



Identifying Key Workplace Stressors Affecting Twentieth Air Force

Analyses Conducted from
December 2012 Through February 2013

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Foreword

In November 2012, the commander of 20th Air Force asked the Chief of Staff of the Air Force for assistance in identifying ways to mitigate concerns about job stress and dissatisfaction among personnel in the intercontinental ballistic missile (ICBM) community. The Chief of Staff asked RAND Project AIR FORCE to take a quick look at these concerns and provide recommendations to the Air Force in 90 days.

This research was conducted between December 2012 and February 2013, with findings and recommendations reported to Air Force leadership soon after. Since that time, the Air Force has addressed many of the concerns expressed in this report, including changes that align with several of the recommendations.

The Air Force is taking steps to better communicate the importance of the nuclear mission to the public and within the Air Force, including implementing a nuclear deterrence operations service medal and planning to establish field operations incentives and leadership development programs. The Air Force is increasing its investment in the nuclear enterprise, with more than \$40 million in fiscal year 2014 funding available for immediate investment and manpower and planned increases in operational and maintenance resources for fiscal year 2015.

In line with the stated need to ensure that the Air Force can continue to recruit and retain highly qualified personnel, the service has implemented an ICBM duty ROTC scholarship and is evaluating other accession and retention incentives. Further, the Air Force elimi-

nated local Personnel Reliability Program policies that inhibited the spirit and intent of the program.

Consistent with our recommendation to conduct a larger survey of the force, the Air Force has recently announced the completion of three in-depth assessments of the ICBM mission that included interviews or surveys with nearly 3,000 personnel across 20th Air Force:

- A commander-directed investigation at Malmstrom Air Force Base provided recommendations for changes that address four main themes among missile operators: reforming organizational culture, empowering crew commanders, improving the quality and purpose of training, and reforming testing and evaluation.
- A force improvement program, an aggressive grass-roots-level assessment aimed at identifying ways to rejuvenate the ICBM mission and improve the work environment, resulted in 350 approved recommendations from the field that address all mission areas—ICBM operations, helicopter operations, maintenance, security forces, and mission support.
- A study of missile operator training and education yielded 35 approved recommendations of direct relevance to the operator mission.

Using the information obtained from these efforts, the Air Force is making dramatic changes to improve training, repair and upgrade equipment, reduce micromanagement, better align responsibility with authority, and ensure Airmen receive the respect they deserve. For more information on some of these changes, see the Air Force Global Strike Command's Force Improvement Program website: <http://www.afgsc.af.mil/library/afgscforceimprovementprogram.asp>

The analysis described in the pages that follow helped motivate these and other actions that are now under way.



Ted Harshberger
Vice President and Director
RAND Project AIR FORCE

Preface

Anecdotal concerns about job stress and satisfaction have circulated within the intercontinental ballistic missile (ICBM) community for some time, and many of these concerns are still being discussed in reviews of the nuclear enterprise years after they were first raised. Beyond these personal concerns, evidence points to higher rates of problem behaviors within the ranks of 20th Air Force (20 AF), the portion of the Air Force that operates our nation's ICBM arsenal, than in the broader Air Force.

In November 2012, the commander of 20 AF asked the Chief of Staff of the Air Force for assistance in identifying ways to mitigate these concerns and, in particular, possible signs of job stress and dissatisfaction among ICBM force personnel. He requested that RAND Project AIR FORCE (PAF) provide that assistance by taking a quick look at the issues and reporting back in 90 days with recommendations to improve the situation. The research reported here documents the results provided to the Air Force at that time.

PAF projects typically include a substantial component of direct engagement and collaboration with Air Force sponsors, including interim briefings and draft written materials at regular intervals. In the time since this research was conducted and shared within the Air Force community, the Air Force has begun to address many of the concerns expressed here, including steps that align with several of the recommendations made in this report; examples are noted in the foreword.

This research was jointly sponsored by commander of 20 AF and the Deputy Chief of Staff for Manpower, Personnel and Services. It should be of interest to ICBM community leadership; Air Force and

Department of Defense senior leaders concerned with the health and stability of the nuclear and ICBM community; and Air Force organizations charged with managing policies, resources, and services (such as manpower analyses, personnel screening and assignment policies, and base services) that affect the ICBM community.

RAND Project AIR FORCE

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Additional information about PAF is available on our website:
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Summary

Introduction

Sabotage, unauthorized access, and human error are ever-present concerns in the effort to manage the nuclear enterprise. Even a simple mistake—just one moment of carelessness—could have national and international consequences. Air Force leadership was reminded of this with two highly publicized incidents involving unauthorized transfers of nuclear equipment in 2007 and 2008. One involved the inadvertent shipment of nuclear weapon components to Taiwan, and the other occurred when several nuclear warheads were unknowingly loaded onto a B-52 bomber and flown from Minot Air Force Base, North Dakota, to Barksdale Air Force Base, Louisiana.

Following this event, the Air Force made several reorganization changes, including realigning the intercontinental ballistic missile (ICBM) forces and nuclear-capable bombers under a single major command—Air Force Global Strike Command—in 2009. That command is charged with providing guidance and oversight for two numbered Air Forces: 20th Air Force (20 AF) for ICBM operations and 8th Air Force for bomber operations.¹ That restructuring, along with many other new policies and procedures, followed from several reports including a 2008 review by the Secretary of Defense Task Force on

¹ Although much of the Air Force's nuclear enterprise is housed in Air Force Global Strike Command, some elements are still housed elsewhere. For example, the tactical-delivery nuclear mission resides in U.S. Air Forces in Europe; the sustainment and life-cycle management portion resides in Air Force Materiel Command; and the aerial refueling mission resides in Air Mobility Command.

Department of Defense Nuclear Weapons Management (Schlesinger et al., 2008).

Since that review, several additional studies have been commissioned, revealing the long-standing concerns of personnel in the ICBM community (e.g., a need for better equipment, better incentives, and recognition from Air Force leadership). These concerns alone are worthy of closer investigation. However, concerns have also been raised about higher rates of problem behaviors in 20 AF. Given this, a systematic examination of such issues as job stress, job satisfaction, and other workplace attitudes among ICBM personnel is especially prudent and is one approach to identifying actions to remedy the problems.

Recognizing the problem behaviors and long-standing concerns as possible signs of stress and dissatisfaction among the ICBM force, the commander of 20 AF (AF/CC) asked the Chief of Staff of the Air Force for assistance in identifying ways to mitigate the problems. He requested that Project AIR FORCE take a quick look into the issues and report back in 90 days with recommendations to improve the situation. RAND's effort focused on three key research questions:

1. What are some potential sources of the problem behaviors within 20 AF?
2. What could the Air Force do immediately to reduce or mitigate the problems?
3. What continuing investigation is needed?

Conclusions regarding each question are discussed below.

What Problem Behaviors Do We Find in 20th Air Force, and What Are Potential Explanations for Them?

To start, we conducted a quick review of what is already known about the problem behaviors in 20 AF. This included examining readily available statistics on rates of problem behaviors in the broader Air Force nuclear community (and within the ICBM community, when statistics were available), reviewing recent reports citing issues the ICBM com-

munity has raised to date, and conducting discussions with 20 AF leadership and ICBM support personnel to learn about their views on the key issues for the ICBM community. Our review indicated that **some rates of problem behaviors are higher in the ICBM community than they are in the Air Force overall**; these include rates for sexual assaults, child maltreatment, and partner physical maltreatment.

There are at least three reasonable explanations for the observed differences. Demographics may explain some of the observed differences, and increased reporting and enforcement of the rules in the nuclear community could also account for some of the differences. Although closer examination of these first two explanations was beyond the scope of this project, we do advise that 20 AF explore these issues further, and we provide several recommendations for how to go about doing so.

Nonetheless, even rates that are equivalent to those of the broader Air Force should still raise concerns. Given that ICBM personnel are prescreened through the Personnel Reliability Program (PRP) to be trustworthy and reliable personnel, we would expect that problem behavior should occur much less frequently in that population than it does among similar personnel who have not met the PRP screening requirements.

In addition, our review of several recent Defense Science Board reports and the results of a 2009 ICBM force survey raised a number of concerns that the ICBM community continues to express. Further clarifying and addressing these concerns is recommended for mitigating problem behaviors in the future. We therefore focused the remainder of our research effort on the third possible explanation for the problem behaviors: the presence of several stressors in the ICBM community.

Could Stress, Well-Being, and Workplace Attitudes and Perceptions Be a Potential Cause of the Problems?

We briefly reviewed the existing research literature on the antecedents and consequences of stress, well-being, workplace attitudes, and perceptions in the workplace. This review describes the role of well-being,

attitudes, and perceptions in the workplace; how they can affect personnel; and what actions can be taken at remediation. It also highlights some of the potential long-term behavioral consequences for an organization to help Air Force policymakers gauge the seriousness of not addressing the issues in the 20 AF workplace.

The review explains that stressors and other factors in an individual's environment can affect their physical and psychological well-being. The review also explains that the organization can change or mitigate many of these factors. For example, occupational factors (e.g., work hours, roles, and tasks), organizational factors (e.g., evaluation and reward systems), and situational factors (e.g., weather and commute time) can all negatively affect workers' attitudes and perceptions about their jobs (e.g., perceptions of fairness and injustice) and their physical and mental health (e.g., illness, trouble sleeping, burnout, and depression). Such effects can, in turn, have serious consequences for organizations, including turnover, absenteeism, accidents, unintentional mistakes, and counterproductive workplace behaviors (e.g., theft and vandalism). Consequences for employees, such as family problems (e.g., domestic violence) and unhealthy lifestyle habits (e.g., substance abuse), are also well documented.

The research literature is therefore a good starting point for identifying many of the factors that employers, such as the Air Force, should be concerned about and take action to change or mitigate. Many of the workplace and environmental antecedents to problem behaviors identified in the literature also exist in the 20 AF workplace (such as the climate, the commute, and the nature and timing of the jobs). **Stress and negative attitudes toward the job are two examples of precursors to problem behaviors that came up both among the concerns previous reports raised and in the statistics for 20 AF on problem behaviors. Changing these attitudes and reducing stress are two recommendations for 20 AF that are well supported by the research literature.**

What Are the Major Stressors and Sources of Negative Attitudes or Perceptions in 20 AF?

To further explore the role of well-being, stress, attitudes, and perceptions within 20 AF, we sought answers to the following: (1) Do current ICBM job incumbents find their jobs stressful? (2) What are their top concerns about the jobs? (3) What do they believe are potential remedies to address those concerns? Given the time frame of this project, using a large-scale survey was not a viable option. Instead, we conducted a series of in-depth group interviews (i.e., focus groups) and piloted some questionnaire items to gather more information and help inform the development of a future survey. At each of the three missile bases—Malmstrom, Minot, and F. E. Warren—we held eight occupation-specific focus groups, as well as focus groups with maintenance and security forces (SF) squadron-level leaders (typically, majors or master sergeants) and spouses of missile operators, enlisted maintainers, and SF. All told, we had a total of ten focus groups per base. Across the three bases, 127 people participated—112 military personnel (102 male) and 15 spouses (all female). We also included a short questionnaire in the focus groups to supplement the discussion findings.

Do ICBM job incumbents find their jobs stressful? The short answer is yes. We included two measures of stress—a single item evaluating how stressful they perceived their jobs to be and a scale measuring job burnout. Both ranged from 1 to 7, with higher scores indicating greater stress or burnout. Average participant responses to the stress item showed that, in all but two of the career field groups (junior-level maintainers and facility managers), participants perceived their jobs to be more than moderately stressful. On the second scale, on average, the participants in three career field groups (chefs, operators, and junior-level SFs) were experiencing job burnout. Midlevel SFs and facility managers also reported average levels of burnout that, although lower than the cutoff, are considered signs of possible burnout in the future.

In answer to the second question—What are ICBM job incumbents' top concerns about the job?—the focus group responses and questionnaire answers led to 12 broad themes for participants' concerns. **Of these 12, manning issues and leadership or organiza-**

tional culture issues topped the list for the majority of the career field groupings. Following these themes were the ICBM lifestyle, working conditions, career progression, and being away from home for extended periods.

In terms of *manning*, nearly all participants believed they worked more hours than most Airmen, and nearly all career fields agreed or strongly agreed that they were understaffed. There were a number of reasons for this perception, including issues with PRP; inspections and inspection preparation; special duties, useless tasks, training, distinguished visitor visits, and stand-downs; and operational inefficiencies.

In terms of *leadership and organizational culture issues*, many commented that leadership (from their direct supervisor to the highest levels of the Air Force) is not listening to or does not fully appreciate or understand their concerns. Other issues noted include a culture of fear and perfectionism, micromanagement, a “cover your ass” (CYA) mentality, and misaligned incentives. PRP culture was also raised, both in terms of people abusing the process to get out of work and, conversely, avoiding the process out of peer pressure and guilt.

ICBM lifestyle, working conditions, career advancement, and being away from home represented another set of key themes. In terms of ICBM lifestyle, the groups with the highest proportion of negative comments were the spouses and the facility managers. Although both of these groups made many comments about the hardships, the reasons they were describing them were distinctly different. The spouses were describing their own perceptions of the hardships. The facility managers, in contrast, described themselves as having chosen the ICBM lifestyle. The hardships they described were a recounting of the views of the personnel who were placed there involuntarily and their families. They offered chefs and SFs as examples of the personnel who commonly expressed dismay at the hardships.

Hardships most often mentioned were the northern-tier weather and the lack of entertainment, job opportunities, shopping options in the local area and on base, etc. All groups frequently mentioned working conditions, with comments covering a wide variety of topics. Some described a general lack of safety because of the physical wear and tear on equipment; they noted that equipment is aging, low quality, or inap-

appropriate, leading to poor outcomes and increased workloads. Being deployed to the missile field and away from family for long periods was a major concern for the spouses, and the lack of recognition, incentives, or rewards for ICBM jobs was a common concern across all groups.

In answer to the third question—what they believe potential remedies to address those concerns are—increasing manpower was a top mentioned fix. On the survey items listing ideas of other possible fixes, the strongest levels of endorsement were for better equipment, more recognition from leadership and the rest of the Air Force, more opportunities for advancement, and better upkeep of base and missile facilities. Enlisted SFs, the facility managers, and the spouses endorsed better services and support for families.

What Could the Air Force Do Immediately to Reduce or Mitigate the Problems in 20 AF, and What Continuing Investigations Are Needed?

In this project, we set out to define the concerns of the ICBM workforce. However, our time frame precluded providing a concrete plan for remedying the concerns. Although we asked our participants for suggestions about what they think would help address the problems, and we agree that many of their suggestions are possible actions that the Air Force should consider, we do not have enough information to judge whether implementing these suggestions will have unintended consequences that we and our participants cannot foresee. For that reason, we offer these as ideas to consider but also recommend that Air Force leadership further investigate the best approach to addressing their concerns, paying particular attention to the possible unintended consequences associated with each approach.

