing, upholstery, thermal curtains, cargo netting, and sewing machine maintenance (section G in Table B.1). This finding echoes the concerns expressed throughout our focus groups, during which participants explained that sewing skills have all but evaporated from the career field. Thus, it is not surprising that tasks requiring fabrication and sewing expertise were rated most prone to proficiency issues by the majority of bases we visited. One task panel participant said:

> Sewing has become a specialty thing. It used to be taught better and it has fallen out of favor.

Respondents from the remaining three bases indicated that their bases struggle most performing tasks associated with ACCA and ACDE activities (section F). These findings also support the claims of many focus group participants who highlighted the struggles of working with aircrew in chemical defense procedures.

> We don't know the chemicals, and we've never really had the training to actually do it. So if the aircrew go through a chemical environment, and we have to decontaminate them, it would take us a very long time because we've only done [this task in] training. There is a part where you are supposed to pat them down with stuff, [but] we just simulate it [in training].

Participants also frequently flagged parachutes, radios, training, and leadership tasks as being prone to lower proficiency. These data support concerns we heard from participants throughout our focus groups.

As shown in Table B.2, the responses were remarkably consistent across experience levels. Relatively equal proportions of 5-, 7-, and 9-level airmen reported proficiency issues for each section of the task list.

Table B.2. Proportion of Tasks in Each Task Subsection Performed That Have Proficiency Problems, by Experience Level

	5-levels	7-levels	9-levels
A. Parachute, Drogue, Deceleration & Harnesses Maintenance	0.42	0.51	0.48
B. Flotation Devices	0.33	0.26	0.15
C. Helmet, Optical Accessory, Oxygen and Breathing Equipment Maintenance	0.15	0.23	0.20
D. Weapon, Ammunition, Pyrotechnic and Explosive Device Maintenance	0.28	0.29	0.15
E. Electronic Communication Equipment and Signaling Device Maintenance	0.35	0.34	0.39
F. ACCA & ACDE	0.52	0.58	0.79
G. Aircraft Cover, Soundproofing, Upholstery, Thermal Curtain, Cargo Net, and Sewing Machine Maintenance	0.67	0.83	0.94
H. AFE Maintenance	0.22	0.30	0.22
I. Training Activities	0.48	0.40	0.75
J. Management and Supervision	0.30	0.37	0.48

NOTE: Color coding ranks the values from low to high in each column. The lowest value is dark green, and the highest dark red.

We also examined proficiency responses in absolute terms rather than aggregating into proportions. These figures, shown in Table B.3, demonstrate nuances in response data that give further context to the heat maps shown in Table B.2.

Table B.3. Proficiency Responses in Absolute Terms, by Air Force Base

	Travis	Sheppard	DM	Hurlburt	Robbins	Barksdale	Langley	Ft. Wayne
Number of tasks flagged for proficiency issues								
Average	103	8	41	19	43	126	60	142
Range	133	14	65	40	43	175	66	210
Standard deviation	60	6	28	15	19	81	31	111
Number of tasks performed at that base (out of 420)								
Average	206	116	169	103	115	207	282	291
Range	143	72	197	106	152	156	156	231
Standard deviation	59	33	87	41	69	67	71	129
Percentage of total tasks performed at that base								
Average	49	28	40	25	27	49	67	69
Range	34	17	47	25	36	37	37	55
Standard Deviation	15	8	21	10	16	16	17	31
Percentage of proficiency issues among tasks performed at that base								
Average	47	8	26	16	50	60	21	45
Range	39	12	32	32	61	71	28	33
Standard deviation	18	5	15	12	13	28	11	17

The statistics in Table B.3 represent the average survey response at each base. We calculated the averages by summing all the responses from each base, and then dividing by the number of participants at that base. By examining the data in this fashion and comparing with the ratios displayed earlier, the variability of the responses is more pronounced. First, the absolute number of tasks considered to have proficiency issues ranged drastically, from as few as eight tasks at Sheppard or 19 at Hurlburt to as many as an average of 142 at Ft. Wayne. There was also a wide variability in data received at each base. Participants' responses routinely varied by about 100 tasks when asked about how many tasks are performed at their base. The percentage of those tasks that presented proficiency issues also varied widely within each base.

We attempted to understand this variation by examining the data along experience levels instead of by bases, as shown in Table B.4.

Table B.4. Proficiency Responses in Absolute Terms, by Experience Level

	5-Levels	7-Levels	9-Levels
Number of tasks flagged for proficiency issues			
Average	40	71	29
Range	116	220	42
Standard deviation	40	61	30
Number of tasks performed at that base (out of 420)			
Average	117	182	109
Range	230	242	84
Standard deviation	65	69	59
Percentage of total tasks performed at that base			
Average	28	43	26
Range	55	58	20
Standard Deviation	16	17	14
Percentage of proficiency issues among tasks performed at that base			
Average	40	33	23
Range	99	90	21
Standard deviation	31	26	15

When looking at the responses through this paradigm, 7-levels appear to believe that AFE at their base is responsible for more tasks and identify more proficiency issues in absolute terms but identify fewer proficiency issues as a percentage of the base's total responsibilities than 5-levels, on average. Nine-levels appear to believe that AFE at their base is responsible for fewer tasks and identify fewer proficiency issues in both absolute terms and as a percentage of their total responsibilities than 5- or 7- levels, on average. There do not appear to be any dramatic differences in the variability of responses based on experience levels.

We also examined whether there were any differences in the responses from those who work at multi-MDS bases compared with single-MDS bases (Table B.5).

Table B.5. Proficiency Responses in Absolute Terms Across Tasks in Each Subsection, by Base Type

	Single MDS	Multi-MDS
Number of tasks flagged for proficiency issues		
Average	93	54
Range	124	79
Standard deviation	61	34
Number of tasks performed at that base (out of 420)		
Average	224	159
Range	174	149
Standard Deviation	84	62
Percentage of total tasks performed at that base		
Average	53	38
Range	41	35
Standard deviation	20	15
Percentage of proficiency issues among tasks performed at that base		
Average	44	30
Range	48	34
Standard deviation	17	15

Responses from bases serving a single MDS grouping contained a higher number of tasks flagged for proficiency issues than multi-MDS grouping bases. Respondents from single MDS grouping bases also indicated that they were responsible for more tasks than their multi-MDS counterparts, on average. Interestingly, the variability of responses was more pronounced at single versus multi-MDS bases.

Difficulty

Participants were also asked to describe the difficulty of each task by rating each on a 1–5 scale, with 1 representing “very easy” and 5 representing “very difficult.” The average ratings of tasks within each section at each base are shown in Table B.6. If participants indicated that a specific task was not performed at their current duty station, their responses were omitted from the data.

Table B.6. Mean Task Difficulty Ratings Across Tasks in Each Subsection, by Base

	Travis	Sheppard	DM	Hurlburt	Robbins	Barksdale	Langley	Ft. Wayne
A. Parachute, Drogue, Deceleration & Harnesses Maintenance	2.29	2.07	2.32	2.09	2.48	2.35	2.50	2.88
B. Flotation Devices	2.06	2.09	2.23	1.89	2.26	2.06	2.76	2.04
C. Helmet, Optical Accessory, Oxygen and Breathing Equipment Maintenance	1.28	1.76	1.52	1.32	1.72	1.74	1.41	1.77
D. Weapon, Ammunition, Pyrotechnic and Explosive Device Maintenance	1.43	1.43	1.78	1.68	2.38	1.98	1.70	1.84
E. Electronic Communication Equipment and Signaling Device Maintenance	1.67	1.54	1.48	1.86	1.90	1.96	2.04	1.96
F. ACCA & ACDE	2.06	n/a	2.42	2.25	1.94	2.46	2.81	2.63
G. Aircraft Cover, Soundproofing, Upholstery, Thermal Curtain, Cargo Net, and Sewing Machine Maintenance	2.30	2.47	3.16	2.86	3.34	2.89	2.41	2.48
H. AFE Maintenance	1.70	1.58	1.99	1.56	1.88	2.10	2.33	1.99
I. Training Activities	1.85	1.75	2.17	2.00	3.15	2.25	2.46	2.37
J. Management and Supervision	1.71	1.91	2.26	1.75	2.63	2.01	2.55	2.22

NOTE: Color coding ranks the values across the chart from low to high. The lowest value is dark green, and the highest dark red.

At six of the eight bases, participants indicated that sewing, fabrication, and sewing machine maintenance tasks (section G) were the most difficult tasks. This is in line with responses from task panel participants about proficiency issues (detailed in the previous section) and information gleaned during focus groups. One of the remaining two bases indicated that ACCA and ACDE (section F) are the most difficult collection of tasks, while participants from the other bases responded that parachute maintenance (section A) is the most challenging:

> Almost all of our airmen are 3-levels. We upgrade them to 5-level, and they'll almost automatically move out the door. But there's a requirement, once they learn parachutes, to stay current on a parachute, they have to pack it every six months. And it has to be annotated in a TBA [Training Business Area]. But once they leave out the door, they don't come back to pack it. We're training people to pack a parachute, and they're leaving, and not staying current.

Across all bases, respondents indicated that tasks involving parachutes, flotation devices, chemical warfare defense, training, and management were moderately or very difficult. Participants did not indicate that tasks in sections C, D, E, or H were particularly difficult.

As with responses to the proficiency question, perspectives about the most difficult tasks were consistent across experience levels, with all skill levels agreeing that tasks associated with sewing, fabrication, and sewing machine maintenance (section G) were the most difficult (Table B.7). Participants at all skill levels also agreed that helmet, optical accessory, and oxygen and breathing equipment maintenance (section C) involved the least difficult tasks.

Table B.7. Mean Task Difficulty Ratings Across Tasks in Each Subsection, by Experience Level

	5-levels	7-levels	9-levels
A. Parachute, Drogue, Deceleration & Harnesses Maintenance	2.44	2.22	2.50
B. Flotation Devices	2.28	2.03	2.20
C. Helmet, Optical Accessory, Oxygen and Breathing Equipment Maintenance	1.83	1.39	1.56
D. Weapon, Ammunition, Pyrotechnic and Explosive Device Maintenance	2.34	1.50	2.27
E. Electronic Communication Equipment and Signaling Device Maintenance	2.51	1.49	2.14
F. ACCA & ACDE	2.38	2.12	2.23
G. Aircraft Cover, Soundproofing, Upholstery, Thermal Curtain, Cargo Net, and Sewing Machine Maintenance	3.00	2.43	3.72
H. AFE Maintenance	2.19	1.67	2.10
I. Training Activities	2.80	2.06	3.00
J. Management and Supervision	2.69	1.88	2.73

NOTE: Color coding ranks the values across the chart from low to high. The lowest value is dark green, and the highest dark red.

Training

Panel participants were also asked the question, "How well trained are AFE at this task?" Participant responses were recorded on a 1–5 scale, with 1 representing "very poorly trained" and 5 indicating "very well trained." The average ratings of tasks within each section at each base are shown in Table B.8. If participants indicated that a specific task was not performed at their current duty station, their responses were omitted from the data.

Participants from the majority of bases indicated that they are least well trained to complete chemical defense and sewing and construction tasks (sections F and G). These responses echo what we heard in many focus groups:

> I just went through chutes, and I did training. At the 2b level,[85] it's really just going over everything again. I just got signed off; I didn't even touch it. If I was

[85] According to the CFETP, personnel cannot be signed off as proficient on a task unless they are at the "go" level—the 3c level. In this example, the participant is assuming that only the 2b level was required for sign-off. This is a misconception that seemed to occur with multiple participants. We suggest that the career field work to address this inconsistency in perception about the required minimum level for sign-off.

> told to sew, I guess I could get the machine running and start stuff, but I wouldn't really want to use any equipment that I sewed on. Nobody really taught me it. I don't even know where to go to look for certain types of seams and sewing stuff. We only have like two or three people at our shop that are that good at sewing.

Respondents indicated that they felt most prepared to complete tasks from sections C and E.

Table B.8. Mean Task Preparedness Ratings Across Tasks in Each Subsection, by Base

	Travis	Sheppard	DM	Hurlburt	Robbins	Barksdale	Langley	Ft. Wayne
A. Parachute, Drogue, Deceleration & Harnesses Maintenance	2.38	4.04	2.55	3.11	2.49	2.96	2.95	3.70
B. Flotation Devices	3.26	3.91	3.37	3.11	2.94	2.81	3.16	3.85
C. Helmet, Optical Accessory, Oxygen and Breathing Equipment Maintenance	2.91	4.12	3.88	3.90	3.11	2.62	3.31	3.77
D. Weapon, Ammunition, Pyrotechnic and Explosive Device Maintenance	2.77	4.17	3.70	3.21	2.16	2.53	2.81	3.67
E. Electronic Communication Equipment and Signaling Device Maintenance	2.87	4.23	3.74	3.59	2.71	2.22	2.96	3.59
F. ACCA & ACDE	2.14	n/a	3.24	2.77	2.82	1.74	1.56	3.40
G. Aircraft Cover, Soundproofing, Upholstery, Thermal Curtain, Cargo Net, and Sewing Machine Maintenance	1.61	2.67	1.74	3.43	1.36	1.61	1.89	3.39
H. AFE Maintenance	2.65	4.25	3.63	4.27	3.05	2.41	3.08	3.65
I. Training Activities	2.59	4.92	3.56	4.44	2.61	2.18	3.02	3.18
J. Management and Supervision	2.58	4.77	3.59	4.43	2.64	2.32	2.64	3.23

NOTE: Color coding ranks the values across the chart from low to high. The lowest values are red, and the highest values are green.