Based on this project, particularly the focus group findings, we offer several suggestions for actions the Air Force could consider to reduce some of the negative attitudes and perceptions and to reduce or mitigate stress levels in ICBM workforce. These include the following:

- **Make Air Force specialty-specific changes.** Each ICBM career field expressed unique concerns, so we provide some career-specific recommendations. These include changing the perception that PRP is a “career killer” (for SFs); allowing rest overnight at the missile alert facility, rather than requiring maintainers to come back the next day (for maintainers); delegating more authority, autonomy, and responsibility (for facility managers); and enforcing crew rest and sleep requirements (for operators). The chef population, in particular, is a possible at-risk population for many of the problem behaviors, for which a number of recommendations emerged, including increasing rotation between base-side and missile alert facility assignments to share the burden, reduce loneliness, add variety, and give chefs more experience and exposure to mentors.
- **Address manpower concerns.** Based on the focus group indications that manpower issues are a significant perceived problem area and our review of the available information on existing manpower studies, it appears that the current manpower process may not capture several aspects of the job that are relevant in the ICBM community (e.g., increased operating tempo associated with inspections and inspection preparation). We therefore recommend changing how manpower studies are conducted for the ICBM community (e.g., having 20 AF collect and retain its own data on all aspects of the job that affect manpower requirements) and continuing to monitor perceptions of being understaffed.
- **Improve leadership styles and organizational culture in the ICBM community.** The terms *leadership styles* and *organizational culture* here are meant to refer to a wide set of comments from personnel about pressures at all levels, from the lowest level supervisors on up the chain of command. Examples include feelings of micromanagement, pressures for perfection, and fears of losing their jobs. Additionally, there is clearly an overarching perception that leaders are not listening, or that, when they do listen, they misunderstand. We suggest working to address these areas.
- **Provide incentives and rewards for ICBM service, and modify assignment policies.** The ICBM community made a wide variety

of suggestions about incentives and rewards, some symbolic (e.g., an ICBM medal to show recognition for ICBM service) and some financial or support related (e.g., incentive pays and deployment credits and benefits). Also, many personnel commented that there was no light at the end of the tunnel, meaning they had no idea when or if they would ever get to leave the ICBM world. Opportunities for transfers should be made available, and when transfers are granted, leadership should make sure the moves are actually realized. A two-year term is generally perceived as manageable, and if the promise of getting to leave after two years is consistently upheld, attitudes toward the job will likely improve.

- **Improve base services.** Many of the participants expressed concerns over the lack of services available on base. Because all these bases are located in small towns, food, shopping, child care, and entertainment options off base are also significantly limited. Adding more services on base would help remedy that concern.

Although we suggest that the Air Force take action to change the factors identified by the personnel in our focus groups, we also acknowledge that identifying exactly *how* to take action to change them is beyond the scope of this work. Instead, we recommend that leadership begin to formulate an action plan for addressing the concerns they expressed that pays special attention to identifying possible ramifications and unintended consequences of the action plans.

We also offered some recommendations for continuing investigation, which include the following:

- **Conduct further statistical analyses with the existing data on problem behaviors.** We identified some existing statistics that suggested problem behaviors might be occurring at higher rates within 20 AF relative to other locations within the Air Force; however, these statistics do not control for other factors (such as demographics) that could account for some or all the differences in problem behaviors. We suggest conducting additional analyses to control for such factors. The results might suggest other interventions to help reduce the problem behaviors within 20 AF.

- **Address other concerns raised.** Leadership expressed a wide variety of concerns, ranging from human factors workspace issues, sleep schedules, the need for new or different mission-critical equipment (such as helicopters and vehicles), high rates of problem behaviors, and the fact that long-standing concerns about a variety of workplace issues continue to surface. While this project focused on reducing problem behavior by defining the ICBM community's top concerns, examining the remaining explanations is also important. In particular, we recommend that the Air Force *conduct an in-depth and sophisticated statistical analysis of the rates of problem behaviors*. We also recommend that the Air Force *explore whether increased use of the Uniform Code of Military Justice and nonjudicial punishment authority in the nuclear community accounts for some of the differences*.
- **Develop a larger, recurring survey.** The focus groups in this project were a first step in answering the question: What are the major stressors or sources of negative attitudes and perceptions in the ICBM community? They identified several key stressors and sources of negative attitudes and perceptions, the majority of which were shared by 30 to 100 percent of the focus group participants. However, several additional questions remain, and continued tracking of these issues over time is needed. We therefore recommend *developing a larger, recurring survey of these issues to confirm (or disconfirm) these perceived problems and to track changes in perceptions over time*.

Closing Comments

Weaknesses in the human elements of nuclear surety may be difficult to detect and prevent, and their causes and signs could be easily overlooked. Continued vigilance from Air Force leadership in looking for possible warning signs is critical, and repeated signs of a problem should certainly not be ignored. High levels of stress and increased rates of aberrant behavior in the ICBM workforce are example of such signs. If people are experiencing high levels of stress in ICBM jobs,

and our data suggest some are, identifying their chief complaints and addressing them are sensible first steps to mitigating that stress.

Although many people freely discussed complaints they have about their jobs, they did so because we asked them to. We want to stress that, on the whole, they also expressed a very strong work ethic and a strong willingness to do whatever needed to be done, under any conditions. The overwhelming majority of our participants seemed to genuinely care about the mission, their coworkers, and the Air Force.

We shared the results with senior Air Force leadership soon after the conclusion of our review in February 2013. Since then, the Air Force has begun to address many of the concerns expressed here; examples are described in the foreword.

Acknowledgments

Many people both within and outside RAND contributed to this report. We are grateful first for the input of the numerous experts from 20 AF who helped shape the research agenda and guide our exploration of the issues the ICBM community faces. Most especially, we thank our project sponsors Gen Mark A. Welsh III (Chief of Staff of the Air Force), Lt Gen Darrell D Jones (Deputy Chief of Staff for Manpower, Personnel and Services) and Maj Gen (Ret) Michael Carey (former commander of 20 AF) for their interest and strong support for the project and our project monitor, Arthur Beisner II (Air Force Global Strike Command, 20 AF/A9), for his tireless assistance and attention and guidance throughout the project.

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use as background information in our report and briefings. We are also extremely grateful for the comments and feedback from our reviewers, Don Snyder and Lisa Meredith, who both provided thoughtful and timely comments that without question helped improve the report and our recommendations to the Air Force. A special additional thank you to those who offered additional comments and feedback during the quality assurance process, including Rich Moore, Lara Schmidt, Ray Conley, and Edward Harshberger.

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Abbreviations

20 AF	20th Air Force
AFB	Air Force base
AFGSC	Air Force Global Strike Command
AFS	Air Force specialty
APA	American Psychological Association
CAIB	Community Action Information Board
CSAF	Chief of Staff of the Air Force
CWB	counterproductive work behavior
CYA	“cover your ass”
DoD	Department of Defense
DSB	Defense Science Board
DUI	driving under the influence
DVD	digital video disk
FM	facility manager
HMMWV	high-mobility multipurpose wheeled vehicle
ICBM	intercontinental ballistic missile
IPIP	International Personality Item Pool

JA	Judge Advocate
JCM	Job Characteristics Model
LCC	launch control center
LF	launch facility
MAF	missile alert facility
Mnx Jr	missile maintainers, non-team chiefs
Mnx TCs	missile maintainers, team chiefs
NCO	noncommissioned officer
NEO	Neuroticism-Extroversion-Openness
Ops	missile operators
OPTEMPO	operating tempo
PAF	RAND Project AIR FORCE
PFD	present for duty
PRP	Personnel Reliability Program
ROTC	Reserve Officer Training Corps
SF	security forces
SF 1LTs	security forces, 1st and 2nd lieutenants
SF Jr	security forces, senior airmen and below
SF Mid	security forces, staff and technical sergeants
SF/Mnx Sr	security forces and maintenance squadron-level leaders

Introduction

Background

Sabotage, unauthorized access, and human error are ever-present concerns in the effort to manage the nuclear enterprise. Even a simple mistake—just one moment of carelessness—could have national and international consequences. Air Force leadership was reminded of this with two highly publicized incidents involving unauthorized transfers of nuclear equipment in 2007 and 2008. One involved the inadvertent shipment of nuclear weapon components to Taiwan, and the other occurred when several nuclear warheads were unknowingly loaded onto a B-52 bomber and flown from Minot Air Force Base (AFB), North Dakota, to Barksdale AFB, Louisiana. The national leadership and public were outraged and demanded that action be taken to prevent these missteps from reoccurring.

Among the ways that the Department of Defense (DoD) has historically safeguarded against these human threats to nuclear surety is a program of mental and physical assurance of each person's fitness for nuclear duty known as the Personnel Reliability Program (PRP). According to DoD 5210.42-R, June 30, 2006, p. 15:

The purpose of [the PRP] is to ensure that each person who performs duties involving nuclear weapons meets the reliability standards of the PRP selected and retained for performing duties associated with nuclear weapons or nuclear command and control systems and equipment is emotionally stable and physically capable, and has demonstrated reliability and professional

competence. This shall be accomplished through the initial and continual evaluation of individuals assigned to PRP duties. . . . [E]ach person assigned to PRP duties is responsible for their reliability and has an obligation to report to the certifying official any behavior or circumstance about themselves or others in the PRP that may be expected to result in degradation in job performance or personal reliability or an unsafe or insecure condition involving nuclear weapons and/or Nuclear Command and Control . . . material.

Although the PRP is specifically designed to prevent those with diminished capabilities from serving on the job, it is not designed to prevent all factors that could lead to mistakes, carelessness, or even malicious acts. Instead, it is the job of Air Force leadership to be constantly watching out for any additional safety or security concerns related to the health and welfare of the personnel working in the nuclear community.

Following the two incidents, U.S. Defense Secretary Robert Gates requested that the Air Force's top leaders, Secretary of the Air Force Michael Wynne and Chief of Staff Gen T. Michael Moseley, resign ("Moseley and Wynne Forced Out," 2008). On the heels of that change in leadership, the Air Force made several additional changes to the nuclear enterprise to safeguard against such mistakes in the future. Among the changes was a realignment of the intercontinental ballistic missile (ICBM) forces and nuclear-capable bombers in 2009 under a single major command—the Air Force Global Strike Command (AFGSC).¹ This command was charged with providing guidance and oversight for two numbered air forces: 20th Air Force (20 AF) for ICBM operations and 8th Air Force for bomber operations (Defense Science Board [DSB], 2011). That restructuring, along with many other new policies and procedures, followed from several reports, including a

¹ Although much of the Air Force's nuclear enterprise is housed in AFGSC, some elements are still housed elsewhere. For example, the tactical-delivery nuclear mission resides in U.S. Air Forces in Europe; the sustainment and life-cycle management portion resides in Air Force Materiel Command; and the aerial refueling mission resides in Air Mobility Command.

2008 review by the Secretary of Defense Task Force on DoD Nuclear Weapons Management (Schlesinger et al., 2008).²

Following the 2009 restructuring, several additional studies were commissioned as part of ongoing efforts to reenergize the nuclear enterprise. Some of them describe a variety of any long-standing concerns from personnel in the ICBM community (e.g., a need for better equipment, better incentives, and recognition by Air Force leadership), some of which were raised in the 2008 reports prior to the restructuring. The same concerns are still being discussed in reviews of the nuclear enterprise years later.³

These concerns alone are worthy of closer investigation. However, concerns about higher rates of problem behaviors in 20 AF have also been raised. Specifically, the Community Action Information Board (CAIB), which continuously monitors such behaviors as driving under the influence (DUI), suicides, spousal and child abuse, and sexual assaults across the Air Force, provided data that show that several of these types of behaviors are occurring at higher rates in 20 AF than in the Air Force as a whole. There are several plausible explanations for the increased rates;⁴ however, when certain communities experience higher rates of problem behaviors, special in-depth studies of that community can be critical for identifying community-specific issues and solutions.

In light of additional evidence of higher rates of problem behaviors in 20 AF, a systematic examination of issues like job stress, job satisfaction, and other workplace attitudes among ICBM personnel is especially prudent and is one approach to identifying actions that can be taken to remedy the problems. This report provides an initial systematic look at these issues.

² For more information on these reports, see Air Force Nuclear Task Force, 2008, and DSB, 2011.

³ See Chapter Two for examples.

⁴ These are also discussed further in Chapter Two.

Research Purpose and Scope

In November of 2012, the commander of 20 AF, recognizing that the problem behaviors and long-standing concerns about the job are possible signs of stress and dissatisfaction among the ICBM force, asked the Chief of Staff of the Air Force (CSAF) for assistance in identifying ways to mitigate the problems. The CSAF requested that Project AIR FORCE provide that assistance by taking a quick look into the issues and reporting back in 90 days with recommendations to improve the situation.

RAND's effort focused on providing answers to the following questions:

1. What are the sources of the problem behaviors within 20 AF?
2. What could the Air Force do immediately to reduce or mitigate the problems?
3. What continuing investigation is needed?

As noted above, this project was intended to be a quick look that could be accomplished in 90 days using available resources. Although we knew we could not answer any of these questions definitively within the constraints of the project, we also recognized that collecting systematic data to clarify the top concerns of the people of 20 AF would go far toward identifying actions the Air Force could take to improve the situation. Given that earlier studies suggested that the members of the ICBM force may be dissatisfied with certain aspects of their jobs and because research has repeatedly shown that well-being, satisfaction, and other employee attitudes and perceptions can directly affect problem behaviors in the workplace, we set out to explore that possibility further.

We saw collecting more data to define the concerns of the ICBM force as both beneficial and necessary for two reasons. First, although several concerns within the ICBM force have been expressed previously through other sources, leadership has historically viewed the existing evidence as pure speculation. Thus, this project's goal was to collect systematic data to determine whether these are the opinions of only a few vocal people (i.e., instances of single anecdotes) or whether they

are instead views that many members of the ICBM community hold. The data from this report provide that systematic confirmation of findings that have, in the past, been largely anecdotal. Second, although research has shown that such factors as stress and attitudes in the workplace are important, the exact causes of stress and negative attitudes can vary from workplace to workplace. Although past studies suggested a number of potential sources of stress and dissatisfaction within 20 AF, they were all either outdated or anecdotal in nature. An effort to systematically identify the top concerns for the ICBM force would therefore provide new and better-supported information.