Respondents across all bases indicated that they were relatively well trained to complete tasks dealing with helmet, optical, and oxygen and breathing systems and AFE maintenance (sections C and H). The results in Table B.9 demonstrate a high level of agreement across experience levels. Five-, 7- and 9-level personnel responded similarly, indicating that the career field is least well trained to address the tasks in section G and most prepared to complete the tasks in section C.

Table B.9. Mean Task Preparedness Ratings Across Tasks in Each Subsection, by Experience Level

	5-levels	7-levels	9-levels
A. Parachute, Drogue, Deceleration & Harnesses Maintenance	2.98	2.69	2.57
B. Flotation Devices	3.38	3.05	2.76
C. Helmet, Optical Accessory, Oxygen and Breathing Equipment Maintenance	3.87	3.21	2.76
D. Weapon, Ammunition, Pyrotechnic and Explosive Device Maintenance	3.27	2.87	2.24
E. Electronic Communication Equipment and Signaling Device Maintenance	3.17	3.01	2.29
F. ACCA & ACDE	2.85	2.24	2.06
G. Aircraft Cover, Soundproofing, Upholstery, Thermal Curtain, Cargo Net, and Sewing Machine Maintenance	2.20	1.87	1.13
H. AFE Maintenance	3.53	2.91	2.49
I. Training Activities	3.16	3.02	1.85
J. Management and Supervision	3.39	3.03	2.20

NOTE: Color coding ranks the values across the chart from low to high. The lowest values are red, and the highest values are green.

Reasons for Alarm

Rows A, F, and G scored as the three tasks groups with the most proficiency issues across all bases we visited. They also scored as the three most-difficult sections and the three sections that AFE personnel felt least well trained to complete. These consistently poor ratings (on proficiency issues, difficulty, and task preparedness) supports a conclusion that meaningful proficiency issues exist in performing parachute, chemical defense, and sewing-related tasks. In addition, these conclusions are consistent with testimony of numerous individuals who participated in focus groups.

Comparison to 2017 Occupational Analysis Review

The 2017 AFE OAR used a similar task list survey to gain insights into which tasks may be potentially overtrained or undertrained. Its methodology asked participants to answer two questions on each task, recording responses as inputs on a seven-point scale. The responses to

these questions were then used to calculate two metrics for each task: training emphasis and task learning difficulty. *Training emphasis* captures the "degree of emphasis that should be placed on each task for initial-skills training" (AETC Occupational Analysis Division, 2017, p. 39). *Task learning difficulty* represents the "level of difficulty to learn to perform a task satisfactorily" (p. 39). The Occupational Analysis Division calculates the mean responses for each task and compares them with a benchmark. Depending on where the metrics fall in comparison to the benchmark, that task may be labeled as potentially undertrained or overtrained. In 2017, the Occupational Analysis Division labeled the tasks listed in Table B.10 as potentially over- and undertrained.

Table B.10. Select Results from the AETC Occupational Analysis Division 2017 Survey

Potentially Overtrained		Potentially Undertrained	
A0019	Darn or patch drogue parachute system canopies	**C0117**	Customize breathing equipment
A0032	Inspect drogue parachute systems	**C0142**	Maintain protective helmets
A0060	Remove, replace, or install emergency oxygen cylinders	**E0203**	Program Survival Radios
A0068	Repair or construct seams on aircrew flight equipment (AFE)	**F0210**	Assemble or disassemble ACCAs
A0072	Rig drogue parachutes	**H0300**	Demonstrate use of flight equipment
B0104	Remove, replace, or install flotation test fixture components or accessories		
C0149	Perform daily-use inspections on combined aircrew system testers (CASTs)		
D0180	Remove, replace, or install ammunition or pyrotechnics in survival kits or vests		
G0236	Assemble or disassemble sewing machine components or accessories		
G0246	Fabricate aircraft fabric item patches, such as aircraft blowout or inspection hole patches		
G0265	Perform preventative maintenance on sewing machines		
H0284	Assemble or disassemble survival kits		
H0308	Inspect anti-G garments		
J0396	Evaluate maintenance or utilization of equipment, tools, parts, supplies, or workspace		

	Classification supported by RAND work		Classification not supported by RAND work

SOURCE: AETC Occupational Analysis Division, 2017.

Our findings agree with many of the recommendations from the 2017 OAR but disagree in a few meaningful ways. The data we gathered support the OAR's findings that tasks from section

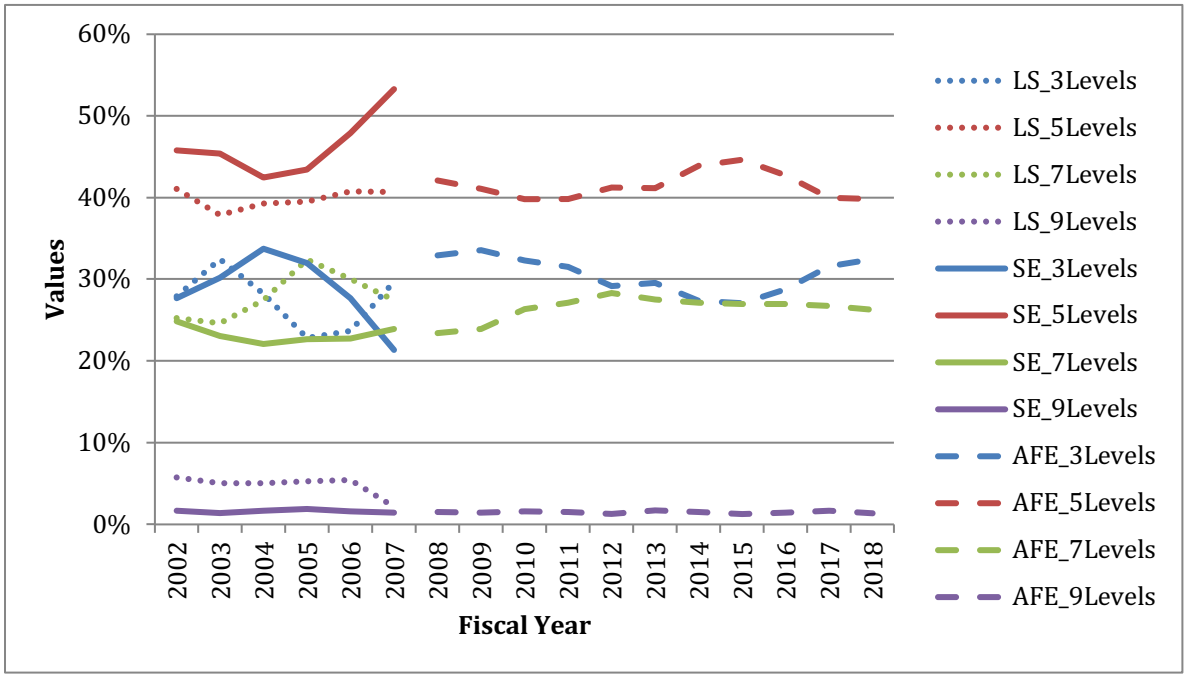
B, C, and D may be overtrained. Our participants labeled these tasks largely as tasks that are not unusually difficult and that they feel they are prepared to complete. We disagree that tasks from sections A, G, and H should be seen as overtrained. Our participants indicated that these are the most challenging tasks and those that they are least well trained to complete.