To gather that information, the project used small, volunteer focus groups (with overall participation of more than 100 people). The focus group methodology applied in this project is widely considered a useful, valid, and rigorous approach to studying workplace issues. We used a systematic and targeted structured interview protocol and quantitatively coded the results, all key features of high-quality focus group methods. (See Appendix B for more details.) We note that while focus group findings, such as those described here, often include anecdotes (example stories) to illustrate a theme, the themes themselves are not anecdotes when they recur across participants, groups, and locations, as they do in this project.

Approach

Given the short turnaround of this effort, our approach to addressing the research questions above included three elements. The first was a quick review of what is already known about these issues in 20 AF, including examining readily available statistics on rates of problem behaviors, reviewing recent reports citing issues the ICBM community has raised to date, and conducting discussions with 20 AF leadership and other ICBM support personnel to learn about their views on the key issues the ICBM community faces. The second was a brief overview of the existing research literature on the antecedents of stress, negative workplace attitudes and perceptions, and problem behaviors in the workplace. The third was a more in-depth exploration of the ICBM

community's perceptions of the top stressors and their attitudes and perceptions about the workplace through a series of structured focus groups. The chapters reporting results and the appendixes offer more detail on the approaches we used. Informed by results of each of these elements, we provide recommendations for immediate actions the Air Force could take to reduce stress and negative workplace attitudes and perceptions and highlight additional efforts that would be valuable but that could not be investigated during the project's time frame.

Organization of the Report

The remainder of this report describes the results of our effort. Chapters Two and Three offer general background information on the ICBM force. In Chapter Two we provide an introduction to the unique features of the lifestyle associated with northern-tier ICBM jobs. In Chapter Three, we summarize key findings from several studies leading up to the present investigation and describe the rates of certain problem behaviors in 20 AF relative to the Air Force as a whole. Here, we also discuss possible explanations for the observed rates of problem behaviors and suggest additional research to explore those explanations.

The remainder of the report focuses on well-being, attitudes, and perceptions in the workplace and what 20 AF can do to improve them. In Chapter Four, we discuss the existing research literature on these topics and describe the role they play in predicting problem behaviors. Chapter Five presents the results of our focus groups. Chapter Six provides recommendations for immediate actions that the Air Force could take based on these results. In the interim, the Air Force has acted on some of these findings and recommendations.

Appendixes A through D provide the following supplemental information: examples of existing measures of workplace attitudes and perceptions (A); the questionnaire items used in our focus groups (B); mean ratings on the questionnaire items (C); and example comments for other themes that were raised during our focus groups but not focused on in Chapter Five (D).

Context on ICBM Nuclear Enterprise, Environment, and Jobs¹

While many of the jobs 20 AF personnel perform are similar to those performed at all Air Force military installations, others are unique to the ICBM community. Many of these unique features are also not well known to those outside the ICBM community. This chapter therefore provides a brief overview of several key features and challenges associated with the ICBM nuclear enterprise, environment, and jobs. This overview serves as background and context for our results, presented in Chapters Three through Six.

We start by describing the northern-tier locations, the living and working environment in the missile complex, the distances and locations associated with the ICBM workplace, and the activities involved in deploying to the missile fields. We next describe the typical tasks, duties, and work schedules for the eight Air Force specialties (AFSs) that are assigned to duties in the ICBM missile field. Last, we describe another challenge that makes the ICBM jobs different from most other Air Force jobs: PRP, which was briefly discussed in Chapter One.

¹ This chapter describes the nuclear enterprise, the environment, and the jobs as they existed at the time in which this study was conducted. Since our study was completed, the Air Force has taken steps to change many aspects of the jobs and environment. These changes are referenced in the Foreword at the beginning of this report.

The Challenges of Northern-Tier Base Locations

There are three ICBM bases: Malmstrom AFB, Montana; Minot AFB, North Dakota; and F. E. Warren AFB, Wyoming. All are near similarly sized small towns; Minot, North Dakota, has approximately 42,000 residents, and Cheyenne, Wyoming, and Great Falls, Montana, both have around 59,000. The towns quickly transition to open countryside at all three bases, with the terrain difference being that multiple mountain ranges surround Great Falls, Montana. The bases are located on the edge of the nearest town's limits, except in Minot, where the base is approximately 10 miles north of town along a major highway. Cheyenne and Great Falls have additional small towns nearby, whereas residents of Minot AFB would have to travel 120 miles to reach the next comparable town.

Each of the nearest towns is small, offering limited shopping, restaurant, and entertainment options. Considered most desirable of the three bases by many, F. E. Warren—located in the heart of Cheyenne, Wyoming—is 50 minutes from Ft. Collins, Colorado, and 90 minutes from Denver by car (see Figure 2.1 for an illustration of the area). Thus, weekend getaways to a major city and affordable travel elsewhere in the country are realistic options for families at F. E. Warren AFB. Shopping, spousal employment opportunities, entertainment, vacations, and connection to friends and relatives are more viable and realistic options at F. E. Warren for the same reasons.

Minot and Malmstrom, in contrast, are far from major cities (e.g., Minneapolis, the closest city, is an eight-hour drive from Minot), making air travel expensive and time-consuming and severely restricting shopping and jobs. Having few base services and service options in town simply adds to the feelings of isolation and hardship.

Because the temperatures, wind, and snow are unparalleled in most U.S. cities, many families find adjusting to the northern-tier lifestyle difficult. Although all three bases face extreme climates, the weather characteristics can vary significantly. On average, Minot AFB experiences more extreme winter temperatures than Malmstrom AFB by about 10 degrees Fahrenheit. Malmstrom and F. E. Warren AFB have historical average temperatures below freezing throughout the

Workplace Structures in the Missile Complex

The workplaces of the ICBM community are also unique. Figures 2.2, 2.3, and 2.4 illustrate the primary work sites in the missile fields; we describe these sites below.

The missile complex has three primary duty stations: the launch facility (LF), the above-ground missile alert facility (MAF), and the launch control center (LCC). Each MAF has an LCC positioned directly below the visible above-ground MAF structure. Each LCC is connected by underground cables to a series of LFs (ten per LCC) that are dispersed through the countryside around the MAF. Each missile squadron has five MAF/LCC structures and 50 LFs. A missile wing has three operational ICBM squadrons, for a total of 15 LCCs/MAFs and 150 LFs. Figure 2.2 illustrates a MAF/LCC structure for Minot AFB.

The MAF (as shown in Figure 2.2) is divided into two primary areas: the above-ground living space and the below-ground capsule and launch control equipment room. The above-ground portion, typically referred to as the MAF, contains the day-to-day living quarters for the

Figure 2.2
Illustration of MAF/LCC



SOURCE: U.S. Air Force.

RAND RR592-2.2

Figure 2.3
Ground and Aerial Views of a MAF



SOURCE: U.S. Air Force photos.

RAND RR592-2.3

missile personnel. The below-ground portion is where the combat crew (consisting of two missile operators) monitors and operates the weapon systems and where the launch control equipment is located.

In the above-ground area, the MAF has a security control center (where personnel are screened for entry into the MAF and the LCC), living and dining common areas, a kitchen, a weight and fitness room, and sleeping accommodations for approximately 20 personnel. The common areas are equipped with televisions, satellite receivers, DVD players, and pool tables. There are also government computers with Internet access, and personnel are encouraged to use them to pursue their education objectives during their downtime in the field. From the outside, the above-ground MAF structure looks much like a regular farmhouse; however, the grounds are surrounded by high fences and

Figure 2.4
Launch Facility and Missile



SOURCE: U.S. Air Force photo by Staff Sergeant Alan R. Wycheck (left), National Park Service photo (right).

RAND RR592-2.4

secured by a variety of sensors, video cameras, alarms, and other security equipment. The below-ground areas are not visible, as shown in Figure 2.3.

Some personnel are regularly stationed in the above-ground area at the MAF, whereas others frequently stop there for shelter, rest, assistance, or meals. A noncommissioned officer (NCO) serves as the facility manager, and another enlisted member performs duties as a missile field chef—these two are members of the ICBM operations squadron and are stationed at the MAF. The facility manager runs the day-to-day above-ground facility-related activities of the MAF, and the chef prepares food for all who place an order during meal hours. There are also always security force (SF) personnel on duty at the MAF, but the exact number varies based on mission needs. Additional security personnel, such as mobile fire teams, SF flight leadership, and camper teams, rotate from MAF to MAF, and a maintenance team will occasionally take shelter at a MAF if logistics do not permit them to return to base.

The underground LCC is essentially the work center for the on-duty combat crew. The command, control, communications, and computer equipment that serve the weapon system converge in this point.

It is located below ground and hardened against enemy attacks. This functionality leaves little room for the comforts of life for the two officers who live there for 24-hour shifts.

The LF is the site where a missile is physically located. The missile itself is situated below ground level in a missile silo. Figure 2.4 shows outside and inside views of an LF. The only feature visible above ground is the large blast door that sits flush with the ground and covers the entrance to the silo. LFs, located miles from the LCCs, are connected to the LCCs through underground network cables. Although the status of the LFs is monitored 24/7 by the operators in the LCCs, SFs and maintainers are the only personnel who physically work at the LFs as part of their normal duties. Maintainers perform repairs at the LFs, and SF personnel accompany them to the sites to secure them while repairs are being performed. SF personnel are also sent to LFs when a nearby security alarm is triggered. They investigate the cause of the alarm and stay at the LF site to secure the missile until the source of the alarm can be identified. If the source cannot be identified, they secure the location until the sensors can be repaired or reset. While working at an LF, SFs and maintainers are fully exposed to the elements. With the nearest MAF shelter up to half an hour away, an LF can be seen as a particularly difficult and dangerous place to work during winter weather.

Distance and Terrain in the Missile Fields

The vast distances ICBM fields cover make 20 AF's area of responsibility unlike that of any other domestic base. For example, Figure 2.1 also illustrates the large distances that the ICBM missile field at F. E. Warren AFB covers. By design, the missile complexes are widely dispersed to enhance wartime survivability. They stretch across five states. The roads that connect these resources are not always well maintained, free of snow, or even paved. Many of the routes see far more farm equipment than traditional vehicles. Road conditions from inclement weather can further affect the drives and the safety of the personnel involved. Driving accidents and delays because of weather

are not uncommon, making work schedules unpredictable. Sleep deprivation after long work shifts compounds the potential dangers of the long commutes home. While working in the missile fields, crews are far from base, their families, and the local towns. Many of the locations are so remote that personnel can sometimes be out of touch with immediate family for hours or even days. They are also unable to receive immediate assistance or get home to family in an emergency, simply because of the distance and weather conditions. As noted above, phones and the Internet are available at MAFs; however, coverage near LFs and in the LCCs is far less reliable.

Put simply, the distances and terrain of the missile fields makes them unlike any other Air Force flight line. With the vast distances between the operating base, the MAFs, and the LFs; the wide variety of vehicles Air Force members commonly drive in the missile complex (including cars, high-mobility multipurpose wheeled vehicles [HMMWVs], tractor-trailers, and pickup trucks); the unpaved roads; and the unpredictable weather, commutes to the missile fields are considered a major undertaking and viewed as a central part of all ICBM jobs.

Preparing to Deploy to the Missile Field

For personnel assigned to the missile fields, preparation tasks and travel time are a significant part of their typical work cycle. Personnel arrive on base at the start of their shift and participate in a variety of activities prior to leaving the main operating base and “deploying” to the missile complex. The length of the preparation process can vary within and across jobs. In some cases, it can begin the day before the actual mission.

While each career field calls it something different, preparations include a gathering of Airmen to cover the anticipated tasks of the day, weather, and other reminders pertinent to the duties they are about to perform. SFs begin each day (around 0700) with guard-mount, where they receive assignments for the day, a brief related to any anticipated threats, and complete a final check of their gear. Operators rally for

a squadron-led mission planning session at approximately the same time. In addition to the items briefed to SF troops, the operators cover anticipated effects on the weapon systems and maintenance activities in their areas of responsibility. They also attend a groupwide predeparture briefing before departing for alert duty. The preparation work for maintenance teams varies a bit more but always covers site configuration, task prebriefing, and gear checks. For more significant maintenance actions, some preparation work will be completed and briefed on the day prior to task execution.

Once the on-base preparation process is complete and the group has approval to deploy, personnel can expect to spend anywhere from 30 minutes to three hours commuting to their missile field destinations in mild weather conditions. In inclement weather conditions, the travel times can be significantly more than that.

Air Force Specialties Assigned to Duties in Missile Field

Seven occupational specialties are typically assigned to duties in the missile fields, including both officer specialties and enlisted specialties. Missile operators are officers only. Security forces include both officers and enlisted. Maintainers include officers and enlisted, and the service jobs are filled by two enlisted specialties: the facilities managers and chefs. The following are the AFS codes that correspond to each specialty:

- 13NX: Missile operators—officers
- 31PX: SF—officers
- 3P0XX: SF—enlisted
- 21MX: Munitions and missile maintenance—officers
- 2M0XX: Missile maintenance—enlisted
- 3M0XX: Services (missile chefs)—enlisted
- 8S0XX: Missile facility manager—enlisted.

These specialties are explained further below.

Missile Operators—13NX

Missile operators work in two-person crews on “alert” for 24 hours at a time in the sealed underground capsule, the LCC. Every LCC must be manned with two operators at all times, so each team spends its entire 24-hour alert in the capsule until the next two-person crew arrives to replace them. Because of weather or other events, replacement crews can sometimes be delayed, causing some alert shifts to be longer than 24 hours. In such cases, the current crew must remain in place until its replacements arrive.

After the missile operator crew arrives at the MAF, its members are cleared by the security personnel on duty guarding the entrance to the elevator that leads to the LCC. They then travel by elevator down to the underground LCC to relieve the current shift of operators. After taking over responsibility for the LCC, the new crew closes the capsule’s blast doors, and its 24-hour alert begins.

During a shift, the crew responds to exercises and real-world events, all the while knowing it is ultimately responsible for the safety and security of their MAF and the LFs connected to them. Some elements of the alert workload are structured and planned in advance (routine checks on the weapon systems, etc.); however, many events (such as alarms or other warnings from the weapon systems) cannot be anticipated. These unanticipated activities can come up frequently throughout a typical alert, raising the operating tempo (OPTEMPO) and reducing the opportunity to sleep during the time on duty.

During the 24-hour alert, the crew is expected to sleep. (All LCCs include a twin-sized sleeping bunk). However, sleep is only permitted under certain circumstances. For example, only one member of the crew is allowed to sleep at a time. Many activities must be performed with both officers awake. These two-person activities can arise at any time, and when they do, both officers must be up to respond. In addition, some personnel will opt to forgo sleep in certain circumstances. For example, when a crew commander is training a new crew member, he will often stay awake to oversee the new crew member’s activities. This results in erratic sleep patterns for the crews that can affect their ability to get adequate amounts of sleep, both on and off the job. After they are relieved by the next crew, they drive back to base and com-

plete any additional required paperwork or briefings on base before they leave to go home.