Appendix C. Exploring Skill-Level Changes over Time

Monthly active enlisted personnel extract files ranging from 2000 to 2018 were used to generate Figure C.1 and Figure 5.1 in Chapter 5. The files are more commonly referred to as AAE. The AAE files are monthly extracts from the Military Personnel Data System. An AFPC data analyst removed all personally identifiable information and created a new variable named RAND_ID to uniquely identify every military member in the AAE files.

Figure C.1 shows a breakout of the proportions of people by skill level across fiscal years before and after the merge. The 5-level proportion decreased, while the 3-level and 7-level proportions increased after the merge.

Figure C.1. Proportion of Personnel at Each Skill Level



Appendix D. Comments on the Reserve and Guard Impacts on Proficiency

As mentioned at the outset of this report, the results focus primarily on RegAF personnel. However, during our discussion groups, comments pertaining to proficiency of the reserve and guard arose from time to time. It is important to note that the numbers of participants with experience working with the guard and reservists was small, the comments were few, and we do not have any additional information to support or refute them. This appendix captures those comments.

Said by a RegAF participant about guard and reserve proficiency:

> One of the reasons that we struggle to maintain standards is we can't discipline like we would discipline an active-duty person. If I have an airman who keeps messing up, who is not meeting standards, I can write paperwork. LOCs [letters of counseling]. I can take those actions. I can't do that with [reservists]. I can have documentation and TBA. But at the end of the day, the only answer to that is to keep retraining. I can only keep retraining someone so many times before it's like . . . they're just not getting this.
>
> I think guard training is substandard. TFI [Total Force Integration] and weekend people. We stay late when they have guard folks who stay to do incentive flying, but they don't really know how to do fit. I also had to do inspection on parachutes. They didn't know how to do that. Only one out of three.
>
> I think it's more lax on their side of the fence. There is less accountability. When they're imbedded with active duty, they can always rely on the active folks to do stuff. It can come off as you're untouchable because you're guard.
>
> We don't know what they're responsible for and where we can enforce certain things on them. They also seem to promote faster.
>
> I don't think TFIs work the way they were intended to. We don't work together; we just do their work.
>
> A lot of people think working in the guard is the golden ticket because they get all the benefits with less costs. A lot of guard folks think the active-duty folks will take the lead and pull most of the weight, and just be there.

Participants also talked about problems resulting from having two separate chains of command:

> You can give your input, but we have little leniency to enforce on the guard. There are inconsistencies between how guard and active folks are treated.
>
> ***
>
> At [our base], the biggest difference, we owned the iron. So, we owned the program and guard helped us out. Here, guard owns the program, which is not a problem, but they've got five open slots they need to fill, and they haven't filled

them, and I've been here over a year. Then they have technician slots, which they come into a problem going TDY because they can't go TDY unless it's over 30 days, so active duty has to take the brunt of that. Our dwell times are way different than the guard. We are on a shorter dwell, so we are going out the door more, and we are running the programs; but the guard is supposed to be running the program because they own the iron. That's why it's barely 50 percent [proficiency].

***

And guard supports us, and the technicians, they can go on TDY if the active duty don't want to. But since those are support, so we don't necessarily expect them to go. Here, we need the guard to go on them so we don't kill our guys. We had a guy just decide he wanted to take a week off, and, since he is a technician, he doesn't have to tell that to our chain of command, who has to pick up their workload because we can't stop the flying. The guard guys and even the AGR [active guard] guys, something comes up, their commander pulls them because not only do we work for the OSS here, we are two different OSSs, two different groups, do you think we talk to each other, no. We don't know what they've got going on there, and they don't know what we've got going on, but anytime there is a problem going on with the programs, active duty, we get hit, so that's why we took the lead.

***

To truly do a TFI situation, you'd also need to combine leadership. This is almost impossible. Instead of [an OSS] and a [separate organization for the guard], it needs to be together. Everyone is held to the same standard. You're a guard active duty, but we can discipline each other. We can hold each other to the same standard without having to go outside my chain of command, and they'll try to defend their people. I get it when a squadron commander is trying to keep their people out of . . . but in the career field, we're supposed to be TFI. The gear we have itself doesn't differentiate between [the OSS] and [the guard organization]. You don't have a TO for a [the OSS] person and then [a TO for the guard] person. There's one TO for how something should be done. They shouldn't have two different standards based on who you belong to.

Appendix E. Improving Unit-Level Trend Analysis

At each of the bases we visited, we requested additional documentation on the proficiency problems. Five of the bases we visited provided us with recent trend analysis reports—essentially summaries of the results of inspections of equipment that are routinely performed to explore whether AFE personnel are performing tasks correctly and to standard. We requested the trend analyses specifically to see what additional information about the proficiency problems might be gleaned from them. Our overarching conclusion, however, was that the trend-analysis format did not provide us with the type of analytical information we could use to explore proficiency in this study. Instead, what we did learn was that better trend-analysis data could be collected that would be helpful for future efforts and that more guidance on how to analyze the trend data is critical to ensuring that the data are most informative (and not potentially misleading) for their intended audience.

These trend-analysis reports are currently intended for use by the local unit commander and focus on the number of inspections performed and number of discrepancies (i.e., steps or tasks that are performed incorrectly or differently than the standard) observed during those inspections. Trends in the discrepancies, if found, are noted in the narrative portions of the reports. However, these are high-level summaries and do not provide detailed insights on the data collected to produce the results.

With our background in statistics and data analysis, it was apparent to us that the format used in four of the five reports could lead to an incorrect interpretation of the findings, especially when presented to someone who lacks that background and lacks a deep understanding of AFE processes and procedures. For example, one trend-analysis report states that six of the 52 inspections for an equipment category were quality-control inspected, and three discrepancies were discovered. The example report tracks the percentage of quality-control inspections as the metric, which, in this case, totaled 12 percent, which met the standard.

This is typical of the reports reviewed; the metric tracked is the percentage of quality-control inspections performed. However, to a statistician or data analyst, seeing 50 percent of the sample taken (three of six) with discrepancies stands out as a data point worth further explanation and exploration. Other examples in the reports examined had results in which statistically large percentages of samples showed discrepancies and could lead to false conclusions on the validity of the trend-analysis reports.