Operators are expected to perform eight alerts per month, unless they are assigned specific duties, such as instructor, evaluator, or flight commander. Total time involved (including prealert activities, such as security briefings and driving to the MAF, and postalert tasks, such as driving back to base) is approximately 32 total hours. However, in inclement weather conditions and for the farthest MAF locations, the total time can often be longer. In addition, operators receive mandatory combat crew rest and relaxation following their nuclear duty. The crew rest is equal to one-half of the time spent on alert (about 12 hours), leading to a total work period of about 48 hours for every 24-hour alert. During the remainder of a given month (while not participating in an alert), crew members are required to receive three recurring classroom training sessions, pass the subsequent test, and complete a monthly proficiency simulation in the missile procedures trainer.

Security Forces—31PX and 3P0XX

Missile SFs typically serve in one of three types of jobs. The first consists of the teams posted at every MAF, each working 12-hour shifts for three to five days. (Posting durations can vary based on unit criteria.) At least two members of the security team are on duty at all times and available to act as a response team for missile complex alarm situations. The others are in rest status; although they are available to respond in extreme security situations, their rest status is only interrupted for real-world events. These personnel are responsible for securing the MAF and verifying that only authorized personnel have access to the MAF and, ultimately, the LCC.

The second job involves accompanying maintenance teams that dispatch to the field and securing LFs when other detection systems are not functioning properly. Those attached to a maintenance team work the same hours and cycle as that team; however, those asked to provide physical security in the absence of alarm systems typically have a 12-hour work cycle that may extend several days or until the alarm condition is repaired.

The final job involves working in teams of four or more personnel who provide mobile security augmentation anywhere security is needed in the missile complex. The location typically changes over the three- to five-day tour in the field. These teams may spend an entire day augmenting security on one end of the complex then drive hours to the opposite end of the missile field to spend the night and preposition themselves for similar security requirements for the next day.

Missile Maintainers—21MX and 2M0XX

To maintain the missile systems and facilities, certified maintenance teams and security personnel travel all over the missile complex to conduct repairs and routine maintenance. Each maintenance team has between two and six members, depending on the task, with at least two directly attached security personnel. To comply with directives, additional security personnel are required to deploy to the missile complex; their numbers can vary based on the quantity and type of actions performed.

There are six types of maintenance teams: facility maintenance; electromechanical; missile handling; missile maintenance; power, refrigeration, and electric; and communications maintenance. The facility maintenance team services the support equipment on MAFs and LFs, such as generator maintenance. The power, refrigeration, and electric team covers a myriad of tasks, such as final checkout of the liquid coolant pump or checkout of the missile emplacement vehicle. The missile handling team installs and removes the downstages of the rocket motors that propel the missile at the LF. The missile maintenance team covers such tasks as the replacement of the ICBM's guidance system, and the electromechanical team covers such items as loading software or programs on the guidance system. Many maintainers remain in a single maintenance discipline for their entire careers; they progress from team member to team chief to a support shop or training and evaluation duties, finally ending up as a supervisor of multiple teams within that discipline.

While the driving distances for a single trip for maintenance personnel are comparable with those for other disciplines in the missile complex, their required vehicles vary greatly. Depending on task

requirements, the vehicle varies from a 1-ton pickup with a specialized bed to house tools and equipment all the way up to full-size tractor-trailers. Given that there are so many more LFs than MAFs, there is a high probability that these larger vehicles will be required to traverse smaller, possibly gravel roads in very isolated areas. Likewise, these high-profile vehicles are more difficult to drive in weather that is routine in these areas, such as snow, ice, and high winds.

Duty hours for the maintainers are strictly controlled. Air Force Instructions 21-200 and 21-202, Vol. 1, dictate a 16-hour maximum allowable duty period for completion of most tasks. For those working directly with the weapon system or explosives, the duty day is 12 hours (but the commander can authorize up to 16 hours). The same regulations require eight hours of rest prior to reporting for duty and a 12-hour rest period following the work cycle. The duty day starts at base before departing for the complex; it continues until the team returns to base or arrives at a MAF with the intent of resting for a prolonged period (and return to base on the following day). If a task is completed in a reasonable amount of time, rules permit the team to drive to another LF and perform tasks there within the confines of their workday timelines.

Facilities Managers and Missile Chefs—8S0XX and 3M0XX

Facilities managers are responsible for managing and maintaining all aspects of the MAF facilities. A few examples of typical activities include clearing snow, maintaining the sleeping quarters, fixing the exercise equipment, and monitoring the water systems. As the highest ranking enlisted person stationed at the MAF, facility managers also oversee and mentor the enlisted SFs and the chefs at the MAF and provide leadership and assistance in emergency situations. The facility manager position is the only missile field job staffed entirely with volunteers. Most chose to move to the northern-tier bases to work missile duties after having served at other nonmissile base locations.

Each MAF is staffed with a missile chef. Duties include cooking breakfast, lunch, and dinner; cleaning the kitchen and dishware; inventorying the food; and restocking the kitchen. Only one chef is on duty at the MAF at a time who typically spends four days stationed

there. Most days involve fairly consistent hours; however, the chef is on-call essentially 24 hours a day. For example, the chefs are occasionally asked to cook late in the evening if crews arrive after dinner service has been completed. With preparation and cleanup occurring before and after every meal, this can result in some long workdays, starting with breakfast first thing in the morning. There are, however, typically opportunities to rest between meal services. Because chefs work alone at the MAF (there is no other chef staying at the MAF at the same time), the job is more isolated and involves more individual-level responsibility than in other kitchens, where chefs typically work in teams. Many chefs are first-term Airmen, and serving in the missile field is part of their first tour. There are no other on-site chefs to turn to for mentoring, guidance, or assistance. Instead, the chefs report directly to the facility managers.

Personnel Reliability Program

Chapter One briefly discussed the PRP; here, we discuss it in more detail as another feature that makes the ICBM world distinctly different from most Air Force jobs. All personnel with potential access to nuclear weapons, specific nuclear-related materials, or command and control authorities are certified under PRP. SFs, operators, and maintainers are subject to PRP requirements; chefs and facility managers are not.

The purpose of PRP is to ensure that each person who performs duties involving nuclear weapons meets program reliability standards. PRP also ensures that each person selected and retained for performing duties associated with nuclear weapons or nuclear command and control systems and equipment is emotionally stable and physically capable of performing the duties and has demonstrated reliability and professional competence (DoD 5210.42-R, Air Force Manual 10-3902, 2006).² If members are not capable (for any number of possible rea-

² Also see Headquarters AFGSC PRP, 2011.

sons) of completing PRP duties, they are removed from these duties until fully restored to the program.

Under PRP, personnel must first meet the initial screening requirements (including a willingness to work with nuclear weapons, no mental or physical concerns that might hinder performance on the job, and security clearance requirements) for entry into nuclear-related jobs. To ensure that new personnel are likely to meet PRP requirements, the administrative certification process typically begins at their previous duty station or during technical skills training. Starting the process early also helps ensure that personnel will be present for duty (PFD) sooner after arriving at PRP unit. The certification process includes a review of all personnel, security, and medical records, plus an interview with the commander of the current unit. Based on a review of this information and the recommendation of the current commander, the certifying official can accept or reject the personnel before they ever depart their previous assignments.

Through a process of self-report, peer reports, and oversight by command and medical personnel, all personnel are continuously certified as competent for duty under PRP every day they are required to perform duties involving nuclear equipment. Thus, PRP status can change on a regular basis, sometimes for just a few hours, but sometimes for days or weeks. As one example, if a PRP member is referred to a medical provider downtown to have an MRI for knee pain, he is automatically suspended from work by his certifying official until he is seen again by the on-base flight surgeon. Based on a review of the visit, the flight surgeon makes a recommendation to the certifying official about the PRP status of this individual. The same would hold true if a member went to the local emergency room—the member is suspended and not available for PRP duties until the flight surgeon can make a recommendation to the certifying official to bring the member back up on PRP. Suspension also occurs when someone receives a new prescription from a doctor because of possible drug side effects. Until the possibility of side effects or allergic reaction to the medication is definitively ruled out, the members are removed from PRP duties.

Summary

In this chapter, we described the ICBM lifestyle and other unique features of ICBM jobs. The context provided here was intended to help readers understand what the bases look like and what the jobs there entail. By doing so, we have provided some orientation for the particular job categories in our focus group results (Chapter Five) and suggested how the ICBM lifestyle could help explain the problem behaviors we found in our review of existing Air Force statistics (Chapter Three), could be an environmental driver of stressors or workplace attitudes and perceptions (such as those described in the review in Chapter Four), and could be a contributing factor to the focus group results we uncovered (Chapter Five).

Concerns in 20th Air Force and Potential Explanations

As noted in Chapter One, a series of research efforts studying the recurring concerns of ICBM job incumbents were released after the 2007 and 2008 incidents. To better understand the concerns these efforts raised, we discuss the reports in more detail in this chapter. We also explore concerns about problem behaviors within 20 AF by summarizing some available statistics highlighting higher rates of problem behaviors in the ICBM force than in the entire Air Force population. Finally, we discuss some potential explanations for the problem behaviors we found in the available statistics.

Recurring Concerns Raised in Recent Studies of the ICBM Community

As mentioned earlier, several studies of the ICBM community have taken place since the events of 2007 and 2008, and each provides insights into key issues that the ICBM community continues to raise as concerns. For example, in 2009, the Air Force Manpower Agency conducted a survey of the ICBM force in response to a 20 AF request to identify incentives and disincentives that affect the decision to remain in the ICBM nuclear field. The survey explored pay, assignments, facilities, overseas short-tour credit, deployment credit, time, manpower, tools and equipment, and training. In addition to asking respondents to rate how important a topic is for recruiting and retaining personnel and for their decision about whether to stay or leave, the survey gave

respondents the opportunity to provide written comments and suggestions about each topic.

Results showed that personnel viewed many factors as important in stay-or-leave decisions and viewed several areas as needing improvement. Among the concerns were PRP, not having protected time off, having a high OPTEMPO, equipment issues (such as not having the right vehicles, armor, and helicopters), inadequate base facilities, not having deployment credits, and being stuck in the same job. Based on the findings, Air Force Space Command's Personnel Support office made the following recommendations in a series of talking papers:

- *Establish incentive pay (like hazardous duty pay and aviation career incentive pay) for those providing direct support to the missile fields or the MAFs.* They suggested a graded incentive pay for missile operators and incentive pay of \$150 per month, regardless of rank, for the rest of the missile jobs.
- *Change the way assignments are handled to ensure growth and development and improve quality of life.* They suggested rotating people across bases, in and out of the missile fields, across positions and, for SFs and chefs, rotation out of the ICBM nuclear enterprise after their first tour. They also recommended bringing SFs back to the ICBM nuclear enterprise to capitalize on their increased experience.
- *Establish a medal (similar to the aerial achievement medal) recognizing ICBM nuclear duties.*
- *Credit personnel with short-tour adjustments* to ensure that they do not move to the top of nonvolunteer lists for short tours or deployments.

Changes to several assignment policies were made in the years after the 2009 report; however, the other recommendations were not instituted.

Following the 2009 missile survey, at least two manpower studies were conducted to reexamine the manpower requirements. In 2011, the Air Force Manpower Agency studied SF, and in 2012, the Air Force Personnel Center studied missile operators. The 2011 study of SF included an 8-percent cushion to account for PRP disqualifica-

tion; however, no additional details on how the study arrived at that disqualification rate were provided. New manpower standards for the number of SF personnel required for missile duty were provided based on the study findings. It was not clear from the report what instigated the study or whether the resulting manpower estimates were different from previous ones. In the 2012 study of missile operators, the PRP disqualification factor was assumed to be 4.9 percent, although, again, no justification for that rate was provided. This report did include a comparison with the old manpower estimates; according to the new estimates, a total of 82 fewer people were needed for the job. Whether the reduction in the manpower requirement corresponds to a reduction in the number of active LCCs is unclear from the report.

Finally, the DSB published two reports that mention key concerns for the ICBM force (see DSB, 2011; DSB, 2013). For example, according to the 2011 report:

- *Some aspects of PRP implementation are unproductive.* The existing PRP practice “is a clear demonstration of distrust, is costly in productivity and generates an enormous amount of additional and unproductive work for the unit, for medical personnel and for inspectors” (p. 39). DSB also notes that it is not unusual for 10 percent of the workforce to be suspended for PRP.
- *Inspections are excessive.* The inspection regime is excessive and creates a climate in which the workforce feels that “leadership does not trust them to perform professionally” (p. 14). Increased workload generated from the ever-increasing inspections makes it even harder to correct mistakes between inspections. “The level of detail in the inspection, the judgment about what is major and what is minor, and a number of new and seemingly illogical rules raise credibility issues” (p. 24).
- *Workload continues to increase.* Support equipment issues, inadequate technical data, reductions in manpower and experienced NCOs, and inspections were among the explanations for the increased workloads.

DSB, 2013, found some improvements; however, it also indicated that many concerns still remain.¹ For example, it reported “positive results either delivered or promised” for PRP and improved morale, but it also reported that personnel still felt “skepticism about the promises of future improvements in support of the daily work involved in performing the mission.” The report also reiterated concerns over manpower issues (p. 13):

Headquarters Air Force has conducted a number of manning standard assessments that have resulted in improved resource-to-tasking match. However, the manning standards for a missile wing are either non-existent or deficient depending on whose view is expressed. The issue associated with manning standards is the need to allow the unique nature of the ICBM mission workload arising from the ICBM “flight line.” While the bomber flight line is measured in acres, the ICBM “flight line” is measured in thousands of square miles. Hence, movement to, from, and around the bomber flight line is largely inconsequential in terms of time and workload. The movement to, from, and around the ICBM “flight line” consumes multiple hours in routine travel time. There exists a clear perception that the manpower surveys do not benefit from an understanding of the unique factors in the ICBM force maintenance workload. The combination of manpower reductions and the practice of filling slots with reduced rank and qualification levels increases the demand on supervisors, both officer and senior enlisted. These demands are further exacerbated by the combination of an attitude that there must be no mistakes and the difficulty in getting senior [NCOs] to accept assignments to some bases.

The authors also highlighted several areas where communication about the changes could be improved. For example (p. 4),

Some in the operating forces continue to rely on frustrating work-arounds even after help is available to operate more efficiently; 2) The workforce continues to have low expectations of responsive support and therefore accepts responses that do not address their

¹ This report was released after we had completed our focus groups.

needs when they should be demanding better answers; and 3) The major air command, numbered air forces, and wings continue to impose extraordinary processes that impose non-value-added workloads to deal with inspection team demands and practices that are, at least officially, no longer in use.