What is missing, on further review, is the number of tasks required to inspect the equipment as a multiplier. In the example just presented, we can hypothesize that the equipment inspection has 50 associated tasks. This really means the six quality-control inspections had three discrepancies out of 300 tasks (6 x 50) for a 1 percent error rate. This is a much smaller incidence of discrepancies based on the sample taken. In fact, this method is used as an example

in AFI 11-301 (2017b, pp. 91–92) of a method of using data to identify trends, as shown in Figure E.1. It is not a prescribed or required format, just an example. It is up to local units to determine their own trend-analysis methods. Of the trend-analysis data received from the five bases, only one uses this format in their report. The information shows at a glance the error rate but no details on where those errors occur within the equipment type categories.

Figure E.1. Air Force's Example Format for Trend Analysis

A3.2. Quality Assurance may include data from a single source or multiple sources. The program is intended to quickly identify and eradicate negative trends within AFE and outside agencies that provide equipment and services for AFE. The following is a sample of the types of formulas that may be used to calculate and identify trends:

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A3.2.1. QA Data Points * Number of Items QCId = QA Point Value

A3.2.2. **(Number of QA Errors / QA Point Value)** * 100 = Error percent

Figure A3.3. Sample Metric of a Quality Assurance Inspection.

EQUIPMENT TYPE	ITEM VALUE	NUMBER OF QCI's	NUMBER OF ERRORS	POINT VALUE	MONTHLY ERROR PERCENTAGE
Helmet & Mask	54	4	9	216	4.17
Harness	20	4	3	80	3.75
Anti G-Garments	21	8	6	168	3.57
Survival Vest	22	4	1	88	1.14
Anti Exposure Suit	20	8	4	160	2.50
Survival Kit	25	2	5	50	10.00
TOTAL	162	30	28	4860	0.5761

SOURCE: AFI 11-301, 2017b.

But this example with three discrepancies out of 300 inspected tasks (a 1 percent error rate) presents two potential outcomes:

1. If those three discrepancies ***are not associated*** with the same tasks or a closely aligned task grouping, it is likely no trend exists, but,
2. if those three errors ***are based on the same task or closely aligned task grouping***, this highlights a potential area for further analysis and examination of causes.

Moreover, it is not possible to determine from the high-level summary reports which of these outcomes is occurring. Hopefully, this level of analysis is part of the process to create the report. However, this is not clear from the data we received. It also is worth noting that none of the data presented by charts in the reports show trend data. The reports show monthly discrepancies and only in the narrative material is it possible to get an indication of month-to-month trends. Some of these narratives have described individual instances of discrepancies or observations of below-standard performance that inspectors have highlighted for correction during the previous month, but no information is provided on whether these were trends based on month-to-month occurrences.

These reports do show that AFE units are identifying, fixing, and correcting deficiencies based on observations within any given month in question, but they provide no insight on month-to-month trends. This is not to say that this type of trend analysis is not being done, it just was not provided to the research team. To illustrate further, there are instances of data charts showing double-digit discrepancies in a category, but no trends for the month. We did not have the data to determine if outcome 1 or 2 above applies, nor if the total number of discrepancies identified made up 10 percent or 0.001 percent of the tasks inspected.

A trend report showing the error or discrepancy rate over time (e.g., the latest month plus the previous three) to get a sense of how performance is trending would have been beneficial. A one-month snapshot does not provide this information. This type of reporting may already be in other data analysis and reports generated by local AFE shops, but it is not obvious from the data we received.

Finally, the trend analysis reports that we reviewed showed data only on equipment maintenance and inspection tasks. There were no data provided to us on training or knowledge deficiencies, which could be beneficial in building a picture of the overall health of the AFE career field in general and in highlighting areas for emphasis. Training and knowledge are linked to performance. We observed retraining as a solution for trends in some reports and mention of no-notice technician training program inspections in another. However, we saw no data on the types of training and knowledge activities performed and if there were any deficiencies in those programs. This may not be applicable, but it is worth investigating. As it stands, the trend data received do not do a good job of supporting claims of proficiency challenges in AFE.

We also could not find in any AFE guidance documentation any definition for *trend* or a standard process for identifying and analyzing trends. *Trend* is often used with accompanying words *analysis* and *data* in Air Force instructions and policy letters without explanation or

definition. For example, it appears by itself or in conjunction with *analysis* or *data* 15 times in AFI 11-301 (2017b) as a task or requirement. There appears to be an assumption that everyone is using the same definition or concept about what a trend looks like. But using our review of the five trend analysis reports provided to us, we are fairly certain that is not a good assumption.

Appendix F. Comparison of Number of Tasks in the Aircrew Flight Equipment Career Field to Other Maintenance Career Fields

A common sentiment echoed throughout focus groups and task panels was that the AFE career field is currently responsible for too many tasks. So, we set out to explore this issue further. However, counting tasks from various career fields' OARs reveals that AFE has fewer tasks than similar career fields. For example, AFE is responsible for 420 tasks, whereas aircrew egress systems, a maintenance career field, is responsible for 760 tasks.

Using a count of AFE's tasks from the OAR may not be an appropriate means of determining whether the career field is responsible for too many tasks. Many tasks in AFE's OAR are written broadly and apply to multiple pieces of unique equipment. For example, the assembly and disassembly of cargo, deceleration, drogue, personnel, and personnel recovery parachute systems constitute a total of five tasks according to the OAR. However, AFE OAR survey respondents reported that they are responsible for at least 57 separate parachute systems. Although there may be similarities across some parachute systems, it can nonetheless be argued that the process of assembling and disassembling each system constitutes a discrete task. Furthermore, assembling or disassembling a parachute system requires maintaining additional pieces of equipment, as pointed out by a focus group participant:

> The parachute TO is like a thousand pages. But when you're packing a parachute, it will refer you to about five other TOs. The oxygen bottle has its own TO. A beacon has its own TO. And that's just parachutes.

Similarly, although the OAR counts building up helmets as a single task, AFE is responsible for maintaining at least 12 types of helmets or helmet systems. Furthermore, the way that a particular type of helmet is built may substantially change depending on the MDS for which that helmet will be used:

> Take the basic B-52 helmet. You put that on an F-16, you gotta have a bladder in it. There are different things. Lip lights. Headset. I don't know if Air Force thinks that way, but if they're just thinking, "It's a helmet. Once you know how to do a helmet, you know all helmet"—if they're thinking that way, that's the wrong way to think.

In conclusion, because a single task listed in AFE's OAR may actually pertain to a wide variety of equipment or procedures, a simple count of AFE's tasks may be an inappropriate metric to determine whether the career field is responsible for too many tasks.