Many of the frustrating support shortfalls experienced over a period of years have been or are being effectively addressed. Still, many in the workforce are unaware of what has been done and what is on track to be delivered in the future.

and (p. 12),

Facilities are part of the perceived mismatch between the declaration that the nuclear mission is Job 1 and the visible support for the mission.

Recent climate surveys and Air Force Culture Assessment Survey Tool surveys of the ICBM force also regularly provide data to assist 20 AF leadership in evaluating morale and other workplace issues. The results of the most recent surveys indicate that some aspects of morale are lower than the rates Air Force-wide. Respondents also provided written comments in response to several questions on the surveys, and these comments echo many of the concerns expressed in the 2009 survey and those raised in the 2011 and 2013 DSBs.

Concerns Raised by Existing Statistics on Problem Behaviors in the ICBM Community

20 AF leaders have also expressed concerns about the higher rates of problem behaviors that continue to be observed in 20 AF. Table 3.1 provides a summary of their findings for 2010, 2011, and 2012. Where there is an arrow (↑) in the cell, the rates are higher than for the Air Force as a whole; where there is a blank cell, the rates are either lower or about the same as the Air Force as a whole. Existing CAIB briefings that had been prepared for AFGSC show that many rates for AFGSC are higher than for the Air Force as a whole. As shown in the

Table 3.1
Rates of Problem Behaviors in AFGSC Relative to the Overall Air Force

Problem Behaviors	2010	2011	2012
Suicides	↑	↑	
Underage drinking	↑	↑	↑
DUI	↑	↑	↑
Sexual assaults	↑	↑	↑
Child maltreatment			
Physical—child	↑	↑	↑
Sexual—child	↑		
Neglect—child	↑	↑	↑
Emotional—child			↑
Multiple—child	↑	↑	↑
Partner maltreatment			
Physical—partner	↑	↑	↑
Sexual—partner	↑		↑
Neglect—partner			
Emotional—partner	↑	↑	
Multiple—partner	↑		

SOURCE: CAIB metrics provided by the Air Force. Rates listed as higher, although actual rates for AFGSC and the Air Force were not provided.

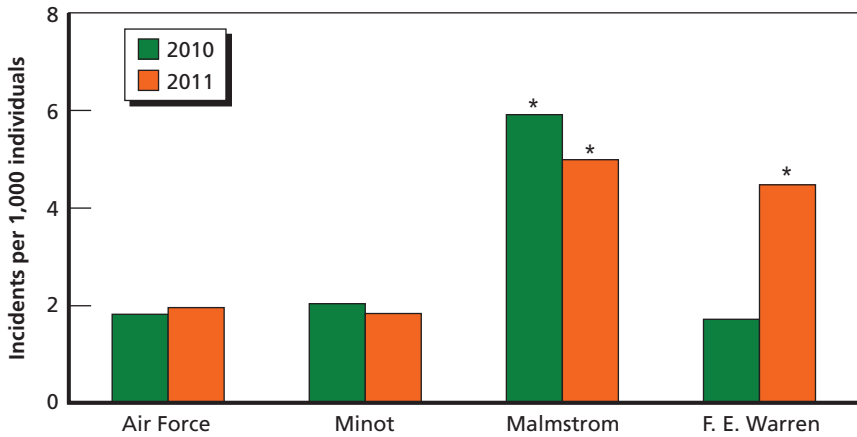
NOTE: ↑ indicates higher rate relative to the overall Air Force.

table, rates for underage drinking, DUIs, sexual assaults, several types of child maltreatment, and partner physical maltreatment are higher across all three years shown.

Additionally, in the CAIB briefings provided to us, data comparisons between 20 AF and the overall Air Force were available for a subset of the CAIB metrics (see Figures 3.1, 3.2, and 3.3).² Figures 3.4

² Statistics on CAIB metrics may be available for 20 AF population compared to the Air Force overall; however, we did not have time in this study to request the analyses or to obtain the individual-level data to conduct the analyses ourselves.

Figure 3.1
Reported Sexual Assaults in 20th Air Force Compared to Overall Air Force
 (rates per 1,000)

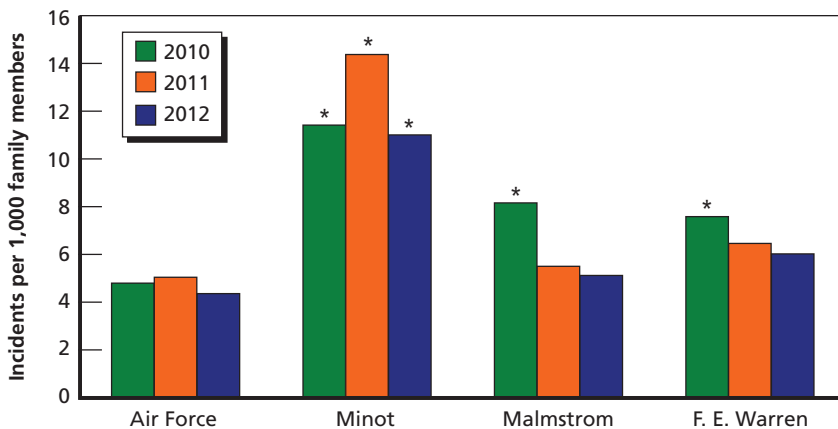


SOURCE: CAIB Metrics 2012 provided by the Air Force.

NOTE: Asterisks indicate numbers significantly higher than Air Force rate at $p < 0.05$.

RAND RR592-3.1

Figure 3.2
Substantiated Partner Maltreatment (rates per 1,000 family members)

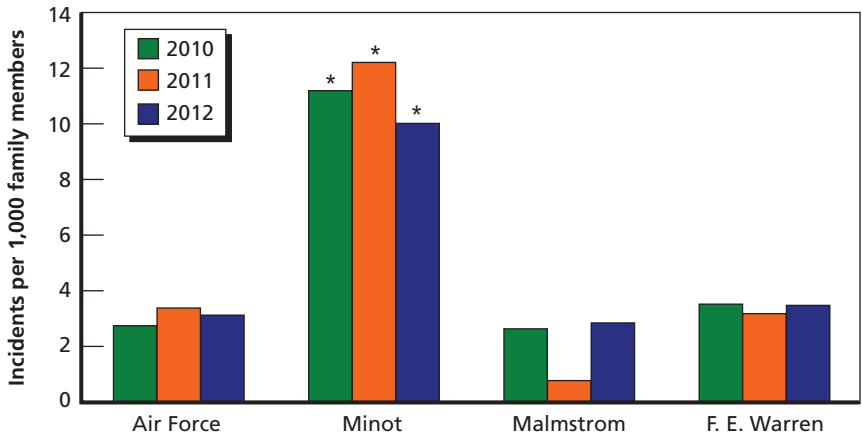


SOURCE: CAIB Metrics 2012 provided by the Air Force.

NOTE: Asterisks indicate numbers significantly higher than Air Force rate at $p < 0.05$.

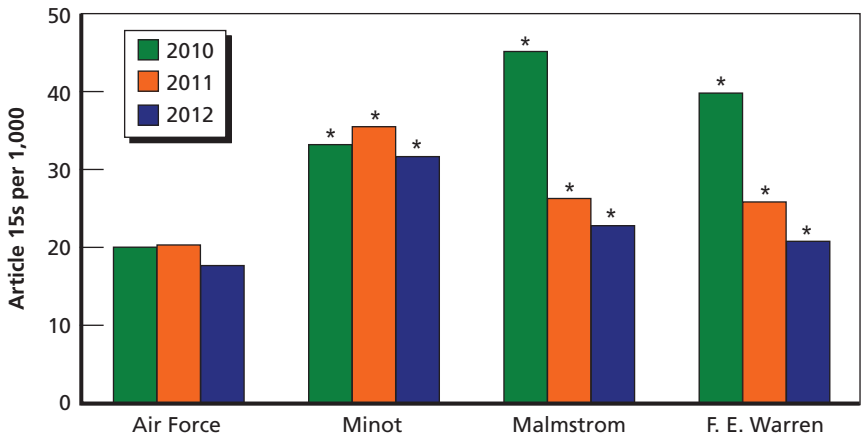
RAND RR592-3.2

Figure 3.3
Substantiated Child Maltreatment (rates per 1,000 family members)



SOURCE: CAIB Metrics 2012 provided by the Air Force.
NOTE: Asterisks indicate numbers significantly higher than Air Force rate at $p < 0.05$.
RAND RR592-3.3

Figure 3.4
Article 15s in 20th Air Force Compared to Overall Air Force (rates per 1,000)

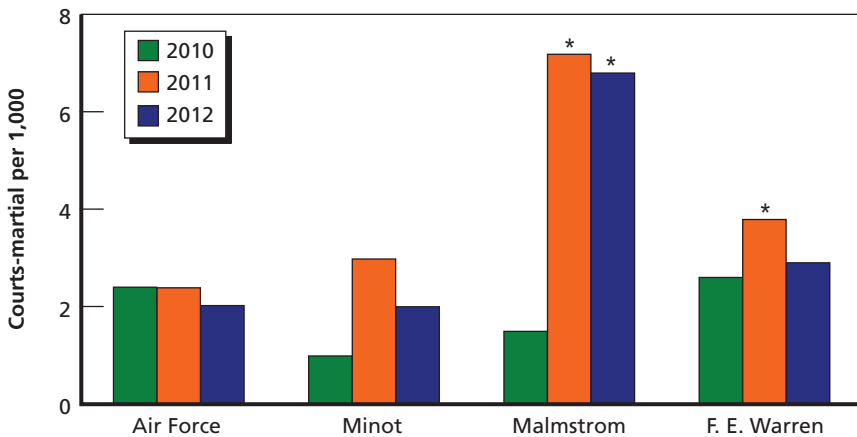


SOURCE: Military justice statistics provided by the Air Force.
NOTE: Asterisks indicate numbers significantly higher than Air Force rate at $p < 0.05$.
RAND RR592-3.4

and 3.5 provide summary statistics (from the Judge Advocate [JA] offices) on Article 15s and courts-martial.³

Using the sample sizes and rates of occurrence from the CAIB and JA summary reports, we tested for significant differences between 20 AF and the overall Air Force. We found that many differences shown in the figures are statistically significant. For example, even though Article 15 rates have fallen at Malmstrom and F. E. Warren over the last three years, 20 AF rates as a whole are still significantly higher than those for the Air Force overall. Malmstrom's sexual assault reports and 2011 and 2012 court-martial rates were also significantly higher than those for the Air Force as a whole. And across multiple years, Minot had significantly higher rates of partner maltreatment and child maltreatment than the Air Force as a whole. Statistical significance is, in

Figure 3.5
Courts-Martial in 20th Air Force Compared to Overall Air Force (rates per 1,000)



SOURCE: Military justice statistics provided by the Air Force.

NOTE: Asterisks indicate numbers significantly higher than Air Force rate at $p < 0.05$.

RAND RR592-3.5

³ Article 15 refers to disciplinary action authorized by Article 15 of the Uniform Code of Military Justice.

Note that information about Minot includes both personnel inside and outside the ICBM community.

part, a function of the sample size used in the analysis, and in these figures, the population sizes are quite large. The JA data we received list the populations in those years as about 3,000 to 3,100 at F. E. Warren; 3,200 to 3,300 at Malmstrom; 5,300 to 5,400 at Minot; and 330,000 to 333,000 in the Air Force as a whole. For this reason, even small differences in rates of behavior will be statistically significant. Therefore, we suggest consideration of the magnitude of the differences in addition to the statistical significance in determining whether the difference has *practical* significance.

Last, although we do not have data to quantify this, in our discussions with health professionals and leaders within 20 AF, concerns were expressed about suicide rates, suicide attempts, DUIs, and alcohol abuse in 20 AF.

Possible Explanations for Problem Behaviors in 20th Air Force

Although the existence of any problem behaviors in the ICBM force could be cause for concern, the rates may not be as disconcerting as some of the raw data used in these figures would suggest. For example, some of the rates could be explained by rare isolated events. In particular, a large Spice drug ring bust at one of the ICBM base locations accounts for part of the spike in court-martial rates.⁴ Other rates could be artifacts of reporting differences rather than actual behavior differences. For example, it is possible that sexual assault rates are high simply because the base is doing a good job of fostering a culture of safe

⁴ According to the National Institute on Drug Abuse, 2012:

“Spice” refers to a wide variety of herbal mixtures that produce experiences similar to marijuana (cannabis) and that are marketed as “safe,” legal alternatives to that drug. Sold under many names, including K2, fake weed, Yucatan Fire, Skunk, Moon Rocks, and others—and labeled “not for human consumption”—these products contain dried, shredded plant material and chemical additives that are responsible for their psychoactive (mind-altering) effects. . . . For several years, Spice mixtures have been easy to purchase in head shops and gas stations and via the Internet.

They also note that manufacturers of Spice continue to find ways to sell it legally in gas stations and on the Internet by continually changing the chemical contents of the products being sold (National Institute on Drug Abuse, 2012). Regardless of whether the drug is legal for civilians to purchase, possession and use of it in any form is punishable under the Uniform Code of Military Justice for military personnel.

reporting. Because details of who perpetrated the incident and whether it occurred prior to arriving at the base are never reported without the person's consent, there is no way to know how many of the reported offenses are actually connected to that base location or if the offenders were Air Force personnel. Similarly, increased use of the Uniform Code of Military Justice and nonjudicial punishment authority in the nuclear community could account for part of the rate differences in these figures. The ICBM world is known for fostering a culture of zero tolerance. If the other bases do not have that culture and they issue Article 15s or courts-martial less religiously than ICBM bases do, it would appear that there are higher rates of the behaviors, even if the behaviors are occurring at the same rates.

However, if the differences are *not* artifactual, two other explanations are plausible. The first is that the demographic makeup of the ICBM force includes personnel who are more likely to engage in problem behaviors. For example, the ICBM community has a much larger concentration of certain AFSs than other bases. Cultural, educational, and experiential differences associated with the career fields could lead to higher rates of problem behaviors. In addition, a large portion of the ICBM force is made up of first-term Airmen. Given that younger populations are more likely to engage in many of these problem behaviors, age differences could explain some or even all of the higher rates that are being observed.

The second explanation (supported by a wealth of existing research) is that stress, dissatisfaction, and other negative attitudes and perceptions among the ICBM community could be exacerbating the problem. To the extent that the ICBM personnel are experiencing higher rates of stress or dissatisfaction with their jobs, we could see higher rates of resulting problems among the personnel in 20 AF.

Any organization interested in reducing problem behaviors in its workforce should examine all possible explanations and make adjustments based on the findings. In this project, we only had the time and resources to examine one explanation further. We chose to focus them on the role of stress, dissatisfaction, and negative attitudes in the ICBM force. The results of that effort are described in the remainder of this report.

Summary

Data suggest that some rates of problem behaviors are higher in the ICBM communities than they are in the Air Force overall. These include rates for underage drinking; DUIs; sexual assaults; physical, neglect, and multiple child maltreatment; and partner physical maltreatment. However, the observed differences have many potential explanations. Demographics may explain some of or all the differences. Increased reporting and disciplining of problems in the ICBM nuclear community could also account for some of the differences. Because of the emphasis on trustworthiness and reliability around nuclear weapons, an attitude of zero tolerance makes sense. However, it is not clear how much this zero-tolerance approach is taken in other locations.

Nevertheless, even rates that are equivalent to those for the broader Air Force or that are inflated because of the zero-tolerance approach or demographic differences should still raise concerns. Given that ICBM personnel are prescreened through PRP to be trustworthy and reliable personnel, we would expect problem behavior to be much less frequent in that population than it is among similar personnel who have not met PRP screening requirements. A third explanation, one that has been mentioned in several past studies of the ICBM world and by ICBM leadership, is the presence of several stressors and perceived problems in the ICBM community.

Research on Stress, Well-Being, Attitudes, and Perceptions in the Workplace

As noted in Chapter Three, the remainder of this report focuses on one explanation for the problem behaviors in 20 AF, namely, that stress, well-being attitudes, and perceptions in the workplace affect workplace behavior. In this chapter, we review what the broader organizational research literature suggests about these topics. This review serves three primary purposes: (1) It provides examples of stressors, negative attitudes, and negative perceptions that the Air Force should consider for remediation; (2) it illustrates the seriousness of not addressing these issues in the 20 AF workplace; and (3) it provides an overview of the topics that should be explored further within 20 AF. The topics discussed in this chapter served as the basis for the questions we raised during the focus groups described in Chapter Five.

The review provided here is not intended to be comprehensive; each topic described has its own vast and detailed research base. Instead, we highlight each topic to offer readers and policymakers a basic understanding of why we believe that factor may be relevant to the issues 20 AF faces. Where possible, we direct readers to more-comprehensive reviews on the topics. Throughout the discussion below, we also describe some well-established measures that could be included in a large-scale, detailed survey of the ICBM community. Although a large-scale survey was outside the scope of this effort, we recommended pursuing it further as a next step, as discussed in Chapter Six. Although we cite several measures in this chapter, the list is intended

to be illustrative of the types of measures that might be relevant rather than exhaustive.

Our review spans a variety of topics well known in the field of industrial psychology as being relevant for understanding workplace behavior. In the first section, we present the conceptual framework we used to organize the review; then, in the remainder of the chapter, we elaborate on the topics within that framework that are particularly relevant to 20 AF and the ICBM community.

Conceptual Framework for Organizing the Literature

A wealth of research suggests that problem behaviors can be influenced by stress, negative attitudes, and negative perceptions of the workplace. To organize the vast literature for this review, we created a conceptual framework to serve as a guide or outline for the chapter.¹ That framework, shown in the box starting on p. 37, groups the information we cover into three broad topic areas:

1. factors that affect well-being and attitudes in the workplace
2. types of well-being and attitudes that matter in the workplace
3. the consequences of well-being and attitudes for organizations and individuals.

The content of these three topic areas is further defined by the subheadings and factors listed in the box. Subtopics are delineated

¹ Although the framework we present here is closely aligned with frameworks other researchers have used to guide their reviews of the literature (see, for example, Danna and Griffin, 1999), we acknowledge that it is an oversimplification of the relationships involved. The framework is therefore solely intended to help structure the concepts for presentation in this chapter. Although researchers have explored each factor listed below a subheading in our conceptual framework as a distinct topic of interest in the workplace, these are also often studied in conjunction with several of the factors described elsewhere in the table. In addition, in many cases, topics identified in the framework as outcomes or consequences are sometimes themselves studied as predictors or mediators of other factors in the framework and vice versa. This crossing of factors and topic areas and the study of them as both predictors and outcomes can make the research literature particularly difficult to summarize. This is why a simplified framework, such as the one presented here, would be considered useful for organizing the concepts, even if deficient.

Box

Examples of Factors Related to Topic Areas 1, 2, and 3

Topic Area 1: Factors that Affect Well-Being and Attitudes in the Workplace	Topic Area 2: Types of Well-Being and Attitudes that Matter in the Workplace	Topic Area 3: Consequences of Well-Being and Attitudes for Organizations and Individuals
Work and Organizational Characteristics <ul style="list-style-type: none"> • Work hours—amount and schedule (e.g., shift work) • Work demands—size of workload, intensity, uncertainty, repetitiveness • Work roles—role conflict, role ambiguity, autonomy, control, job rotation and job enrichment • Organizational structure and climate—evaluation and reward systems, turnover, job security, norms, perceived justice, breaches of psychological contracts • Work-life balance • Person-organization fit 	Well-Being <p><i>Psychological health</i></p> <ul style="list-style-type: none"> • Stress • Depression • Burnout <p><i>Physical health</i></p> <ul style="list-style-type: none"> • High blood pressure • Weight gain • Migraines • Anxiety • Trouble sleeping, exhaustion • Body function or disease • Illness (e.g., catching the flu) 	Work Consequences <ul style="list-style-type: none"> • Productivity, quality of work • Mistakes, accidents, injuries • Absenteeism, turnover • Counterproductive work behaviors (CWBs) which can take many forms (e.g., stealing office supplies, defacing company property, badmouthing the organization, and sabotage) • Reduced prosocial activities (e.g., helping coworkers, or volunteering to staying late to get work done) • Increased healthcare and disability costs • Substance use on the job
Environmental Characteristics <ul style="list-style-type: none"> • Situational pressures—weather, commute • Economic and industry pressures—unemployment, unions, increased training and education requirements levied on members of certain professions • Geographic location features—quality of life; cost of living; climate; hours of daylight and sunlight exposure; the community's alignment with someone's personal interests, goals, and lifestyle preferences 	Attitudes and Perceptions <ul style="list-style-type: none"> • Job satisfaction • Family and life happiness • Perceived justice, psychological contracts • Organizational commitment 	Personal Consequences <p><i>Individual</i></p> <ul style="list-style-type: none"> • Long-term health issues—heart disease, depression, suicide, alcohol and substance abuse, driving accidents • Illegal activity—DUIs, arrests, incarceration • Unhealthy life decisions • Emotional and financial hardship <p><i>Family</i></p> <ul style="list-style-type: none"> • Unhappiness, fighting, divorce • Abuse • Unhealthy family decisions • Emotional and financial hardship

Box—Continued

Topic Area 1: Factors that Affect Well-Being and Attitudes in the Workplace	Topic Area 2: Types of Well-Being and Attitudes that Matter in the Workplace	Topic Area 3: Consequences of Well-Being and Attitudes for Organizations and Individuals
Personal Characteristics <ul style="list-style-type: none">• Demographics—age, gender, race or ethnicity• Personality and temperament—locus of control, negative affect, emotional stability• Family demands and other life constraints or pressures—work-family conflict, child care needs, financial stability		

within each topic area by bolded subheadings. Below each heading, we provide examples of the types of factors that researchers have explored within that subtopic.

This framework groups together a wide variety of factors that have been shown to matter in the workplace but that are rarely viewed together as a whole. As a big-picture perspective, the topic groupings make sense. Broadly speaking, Topic Area 1 could be thought of as potential antecedents to well-being and attitudes. It provides a list of factors that an employer could consider as areas in which steps can be taken to institute change. For example, the job could be modified by eliminating, changing, or adding tasks; environmental factors could be mitigated through benefits or incentives; and problematic personality traits can be reduced through personnel screening. Topic Area 2 defines the types of well-being and attitudes that employers most need to be concerned about in their employees. This list includes not only well-being and attitudinal factors that employees care about personally but also factors that make a difference in accomplishing the job. These are examples of factors that employers could monitor to ensure that workforce morale is good. Changes in these factors or chronic and widespread problems with them could signal a potential for bigger behavioral problems down the road. Topic Area 3 lists examples of behaviors that could result—the potential consequences of employers failing to pay attention to employee well-being and workplace attitudes.

Although the framework is useful for structuring this vast literature, the relationships among the factors identified in it are actually much more complex. Most do not fit neatly within just one of the three topic areas. For example, many of the factors listed within Topic Area 1 can be described as potential *stressors* or causes of stress (such as role ambiguity, shiftwork, and high-intensity workloads), and several of the Topic Area 2 factors involve perceptions of *stress* or what is sometimes referred to as *strain* (psychological, physical, and behavioral responses to stress).² However, these *stressor* and *strain* roles can sometimes be reversed. Depression, illness, and job dissatisfaction, for example, could be considered both consequences and causes of work-

² For more on stressors, stress, and strain, see Cooper, Dewe, and O'Driscoll, 2001.

place stress. Similarly, some factors in Topic Area 3 include examples of long-term outcomes of stress (some could be called behavioral strains), whereas others, such as financial hardship, could clearly act as stressors or strains. Because these factors do not always fit neatly into area 1, 2 or 3 or into the subgroupings within topic areas, we have listed a few of them in more than one place. For example, depression is listed in both Topic Areas 2 and 3. Similarly, perceptions of justice are listed in Topic Areas 1 and 2. Although other factors are listed only once in the box, they, too, could be argued to fit elsewhere in the framework.

One last point worth noting about the framework is the absence of the term *morale*. Although many of the comments in past reviews of the ICBM field have hinted that there might be low morale within the ICBM force, we have refrained from using the term *morale* in this report because it has not been well defined as a concept.³ Instead, we have included in the framework many of the factors that tend to be thought of as important indicators of morale, such as job satisfaction, happiness, stress, and burnout. Throughout the remainder of the report, we focus our discussion on these narrower topics that have been much more clearly defined in the research literature. Note, however, that some of the factors and relationships described in the framework could be conceived of as indicators of morale, the antecedents to morale, or the consequences of it.

Because many reviews on the topics shown in the table already exist and the research literature on each factor within a subtopic can be vast, we have neither the space nor the resources to define and describe them all. Instead, we discuss a subset of the subtopics, particularly those that might be relevant for 20 AF, in more detail in the sections below.⁴ For more information on any of these topics, we direct inter-

³ For a discussion of the meaning of *morale* and how others have defined it, see Motowidlo et al., 1976.

⁴ Research supports examining the personal and working environment to determine influences of both psychological and behavioral outcomes at work. For that reason, we suggest that 20 AF conduct regular surveys of the factors described in this chapter. Established measures are available to examine many of the topics covered here reliably and with high validity. To assist 20 AF in any continuing efforts to examine these issues, Appendix A presents some example instruments.

ested readers to the myriad of comprehensive reviews and books on the subjects. Examples include Cartwright and Cooper, 1997; Brief and Weiss, 2002; Danna and Griffin, 1999; Greenberg and Colquitt, 2005; Maslach, Schaufeli, and Leiter, 2001; Barling, Dupré, and Kelloway, 2009; Hassan et al., 2009; Galinsky et al., 2005; and Allen et al., 2009. For more examples, see the references cited in the descriptions below. In addition, the American Psychological Association (APA) has produced a fact sheet (APA, 2011) summarizing several relevant statistics from other sources. Some of these statistics are cited throughout the text below.

To help guide and orient readers to the conceptual framework presented in the box, we have aligned the headings and subheadings in the remainder of this chapter with the headings and subheadings shown in the table.

Topic Area 1: Factors that Affect Well-Being and Attitudes in the Workplace

The first topic area (shown in the first column in the box) covers a wide variety of stressors and other relevant workplace, environmental, and individual factors that are known to predict psychological and physical well-being and important workplace attitudes. In the subsections below, we provide examples of research on topics that are particularly relevant to 20 AF.

Work and Organizational Characteristics

Researchers have repeatedly shown that key features of the workplace can heavily influence people's stress levels and their attitudes toward their jobs. Effects of several key workplace characteristics—including such factors as autonomy, work demands, and work roles—have been well studied.

For example, researchers have found strong support for the importance of several of these key workplace features using Hackman and Oldham's (1975) Job Characteristics Model (JCM). The JCM identified five "core job characteristics" that are theorized to relate to

employee *satisfaction* and *motivation*: *skill variety*, *task identity*, *task significance*, *autonomy*, and *job feedback*. The JCM is measured by the job diagnostic survey (Hackman and Oldham, 1975). A single item for each job dimension is used to measure each topic. For example, skill variety is measured with the question: "How much variety is there in your job? That is, to what extent does the job require you to do many different things at work, using a variety of your skills and talents?"

The JCM and accompanying Job Diagnostic Survey have been challenged, for example, because of a lack of fit with the five-factor structure of the core job characteristics and the lack of support for the theorized mediating role of psychological states between the job characteristics and hypothesized outcomes.⁵ Even with its limitations, other researchers (e.g., Fried and Ferris, 1987) have found the JCM to be reasonably valid and a useful theoretical approach to examining the role of work characteristics on organizational outcomes. Theoretical frameworks that embrace a different approach, such as *job enrichment* (e.g., Kelly, 1982) or *job redesign* through autonomous work groups (e.g., Wall et al., 1986), have also garnered support in the literature.

Other authors have measured similar *work involvement* characteristics with military-specific scales. For example, one study examined soldiers' personal involvement in their work while deployed on a peacekeeping mission in Kosovo (Britt et al., 2007). To assess the broader construct of engagement in meaningful work, the authors used four established scales to measure task significance (making a contribution to the mission; Bliese et al., 1998), military pride (sense of pride and accomplishment in the job; adapted from the Military Self-Esteem Scale, Marlowe et al., 1985; Vaitkus, 1994), *job engagement* (how much job performance matters to the soldier; Britt, Adler, and Bartone, 2001), and *challenge at work* (degree to which the job is seen as challenging and demanding of resources; Brown and Leigh, 1996). Each scale used a five-point Likert response (1 = strongly disagree to 5 = strongly agree). Military-specific evidence may be a consideration for 20 AF when deciding how to measure occupational characteris-

⁵ See Parker and Wall, 1998, for a review of job diagnostic survey critiques.

tics. The military-centric scales and job diagnostic survey are respected instruments to use when surveying about occupational characteristics.

Other aspects of the job that the JCM does not measure, such as *work hours*, can also play a major role in affecting workplace stress and attitudes. Approximately one-fifth of U.S. employees work more than 48 hours a week (International Labour Organization, 2007). According to many reviews of the literature (see, for example, Sparks et al., 1997), the stress and fatigue that sometimes result from longer work hours can affect employee health and well-being. In addition, longer hours may affect work-family conflict, leading to further stress in both personal and professional settings (Major, Klein, and Ehrhart, 2002).