Appendix G. Aircrew Flight Equipment Job Description and Entry Requirements

The only ASVAB score requirement for entry into the career field is a 40 on the mechanical subtest. This requirement has remained unchanged since January 31, 2011 (see AFPC, 2019, Attachment 4). The following excerpts describing the AFE career field are drawn from the 2019 Air Force Enlisted Classification Directory (AFPC, 2019, pp. 80–82):

AIRCREW FLIGHT EQUIPMENT CAREER FIELD (1P)
Introduction (Established 31 Jan 08)

The Aircrew Flight Equipment (AFE) field encompasses functions that enhance aircrew performance through the proper equipment integration of the human and the aircraft. Aircrew Flight Equipment personnel issue, fit, repair, and maintain human-side flight equipment such as parachutes, helmets, oxygen equipment, anti-gravity garments, anti-exposure suits, aircrew ocular devices, survival kits, life preservers, rafts, electronic communications, helmet mounted weapons integration devices, and aircrew Chemical, Biological, Radiological, Nuclear (CBRN) equipment. Personnel also instruct aircrew on the proper use and care of aircrew flight equipment under normal, contingency, and CBRN operations. Additionally, this career field maintains, and sets up aircrew contamination control areas (ACCA), and processes aircrew through the ACCA.

CEM Code 1P000
AFSC 1P091, Superintendent
AFSC 1P071, Craftsman
AFSC 1P051, Journeyman
AFSC 1P031, Apprentice
AFSC 1P011, Helper

AIRCREW FLIGHT EQUIPMENT
(Changed 30 Apr 13, Effective 23 Oct 12, Effective 5 Dec 12)

1. Specialty Summary. Manages, performs, and schedules inspections, maintenance, and adjustments of assigned aircrew flight equipment (AFE), aircrew chemical defense equipment (ACDE), and associated supplies, and inventories assets. Prepares, maintains, and monitors AFE operations. Disassembles, assembles, inspects, fabricates, cleans, repairs, and packs aerospace weapon system components such as protective clothing, flotation equipment, emergency evacuation systems, and parachutes. Schedules, supervises, and conducts aircrew chemical defense and aircrew continuation training. Prepares for response to use of chemical, biological, radiological, and nuclear weapons contamination and supervises and conducts contamination control area processing. Related DoD Occupational Subgroup: 186000.

2. Duties and Responsibilities:
2.1. Inspects, maintains, packs and adjusts aircrew flight equipment such as flight helmets, oxygen masks, parachutes, flotation devices, survival kits, helmet mounted devices, aircrew night vision and other ocular systems, anti-G garments, aircrew eye and respiratory protective equipment, chemical biological protective oxygen masks and coveralls, and other types of AFE and aircrew chemical defense systems. Repairs fabric and rubber components, including protective clothing, thermal radiation barriers, flotation equipment, and various parachutes. Evaluates problems and determines feasibility of repair or replacement related to inspecting and repairing fabric, rubber equipment, and parachutes. Evaluates work orders for fabrication of authorized items.

2.2. Installs and removes aircraft-installed AFE. Uses various types of test equipment such as altimeters, oxygen testers, leakage testers, radio testers, and other types of testers to conduct reliability testing on AFE and ACDE. Maintains inspection and accountability documentation on AFE issued to aircrews or prepositioned on aircraft.
2.3. Operates, maintains, and inspects AFE machinery, test equipment, and tools. Performs operator maintenance and service inspections on shop equipment. Stores, handles, uses, and disposes of hazardous waste and materials based on environmental standards.
2.4. Controls, issues, and safeguards aircrew side arms, and ammunition. Maintains applicable weapons qualification. Operates aircrew armories and inspects aircrew side arms as required. Ensures proper safety procedures are followed.
2.5. Requisitions, stores, forecasts, handles, and transports ammunition, aircrew survival pyrotechnic devices, and other explosives such as releases, cutters, and signaling devices.
2.6. Conducts aircrew continuation training; instructs aircrews on equipment use, operation, and capabilities. Conducts aircrew chemical defense equipment training; instructs aircrew on ACDE donning, doffing, and decontaminating procedures. Provides or assists in training aircrew techniques such as evasion procedures, emergency egress, post ejection/bailout descent procedures, combat survival procedures, environmental hazards, and other survival actions.
2.7. Plans, directs, organizes, and evaluates AFE operational aspects such as equipment accountability, personnel reliability, mobility readiness, and other activities necessary to meet operational readiness. Maintains associated databases to ensure equipment accountability. Establishes performance standards, improves work methods, and advises on inspection, repair, and repack of aircrew flight equipment. Ensures serviceability based on required specifications and technical publications. Evaluates problems and determines feasibility of repair or replacement related to inspecting and repairing fabric, rubber equipment, and parachutes.
2.8. Prepares checklists and operating instructions for AFE activities. Develops lesson plan for aircrew training, safety, and other required programs. Assigns, trains, and prepares AFE personnel for deployment. Procures, maintains, stores, and prepares equipment for deployment. Inputs, maintains, and reviews data for status of resources and training system (SORTS). Determines facilities, funding, and mobility of AFE assets to support unit taskings. Develops and submits budget requirements. Requisitions AFE and supplies. Maintains custodial files for accounts such as supply and equipment, munitions, and test, measurement and diagnostic equipment. Obtains assistance from other agencies to support AFE.
2.9. Manages unit and staff agency AFE programs. Provides unit and staff agency assistance to subordinate units to ensure AFE planning and training have been accomplished, and AFE directives are being followed. Analyzes training and deficiencies preventing accomplishment of wartime tasks. Conducts quality assurance inspections to ensure compliance with policies and directives. Identifies and documents equipment and personnel training discrepancies and recommends corrective action. Evaluates and critiques AFE instructors' effectiveness, and ensures presentations are accurate and current. Advises and assists agencies whose functions affect AFE activities. Evaluates data involving equipment development and sustainment and resolves AFE problems. Conducts aircraft mishap safety investigations and analysis where AFE involved.
2.10. Establishes, coordinates, and distributes exposure and contamination control procedures. Monitors associated requirements and procedures. Ensures assigned personnel take safety precautions. Prepares wartime and contingency response plans. Coordinates actions to ensure prompt response to enable and sustain operations in a chemical, biological, radiological, nuclear environment with minimal degradation of combat capability. Coordinates actions to continue or restore vital functions and operations. Prepares AFE annexes, appendices, supplements, and other supporting documents to support operations plans. Serves in survival recovery center; advises leadership on mission impact and recovery activities following an attack; coordinates aircrew contamination control area requirements. Supervises contamination control operations teams.

3. Specialty Qualifications:
3.1. Knowledge. Knowledge is mandatory of: AFE inspection and maintenance procedures; parachute construction; temperature and humidity effects on parachutes and other fabrics; characteristics of rubberized items; solvent, heat, and pressure effects on rubber; proper handling, use, and disposal of hazardous waste, materials, and pyrotechnics; aircrew flight and chemical defense equipment inspections, fitting, and maintenance procedures; supply procedures; principles of contamination control; related technical information, policies, procedures, techniques, and equipment; contingency planning, training, operations, equipment supply procedures, directives and policy; and conducting aircrew continuation and aircrew chemical defense training.
3.2. Education. For entry into this specialty, completion of high school with courses in speech, general science, shop mechanics, and basic computer applications is desirable.