Shift length has also been shown to have an important influence on health and well-being. For example, when comparing individuals working 12-hour shifts to those working 8-hour shifts, the longer-shift workers appear to have fewer hours of sleep and greater levels of fatigue (Di Milia, 1998; Smith et al., 1998). Yet in many cases, employees are choosing to work longer hours to increase earnings and deciding to increase periods of leisure time by working a smaller number of extended shifts (Bendak, 2003). Studies indicate that the tolerance of nontraditional work hours may be greater when the shift work is something that is chosen by an individual (Barton et al., 1993). The Fair Labor Standards Act of 1938 and its regulations for total weekly hours, work breaks, and overtime pay were implemented to address many of the concerns about employers forcing individuals to work under stressful conditions. However, extended work hours continue to be reported as a stressor for many individuals.

The *timing of work* can also contribute to employee stress, particularly among those who participate in shift work. Shift work—working shifts that occur outside the times that are typical for a regular daytime job (McMenamin, 2007)—can vary in response to a number of factors, including how schedules rotate over time, the number of consecutive shifts, and how much recovery time is allotted between shifts. According to the Department of Labor Statistics, nearly 18 percent of wage and salary earners work a schedule that can be considered shift work (McMenamin, 2007). More than one-half of these workers report that the shift work is the result of the nature of the job and/or

industry. There are many reasons individuals choose shift work, including the accommodation of other life demands (e.g., child care) and the availability of higher wages for alternative shifts (McMenamin, 2007).

In some cases, a shift may extend beyond the usual 8 hours; 24-hour shifts are common in some professions. Examples of occupations that require employees to be on the job on a 24-hour basis include nursing, air traffic control, manufacturing, police service, and fire protection.

Many studies have shown that evening, night, and weekend shifts; shifts that rotate between daytime and nighttime; double shifts; and shifts with long working hours can have negative consequences (for a review, see Sallinen and Kecklund, 2010). A primary concern is the disruption it creates to sleep-wake cycles (Nesthus, Hackworth, and Boquet, 2006). These disruptions can lead to fewer hours of sleep and less restful hours of sleep. For example, studies show that firefighters and medical residents obtain approximately 2 to 2-1/2 fewer hours of sleep on days in which they work nontraditional schedules (Rosekind, 2005). Fewer total hours of sleep and less restfulness during sleep hours lead to sleepiness in the workplace. A study of shift workers indicated that the typical day or evening shift results in rates of severe sleepiness around 10 percent of the time, while individuals working night and early morning shifts have rates of severe sleepiness of 50 percent and 20 percent, respectively (Härmä et al., 2002). In addition to affecting the attitudes an individual has about the job, the added exhaustion and fatigue can lead to a wide variety of psychological and physical health issues (for examples, see Admi et al., 2008; Di Milia and Bowden, 2007; Saksvik et al., 2011; and Dembe et al., 2007).

A number of different shift-related factors can affect sleep, alertness, and safety, including early start times, daytime sleep periods, on-call duties, extended work periods, and insufficient rest time between shifts (Rosekind, 2005). Long working hours (e.g., shifts lasting longer than 12 hours without adequate breaks or naps or shifts that total to more than 48 hours a week) have been shown to increase injury rates and recovery times (Dembe et al., 2005) and medical errors among doctors (e.g., Barger et al., 2006). However, some individuals tolerate shift work better than other people, showing less fatigue and fewer

attention deficits. For example, according to a review of research on shiftwork tolerance, being young, male, preferring a later wake time, and scoring high on flexibility are all characteristics associated with greater levels of tolerance (Saksvik et al., 2011).

In addition to total hours of work, the *demands of the work* done within those hours can act as stressors. Studies find that 26 percent of employees reported being overworked often in the last month, and 35 percent of wage and salaried workers report they often feel overwhelmed by the amount of work they have to do (Bond et al., 2003; Galinsky et al., 2005). Highly demanding work has been shown to be related to emotional exhaustion; eventually, this exhaustion can lead to burnout (Lee and Ashforth, 1996; Maslach, Schaufeli, and Leiter, 2001). Work demands can also affect the attitudes individuals have about work. More than one-third of employees who feel highly overworked also feel angry toward their employers; only 1 percent of individuals with low overwork levels express the same sentiments (Galinsky et al., 2005). Job satisfaction rates are also lower for individuals who feel overworked (Maslach, Schaufeli, and Leiter, 2001; Penney and Spector, 2005), and a number of studies have shown that exhaustion and burnout can cause health to suffer (Burke and Mikkelsen, 2006; Sparks et al., 1997).

The *intensity of the work* can also play a role in the amount of stress an individual experiences. Workers have been more likely to show stress in jobs that require deep concentration, power, or force (Burke, Singh, and Fiksenbaum, 2010). Risk and emotional commitment to work can be important aspects of intensity in the workplace, particularly in occupations requiring life-or-death decisions (Burke and Mikkelsen, 2006; Burke, Singh, and Fiksenbaum, 2010). Police, firefighters, and medical workers all experience high levels of intensity in this way, although these periods of intensity may be shorter and more occasional. Air traffic controllers are another example, with the job demanding prolonged, intense levels of attention and countless split-second decisions. Studies show that rates of exhaustion and burnout and negative physical health consequences are more common among individuals with these types of intense work (Burke, Singh, and Fiksenbaum, 2010; Fairris, 2004; Zapf, 2002).

Then again, *jobs that are repetitive or leave employees feeling bored* can also be stressful to individuals. When individuals feel that work is not stimulating or rewarding, feelings of cynicism, anger, and workplace dissatisfaction are possible (Bruursema, Kessler, and Spector, 2011; Melamed et al., 1995). These individuals may experience reduced self-confidence, suffer depression, and also withdraw from the workplace (Spector et al., 2006). The potentially negative consequences of these types of jobs have been documented for decades, with accounts starting as early as 1906 in an exposé of the meatpacking industry (Danna and Griffin, 1999).

The *role an individual holds in the workplace* also affects the amount of stress that is experienced. Several studies indicate that demands from the work and the role of the work interact closely in generating workplace stress (McVicar, 2003; Hammer et al., 2004). As employees are afforded different levels of resources and control in the workplace through the role(s) they hold, work demands will bring about differing levels of stress. Control over the work that is done, including autonomy over tasks or control of resources, can be closely related to the stress and well-being that are experienced in response to work demands (Fox, Spector, and Miles, 2001). When individuals have low levels of control, this can drive feelings of reduced personal accomplishment and inefficacy, which can eventually lead to burnout (Maslach, Schaufeli, and Leiter, 2001).

A lack of certainty about the role one holds in the workplace can also be a source of stress. The literature typically describes this uncertainty about workplace roles as being driven by role ambiguity and/or role conflict. *Role ambiguity* arises when individuals do not have sufficient information to perform a job effectively, while *role conflict* represents the differing demands an individual faces when he or she has multiple roles in the workplace (Maslach, Schaufeli, and Leiter, 2001). Exhaustion, cynicism, dissatisfaction with work, and burnout have been shown to be potential consequences of role ambiguity and role conflict (Danna and Griffin, 1999; Lee and Ashforth, 1996; and Maslach, Schaufeli, and Leiter, 2001).

Elements of *organizational structure, climate, and culture* can also affect the amount of stress workers experience, including workplace

norms, interaction with others, evaluation and reward systems, and turnover or stability. For example, according to Hammer et al. (2004), *workplace norms*—“unwritten rules that prescribe the ways in which all members of an organization should approach their work and interact with one another” (p. 84)—can generate tension and stress or act as psychological buffers to reduce the amount of stress an individual experiences. They can also play an important role in determining how individuals act in response to stress they are experiencing (Cullen and Sackett, 2003; Hodgins, Williams, and Munro, 2009; and Kish-Gephart, Harrison, and Trevino, 2010). Norms for behavior are typically established informally and can be unspoken, but they are usually well understood by the group. Topics affected by norms are potentially limitless. For example, there are norms about wearing safety equipment, engaging in illegal or unethical behavior, sexual harassment, and even helping behavior, such as staying late or assisting a coworker.

Another organizational factor that may influence workplace stress is the *amount of support and/or conflict experienced in interactions with others*. Individuals can face a number of negative interactions with coworkers, including workplace incivility and workplace aggression. These types of negative experiences act as stressors and can lead to job dissatisfaction and poor psychological well-being (Cooper and Cartwright, 1994; Penney and Spector, 2005). The effects of stress among some employees may go beyond the individual, leading to spillover effects, with workplace dissatisfaction and burnout spreading throughout a workplace (Maslach, Schaufeli, and Leiter, 2001). The absence of interpersonal relationships can also act as a workplace stressor. According to several studies, individuals who experience isolation in the workplace experience greater levels of burnout and dissatisfaction with the workplace (Schlichte, Yssel, and Merbler, 2005; Stephenson and Bauer, 2010). Then again, positive relationships with others in the workplace can provide important elements of support to help insulate and protect individuals from detrimental responses to other stressors in the workplace (Danna and Griffin, 1999). Coworkers who share values and create an environment of respect and fairness can decrease the likelihood that individuals will experience work stress (Maslach, Schaufeli, and Leiter, 2001).

One validated measure of social support at work (see Etzion, 1984; Carlson and Perrewe, 1999) taps support features of the work environment, such as feedback from others and appreciation. In that measure, respondents are also asked to rate the quality of their relationships with the supervisor, coworkers, and subordinates. Another measure, the Copenhagen psychosocial questionnaire, uses multiple items to assess support from colleagues, supervisors, and the social community at work. The second version of the Copenhagen psychosocial questionnaire (Pejtersen et al., 2010) consists of 41 different scales with 127 items. Example items from each scale include: “How often do you get help and support from your colleagues?” (social support from colleagues), “How often does your nearest superior talk with you about how well you carry out your work?” (social support from supervisors), and “Is there a good atmosphere between you and your colleagues?” (social community at work).

Evaluation and reward systems are additional elements that play a role in employee motivation and satisfaction (Gagné and Forest, 2008). These systems are one of the most visible ways organizations communicate values and expectations to employees. In some cases, these evaluation and reward systems are perceived as unfair. This perceived lack of fairness may lead to dissatisfaction with work and negative effects on health and well-being because implicit and unspoken psychological contracts have been broken (Maslach, Schaufeli, and Leiter, 2001). The perceptions of injustice with evaluation and rewards may not necessarily result from how the pay is distributed within an organization. It may instead be that an entire organization or occupation does not receive external recognition for the work that is being done. Just as boredom and repetitiveness can lead to workplace dissatisfaction and affect well-being because of a lack of intrinsic rewards, a lack of extrinsic rewards and recognition can lead to similarly negative consequences.

The organization’s reward system includes two types of rewards: intangible compensation and tangible rewards (Martocchio, 2011). Intangible compensation includes recognition and status, as well as employment security. Challenging work and unplanned learning opportunities can also be part of the intangible compensation employees receive as a reward for performing their job duties at a high level.

Tangible rewards, however, are limited to the pay and employee benefits one receives in exchange for doing the on-the-job tasks.

Gagné and Forest (2008) argue that the compensation literature has not adequately studied the effect of compensation on the satisfaction of psychological needs. They recommend studying five dimensions: the amount of pay, the perceived fairness of the compensation, the ratio of fixed compensation to variable compensation, the objectivity of the performance appraisal, and whether incentives are rewarded to the group or individual. More research is needed to determine the effect of these dimensions on an individual's needs for autonomy and competence, which are believed to influence one's work motivation (Gagné and Forest, 2008). Although a one-size-fits-all instrument is not available to examine the perceived availability of intangible and tangible compensation across multiple organizations, the recommended approach for an organization's evaluation and reward system is to emphasize the clear link between rewards and behaviors or between pay and performance (Lazear, 2000). In a previous meta-analysis, for example, organizational behavior modification programs were shown to improve performance by 17 percent, on average, when a clear link between rewards and behaviors was established (Stajkovic and Luthans, 1997).

Environmental Characteristics

In addition to characteristics of the organization, occupation, or industry that can drive stress, situational factors that can also add to workplace stress. For example, *commute time* is often cited as something that can substantially affect the health and well-being of individuals (Koslowsky, Kluger, and Reich, 1995; Lucas and Heady, 2002). Individuals with long commutes may experience sleepiness due to the monotonous nature of long-distance driving (Thiffault and Bergeron, 2003). The combined stressors of shift work and a long commute in "drive-in, drive-out" workforces—defined as driving long distances to the work site, living in local accommodation for the work period, then returning to the permanent home—can lead to employees who are dangers to themselves and others on the road (Di Milia and Bowden, 2007).

Among individuals in the drive-in, drive-out workforce, greater travel distances and commute times increase the risk of driver sleepiness (Di Milia and Bowden, 2007). Also, the time of day of the driving commute is important. Early morning drives are related to higher reported sleepiness (Di Milia and Bowden, 2007). Therefore, the time of day and the distance are critical factors to consider at the individual level and across the organization to determine the safety of Airmen as they travel to and from the job. Other factors, such as inclement weather and isolation during the drive, may create greater hazards. All these situational factors should be considered for inclusion as objective measures in a follow-on organizational assessment of 20 AF workforce scheduling.

Weather and *sunlight* can also play important roles in the stress an individual experiences in the workplace. A literature review on the effects of sunlight finds clear relationships between the amount of sunlight in the workplace and individual health and well-being (Leather et al., 1998). The study finds that exposure to sunlight is positively related to workplace satisfaction and well-being and is negatively related to intentions to quit. Particularly for individuals with seasonal affective disorder, working in a region characterized by long, cold winters can lead to higher rates of mood disorders, such as depression (Rosen et al., 1990).

Personal Characteristics

A variety of factors related to individual differences and family life can also affect the roles of stress, attitudes, and perceptions in the workplace. For example, the *effects of work-family conflict* can be multidirectional, with conflict in the family affecting the ways that individuals experience and deal with work stress, and conflict at work can affect the way individuals experience stress in the home. According to an APA fact sheet (APA Practice Organization, 2010), “Fifty-two percent of employees say that job demands interfere with family or home responsibilities, while 43 percent say that home and family responsibilities interfere with job performance.” As the lines between home and work and work have become increasingly blurred, the potential for work-family conflict has grown. For example, a survey by America

Online in 2007 found that more than three-quarters of email users check email at least once a day once during vacations (America Online, 2007). In addition, as the number of dual-earner families has increased substantially over recent decades, the issue of conflict between work demands and family responsibilities has become an even greater concern (Haddock et al., 2006). A number of different factors can lead to increased work-family conflict, including long work hours, childcare needs, clashes between the roles individuals hold at work and home, marital problems, financial well-being, and a range of other issues (Barnett, 1998; Ford, Heinen, and Langkamer, 2007).