3.3. Training. Completion of a basic AFE apprentice course is mandatory for award of AFSC 1P031.
3.4. Experience. The following experience is mandatory for award of the AFSC indicated: 3.4.1. 1P051. Qualification in and possession of AFSC 1P031 as well as experience in equipment inspections, and instructing aircrews in continuation training and aircrew chemical defense procedures.
3.4.2. 1P071. Qualification in and possession of AFSC 1P051. Also, experience supervising and performing functions such as inspections, quality assurance, specialist training programs, and aircrew instruction.
3.4.3. 1P091. Qualification in and possession of AFSC 1P071. Also, experience managing and directing AFE operations and training functions as well as evaluating, planning, and organizing AFE readiness activities.

3.5. Other. The following qualifications are mandatory as indicated. 3.5.1. For entry into this specialty: 3.5.1.1. Must possess a valid state driver's license to operate government motor vehicles (GMV) in accordance with AFI 24-301,

Vehicle Operations.
3.5.1.2. See Attachment 4 for additional entry requirements.
3.5.1.3. Normal color vision as defined in AFI 48-123, *Medical Examinations and Standards.*
3.5.2. For entry, award, and retention of this specialty: 3.5.2.1. Ability to speak clearly and distinctly.
3.5.2.2. Visual acuity correctable to 20/20.
3.5.2.3. No record of claustrophobia or claustrophobic tendencies.

3.5.3. For award and retention of these AFSCs, must maintain local network access IAW AFI 17-130, *Cybersecurity Program Management* and AFMAN 17-1301, *Computer Security.*
3.5.4. Specialty requires routine access to Secret material or similar environment. For award and retention of AFSCs 1P0XX, completion of a current National Agency Check, Local Agency Checks and Credit (NACLC) according to AFI 31-501, *Personnel Security Program Management.*

NOTE: Award of the 3-skill level without a completed NACLC is authorized provided an interim Secret security clearance has been granted according to AFI 31-501.
3.5.5. For retention of AFSCs 1P0XX, qualification to bear firearms according to AFI 31-117, *Arming and Use of Force by Air Force Personnel*.

Appendix H. Key Air Force Terms and Guidance

The comments that were raised during our discussions with members of the AFE workforce use a number of training-related terms (such as *certification*, *upgrade training*, and *special experience identifier*) that are officially defined in the CFETP and AFI guidance for the career field. We have included these official training-related definitions here for reference. We also include an official definition of MDS and some definitions for several key quality assurance terms for reference. The definitions are lifted verbatim from the Air Force documents cited below.

Key Terms from the CFETP (Department of the Air Force, 2015)

Certification. A formal indication of an individual's ability to perform a task to required standards.

Certifying Official. A person whom the commander assigns to determine an individual's ability to perform a task to required standards.

Continuation Training. Additional training that exceeds requirements with emphasis on present or future duty assignments.

Contract Training. Type 1 training that receives the same priority funding as Air Force directed training. It supports initial groups of instructors, operators, etc., that the Air Force requires for new or modified weapon systems.

Guardian Angel (GA). Weapon system encompassing survival, evasion, resistance, escape (SERE), combat rescue officer (CRO) & pararescue (PJ) personnel.

Initial Skills Training (IST). A formal resident course resulting in the award of a 3-skill level AFSC.

Mobile Training Team (Type 7) (MTT). Technical training conducted at operational locations by a mobile training team.

Occupational Analysis Report (OAR). A detailed report showing the results of an occupational survey of tasks performed within a particular AFS.

On-the-Job Training (OJT). Hands-on, "over-the-shoulder" training conducted to certify personnel in both upgrade (skill level award) and job qualification (position certification training).

Qualification Training (QT). Actual hands-on task performance training designed to qualify an Airman in a specific duty position. This training program occurs both during and after the upgrade training process. It is designed to provide the performance skills/knowledge required to do the job.

Special Tactics (ST). Consists of three different Career Fields (Combat Control, Pararescue, Special Operations Weather).

Specialty Training Standard (STS). An Air Force publication that describes an Air Force Specialty in terms of tasks and knowledge an airman may be expected to perform or to know on the job. It serves as a contract between Air Education and Training Command and the functional user to show which of the overall training requirements for an Air Force Specialty are taught in formal schools, career development courses, and exportable courses.

Career Field Education and Training Plan (CFETP). A CFETP is a comprehensive, multipurpose document covering the entire spectrum of education and training for a career field. It outlines a logical growth plan that includes training resources and is designed to make career field training identifiable, to eliminate duplication, and to ensure this training is budget defensible.

Upgrade Training (UGT). A mixture of mandatory courses, task qualification, and CDCs required for award of the 3-, 5-, 7-, or 9-skill level.

Trainer. A trained and qualified person who teaches personnel to perform specific tasks through OJT methods. Also, equipment that the trainer uses to teach personnel specified tasks.

Utilization and Training Workshop (U&TW). A forum, co-chaired by the AFCFM, Training Pipeline Manager, MAJCOM Air Force Specialty Code (AFSC) functional managers, Subject Matter Experts (SMEs), and AETC training personnel that determines career ladder training requirements.

Weighted Airman Promotion System (WAPS). A United States Air Force program that determines who will be promoted to the ranks of Staff Sergeant (E-5) through Chief Master Sergeant (E-9) and provides feedback score sheets to enlisted members considered for promotion. These score sheets help the individual determine professional development needs.

Special Tactics (ST). Consists of three different Career Fields (Combat Control, Pararescue, Special Operations Weather).

Key Terms and Definitions from AFI-11-301, 2017b

QA— Quality Assurance

QC— Quality Control

QCI— Quality Control Inspection

QI— Quality Inspector

Acceptable Quality Levels (AQL)—An AQL denotes the maximum allowable number of minor findings that a process or product may be charged for the task to be rated "Pass".

In—Process Inspection (IPI)—An additional inspection or verification step at a critical point in the installation, assembly, or reassembly of a system, subsystem or component. These inspections are either TO, MAJCOM, or locally directed and are accomplished by qualified technicians designated by the unit CC via appointment letter, or as determined by applicable MAJCOM/FOA. The term IPI is the same as Critical Point Inspection and/or

Rigger Check as found in various different service manuals and will be the only term used on all inspection sheets.

Major Discrepancy/Finding—A major discrepancy is defined as a condition that would endanger personnel, jeopardize equipment or system reliability, impact safety of flight or warrant discontinuing the process or equipment inspection. Any major discrepancy will result in an automatic inspection failure. All discrepancies will be documented for trends.

Minor Discrepancy/Finding—A minor discrepancy is defined as an unsatisfactory condition that requires repair or correction, but does not endanger personnel, impact safety of flight, jeopardize equipment reliability or warrant discontinuing a process or equipment operation. A minor discrepancy is one that will not affect the operation of the equipment but prevents the equipment from being 100 percent compliant with current directives. All discrepancies will be documented for trends.

Personnel Evaluation (PE)—A PE is an over-the-shoulder (direct or indirect) evaluation of a maintenance action or inspection by an individual or team as part of the Quality Assurance Program or SA program. Use PEs to evaluate job proficiency, degree of training and compliance with TOs. A PE may consist of a full or partial evaluation of the maintenance action or inspection being performed.

Specialty Training Standard (STS)—An AF publication that describes an AFS in terms of tasks and knowledge an Airman in that specialty may be expected to perform or to know on the job. Also identifies the training provided to achieve a 3, 5, or 7 skill level within an enlisted AFS. It further serves as a contract between AETC and the functional user to show which of the overall training requirements for an AFSC are taught in formal schools and correspondence courses.

Task Evaluation (TE)—A TE is an over-the-shoulder direct evaluation of a maintenance action or inspection, from start to finish, by an individual or team who is in upgrade or qualification training and NOT currently task qualified on the task(s). TEs are also utilized during initial upgrade training to ensure the AFE technician is at the CFETP defined "GO" level, and can be task qualified in their TBA ITP record.

Technical Data Violation (TDV)—A TDV is an observation of any person performing maintenance without the proper technical data available, available but not in use or not following the correct sequence of steps (if directed). The technician must have knowledge of all general directives associated with the job prior to performing the task. However, those directives applicable to the task being performed must be present at the job site. Do not document a separate TDV on an individual undergoing a PE, since failure to use technical data automatically results in a "Fail" rating.

Two—Person Concept—Is designed and used throughout all IPIs to ensure both the 1P0X1 flight equipment inspector, and the IPI qualified 1P071, are both present and in constant view of each other during the IPI step. Enforce the Two-Person Concept until the IPI step is complete, at which point the individual flight equipment inspector continues with the inspection without the IPI qualified 1P071 present.

Definition of Mission Design Series from Air Force Instruction 16-401

Mission Design Series (MDS)—The official designation for aerospace vehicles used to represent a specific category of aerospace vehicles for operations, support, and documentation purposes.

Guidance Regarding Quality Assurance from AFI-11-301, 2017b

2.10.2. Ensure at least one fully qualified 1P071 or civilian/contractor equivalent is appointed to fill the NCOIC AFE QA position with authority and visibility over all AFE activities. The AFE QA program will reside and be organizationally aligned to the OSS AFE Flight. **Note**: AFE programs with up to 29 1P0X1s will assign one 1P071 member to execute an effective QA program. AFE programs with 30 or more 1P0X1s assigned will assign up to two 1P071 members to execute and effective QA program. MAJCOMs and ANG/AFE Staff may determine applicability of QA programs for units with seven (7) or less full-time technicians assigned. **Note:** ANG units will delineate and assign NCOIC AFE QA duties as required if no full time QA manpower position is authorized on the UMD. **(T-2)**

2.10.2.1. Ensure the AFES/AFE COR has developed a rotation plan for the NCOIC AFE QA. When possible, appointed NCOIC AFE QA will be a minimum of one year. NCOIC AFE QA at ARC, civil service, and COR locations, do not have any time requirements and will remain assigned to the 4818 series core document of their position. **(T-2)**

2.10.2.2. Designated AFE (1P071 or civilian/contractor equivalent) QI may augment the NCOIC AFE QA, as necessary, in the various AFE activities/sections. **(T-2)**

Description of Special Experience Identifiers from AFI-11-301, 2017a

3.5.2. The following SEIs are considered critical to the development of 1P0 personnel and are closely monitored by the AFES/AFEO/MAJCOM FM to ensure they are awarded/removed when warranted. Award of these SEIs are limited to only those personnel who demonstrate the ability to master the tasks associated with the SEI. Additionally, members must be 100% qualified on all core and duty specific tasks identified on the Minimum Weapons System Duty Tasks list in the 1P0X1 CFETP. MAJCOM FMs will remove these SEIs when the member performs duties outside of the career field in excess of 180 days and/or when the member fails to maintain the minimum qualifications of this AFI. (T-1)

3.5.2.1. SEI 077, AFE Guardian Angel/Special Tactics Support Specialist. Requires (1) a minimum grade of Senior Airman; (2) 12 months of AFE experience working on Guardian Angel/Special Tactics equipment with 3 of the 12 months working in an AFE facility as a 5-skill level or higher; and (3) AFES recommendation. AFEO/AFES will initiate removal of this SEI and ensure removal by the last day of the member's 12th year of service or upon their promotion selection to Master Sergeant (MSgt), whichever occurs first. (T-1)

3.5.2.2. SEI 078, AFE Heavy Aircraft Specialist. Requires (1) a minimum grade of Senior Airman; (2) 12 months of AFE experience working on heavy aircraft (C-5, C-17, C-130, E-3, KC-135, KC-46, MC-12, etc.) with 3 of the 12 months working in an AFE facility as a 5-skill level or higher; and (3) AFES recommendation. AFEO/AFES will initiate removal of this SEI and ensure removal by the last day of the member's 12th year of service or upon their promotion selection to Master Sergeant (MSgt), whichever occurs first. (T-1)

3.5.2.3. SEI 079, AFE Advanced Concept Ejection Seat (ACES) II Ejection Seat Equipment Specialist. Requires (1) a minimum grade of Senior Airman; (2) 12 months of AFE experience working on ACES II Ejection Seat (F-15, F-16, F-22, B-1, B-2, etc.) equipped aircraft with 3 of the 12 months working in an AFE facility as a 5-skill level or higher; and (3) AFES recommendation. AFEO/AFES will initiate removal of this SEI and ensure removal by the last day of the member's 12th year of service or upon their promotion selection to Master Sergeant (MSgt), whichever occurs first. (T-1)

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RAND PROJECT AIR FORCE

The Air Force Aircrew Flight Equipment (AFE) specialty—created in 2008 as a merger of two previously distinct career fields, Aircrew Life Support and Survival Equipment—plays a crucial role in ensuring the safety of aircraft pilots, other aircrew, and special warfare operators via training and by engaging in maintenance, inspection, repair, and adjustment, of aircrew flight equipment, such as flight helmets, parachutes, and safety rafts. However, despite career field and Air Combat Command (ACC) leadership attention, proficiency of airmen in this career field has generally declined.

ACC/Flight Operations Division (A3T) asked RAND Project AIR FORCE to investigate the causes for the decline in AFE proficiency and develop courses of action to mitigate the issue. The effort focused on collecting and analyzing subject-matter experts' viewpoints, insights, and suggestions for addressing the proficiency issues, which were gathered from interviews with a wide range of AFE personnel from eight Air Force bases.

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