The majority of studies have found that work-family conflict is associated with decreased levels of job satisfaction (Allen et al., 2000; Kossek and Ozeki, 1998). Several studies indicate that work-family conflict can contribute to psychological conditions, such as anxiety and depression; poor physical health; and substance abuse (Frone, Russell, and Barnes, 1996; Frone, 2000). Shift work has been seen as one way of better balancing family responsibilities in dual-earner families. However, the extended absences from the home for some shift work can sometimes lead spouses to feel like single parents, leading to issues with stress and loneliness (Regehr et al., 2005).

Personality and *temperament* play a critical role in driving workplace stress. In fact, many organizations routinely give personality tests and screen for temperament in interviews to identify individuals who may not be well suited to handle the requirements of the job, including any stressors they may encounter. However, studies consistently show that personality characteristics are less predictive of stress and the undesirable outcomes associated with stress than many of the other stressors described in this section (Maslach, Schaufeli, and Leiter, 2001). Rather than acting as unique stressors, personality and temperament are generally described as moderators of work stressors, affecting the way an individual experiences work and family stressors (Cullen and Sacket, 2003; Hershcovis et al., 2007).

One of the key personality characteristics associated with how individuals experience stress is *locus of control*, meaning the beliefs of individuals about whether the outcomes of their actions are contingent on what they do or on outside forces. Studies have found that individu-

als with an internal locus of control are less subject to stress and have greater levels of job satisfaction, and these direct influences on well-being are related to benefits on physical health (Cooper, Kirkcaldy, and Brown, 1994; Kirkcaldy, Shephard, and Furnham, 2002). Individuals with internal locus of control are also more tolerant of shift work (Saks-vik et al., 2011).

Type A personality characteristics—such as being competitive, job involved, and hostile—have also been shown to be negatively related to health and well-being in the workplace. In particular, studies find that poor physical health and illness are more prevalent in Type A individuals (Danna and Griffin, 1999; Kirkcaldy, Shephard, and Furnham, 2002). Finally, individuals with *negative affect*, or *neuroticism*, are more likely to see work events as stressful (Cullen and Sackett, 2003; Jensen, Opland, and Ryan, 2010).

Personality and temperament can also affect the ways in which individuals deal with stress in the workplace. The Big Five personality constructs—extraversion, agreeableness, conscientiousness, emotional stability (or neuroticism), and openness to experience—are widely accepted as the basic dimensions of normal personality (Chernyshenko, Stark, and Drasgow, 2010). Individuals with high levels of agreeableness and conscientiousness are much less likely to engage in CWB in response to workplace stress (Bolton, Becker, and Barber, 2010; Cullen and Sackett, 2003). According to Orvis, Dudley, and Cortina (2008), conscientiousness is also negative predictor of turnover intentions and positive predictor of job performance. Individuals who have an external locus of control are more likely to turn their reactions to stress outward, while those with an internal locus of control may be more likely to cope with stress through self-directed behaviors (Danna and Griffin, 1999).

The Big Five personality constructs are often measured at the broad level, resulting in a score for each of the Big Five factors. One example of a widely used scale draws from the International Personality Item Pool (IPIP) (Goldberg, 1999), with ten to 20 items per factor. For example, items for conscientiousness include “I am always prepared” and “I like order,” while example items for extraversion include “I am the life of the party” and “I feel at ease with people.” The IPIP Big Five

Factor Markers scale is publicly available and free to administer. However, there is no report generation to interpret an Airman's personality scores relative to a norm.

Many other Big Five personality measures are available, and some provide much more-detailed score information. For example, one highly respected measure of the Big Five, the NEO Personality Inventory–Revised (Costa and McCrae, 1994), provides scores on various subtraits (or facets) within each of the Big Five factors. Although the NEO is only available for a fee per administration, other measures may also include some facet information developed specifically for use in military settings.⁶ The same Big Five facets measured on the NEO personality inventory have been developed for the IPIP as well, allowing measurement of the 30 facets with comparable items at no cost. 20 AF would need to consider whether resources exist to analyze and interpret so many personality facets without the assistance of summary reports from the copyrighted NEO Personality Inventory publisher. Although there are many personality measurement approaches from which to choose, the NEO Personality Inventory–Revised and the IPIP Big Five Factor Markers scale are excellent starting points for 20 AF to measure the Big Five personality constructs at the facet or broad construct level, respectively.

Dispositional affect is another personality characteristic shown to be relevant to the way someone interprets the work and personal environment. It can be divided into two factors: positive affect and negative affect. These two affect factors are treated as uncorrelated or distinct dimensions, meaning each dimension ranges from high to low and is not simply the opposite of the other (Watson, Clark, and Tellegen, 1988). For example, high positive affect is characterized by feeling enthusiastic and active, while high negative affect measures subjective distress, such as anger, contempt, and nervousness. The positive and negative affect schedule by Watson and colleagues (1988) is a common tool for measuring positive affect and negative affect as dispositional

⁶ The Tailored Adaptive Personality Assessment System is administered during the enlisted accession process, and the Self-Description Inventory Plus is administered during the Air Force officer accession process.

traits. Example items include “interested” and “enthusiastic” for the positive affect subscale and “irritable” and “jittery” for the negative affect subscale.

Family demands and family support may be important variables to measure as personal characteristics of the Airman. Family demands can often be quantified with objective measures (such as number of hours per day or week devoted to the family role, time spent in family work, and the number of children or other dependents living at home), while family support measures often rely on self-report responses. In a recent meta-analysis, family demands and family social support were significantly related to family-to-work conflict (Michel et al., 2011).

One established measure of family support is the family support inventory for workers (King et al., 1995). It measures two dimensions: emotional sustenance and instrumental assistance. An example item for the emotional sustenance subscale is: “When I succeed at work, members of my family show that they are proud of me.” An example item from the instrumental assistance subscale is: “Members of my family cooperate with me to get things done around the house.” Other instruments are available to measure family and spousal support, but one advantage of the family support inventory for workers is its item pool. In the published validation of the instrument, the authors provide reliability estimates of using shortened versions of each subscale.

Many other individual difference variables also play a role in how people respond to workplace issues. For example, Michel et al., 2011, also found that marital status, parental status, and gender are significant moderators of many work domain and family domain relationships.

Topic Area 2: Types of Well-Being and Attitudes that Matter in the Workplace

The second topic area in the box lists examples of the types of well-being and attitudes that matter in the workplace. In this topic area, we grouped the research into two categories: *physical and psychological well-being* (such as burnout, health problems, sleep deprivation, and depression) and *attitudes and perceptions* (such as job satisfaction, orga-

nizational commitment, and perceptions of justice). Both categories have been studied extensively in the workplace, and both have been shown to be influenced by factors in the first topic area. We discuss several of the topics that are particularly relevant to 20 AF in greater detail in the following subsections.

Well-Being

Turning to the second column of the box, although several aspects of well-being and attitudes and perceptions are relevant in the workplace, *stress* is at the forefront of many workplace concerns. For example, according to an APA survey, work is the second biggest source of stress after money, with 70 percent of Americans listing work as a significant source of stress (APA, 2012). Stress in the workplace can also be harmful to employers by leading to increased absenteeism, diminished productivity, and employee turnover (Cooper and Cartwright, 1994; Maslach, Schaufeli, and Leiter, 2001). There are also costs in direct medical, legal, and insurance fees. According to an APA fact sheet (APA Practice Organization, 2010), one study estimates the cost of stress in the workplace to be approximately \$300 billion per year.

The term *stress* is often used to describe two distinct aspects of the stress experience: stressors and strains. A *stressor* is an antecedent, such as job or organizational conditions, while *strain* refers to the outcome, or the individual's response to these stressors (Jex, Beehr, and Roberts, 1992). Although many of the immediate consequences of stressors can manifest as behavioral and physical symptoms, others can be psychological in nature and result from dysfunctional mechanisms for coping with stress experienced in the workplace.

There are many different ways to evaluate stress in the workplace; however, most researchers agree that stress measurement should focus on both stressors and strains. The Perceived Stress Scale (Cohen, Kamarck, and Mermelstein, 1983), for example, includes items resembling both stressors and strains to assess how often in the last month the respondent experienced a variety of situations of diminished resources to cope with demands. An example item is: "In the last month, how often have you felt difficulties were piling up so high that you could not overcome them?" Another stress scale—the stress in general scale

(Stanton et al., 2001)—is designed to measure stress of workers while on the job by asking whether various descriptors, such as “demanding” and “nerve-wracking,” apply to their job. Many stress studies also develop their own items to address stressors and strains specific to the community of interest.

Burnout is a closely related stress factor. According to Maslach, Schaufeli, and Leiter, 2001, burnout has three key dimensions: exhaustion, depersonalization, and reduced professional efficacy. Schaufeli and Enzmann (1988, p. 36) describes burnout as a process involving a

persistent, negative, work-related state of mind in “normal” individuals that is primarily characterized by exhaustion, which is accompanied by distress, a sense of reduced effectiveness, decreased motivation, and the development of dysfunctional attitudes and behaviors at work. This psychological condition develops gradually but may remain unnoticed for a long time for the individual involved. It results from a misfit between intentions and reality at the job. Often burnout is self-perpetuating because of inadequate coping strategies that are associated with the syndrome.

The most well-known measure of job burnout, the Maslach Burnout Inventory—General Survey (Schaufeli et al., 1996), has been shown to be a reliable and valid measure of burnout in a variety of occupational settings and across many international samples and translations. The Maslach Burnout Inventory—General Survey uses 16 items to measure the frequency with which the respondent has experienced each of three burnout factors (exhaustion, depersonalization, and reduced professional efficacy). Items on this survey are available for a fee per single administration, plus an additional fee for reporting results at both the individual and group levels. However, a related measure, the Burnout Measure—Short Version (Malach-Pines, 2005)—has also been shown to have adequate construct validity and high face validity, as well as high correlations with the Maslach Burnout Inventory—General Survey’s emotional exhaustion subscale (Malach-Pines, 2005). Example items include being “tired” and “disappointed with people.” Items of this scale are publicly available and free to administer. An individual is

considered to be experiencing burnout if the average scale score is a “4” or higher on the seven-point Likert response.

Depression is another potential response to adverse workplace and environmental factors, although the severity can also depend on individual personality and temperament. Many established measures of depression symptoms exist for purposes of identifying people who might be at risk for depression. For example, the Center for Epidemiological Studies–Depression Scale (Radloff, 1977) asks respondents to report how often in the past week they experienced each of 20 depression-related symptoms. Example items include: “I felt that everything I did was an effort,” and “I was sad.” A shortened version of this scale uses only seven items and correlates 0.92 with the full measure (Mirowsky, 1996). The depression module on the Patient Health Questionnaire (Kroenke, Spitzer, and Williams, 2001) is another widely used screener. Many other measures of depression symptoms—both self-report and those administered by trained mental health professionals using other modes, such as interviews—exist for researcher use.

While psychological health outcomes are often evaluated in the workplace using self-report measures, physical health symptoms are often measured through objective measures. Chronic stressors can lead to reduced adaptability of the immune system over time and have been linked to a variety of *physical health outcomes*, including increased heart rate, increased blood pressure, and increased catecholamines, as well as decreased healthy eating and increased body mass index—all of which are accessible through basic health monitoring and checkups. Additional physical symptoms can be measured inexpensively in a self-report survey by using the Physical Symptoms Inventory (Spector and Jex, 1998). The Physical Symptoms Inventory is an 18-item checklist of common physical symptoms associated with stress reactions, including stomach disorders, headache, eyestrain, sleep disturbance, and chest pains.

Physical exhaustion and sleep deprivation are other physical symptoms of someone’s well-being. Objective measures of sleep and scheduling, such as the number of hours in bed, number of hours asleep, and number of hours of sleep after working shifts greater than eight hours, can be particularly relevant in shift work settings (Rosekind,

2005). Subjective measures of daytime sleepiness can also be useful. For example, in the Epworth sleepiness scale (Johns, 1991), individuals rate how likely they are to doze off or fall asleep in eight situations, ranging from “would never doze,” “slight chance of dozing,” “moderate chance of dozing,” and “high chance of dozing.” Example situations include watching TV and as a passenger in a car for an hour without a break. The items on this particular scale are owned by the author and protected by copyright, but clinicians and researchers may use them without charge.

Attitudes and Perceptions

Experiences in the workplace can affect not only employee well-being but also employee attitudes and perceptions about the job. These attitudes and perceptions (many of which are listed in the box) can, in turn, have negative consequences for individuals and organizations.

For example, employee perceptions about the fairness of an organization’s policies and practices (known as *organizational justice*) are one type of perception that has been shown to affect a wide variety of CWBs. That is, when employees encounter what they perceive to be injustice (e.g., unfair compensation, lack of respect), they may take actions to help to restore justice by acting in ways that intentionally hurt an organization (Fox, Spector, and Miles, 2001; Cohen-Charash and Spector, 2001; Marcus and Schuler, 2004). Perceptions of justice are divided into three distinct types: *distributive justice* (fairness of distributions of rewards or resources); *procedural justice* (fairness of the way outcomes are determined and whether one has a voice in the process); and *interactional justice*, which is divided further into *interpersonal justice* (treating people with dignity and respect) and *informational justice* (receiving clear explanations about the procedures used to determine an outcome) (Greenberg, 1993; Colquitt, 2001; Fox, Spector, and Miles, 2001; and Morrison and Robinson, 1997). Characteristics of work that may influence perceptions of justice include pay, recognition, time off, promotions, performance evaluations, the hiring process, treatment of minorities, and handling of grievances. For results to be most useful to an organization, measures of perceived justice should be tailored to

address each potential target. For example, pay-related items could be adapted from Colquitt, 2001, as follows:

- *Distributive Justice*: “Does your [pay] reflect the effort you have put into your work?”
- *Procedural Justice*: “Have you been able to express your views and feelings during those procedures?”
- *Interpersonal Justice*: “Has [the person in charge of your pay] treated you in a polite manner?”
- *Informational Justice*: “Has [the person in charge of your pay] been candid in (his or her) communications with you?”

Although viewed as distinct from organizational justice, the concept of a *psychological contract* is another area of employee perceptions that can lead to negative workplace outcomes. The psychological contract, defined as an employee’s beliefs about the mutual obligations between the employee and the employer (Rousseau, 1989), is a closely related concept. These perceived mutual obligations are typically implicit—i.e., an employee expectation that the employer may or may not understand and agree to (Morrison and Robinson, 1997). An individual who perceives that the implicit contract has been violated can perceive this as injustice and may attempt to address the injustice through undesirable workplace behaviors. The following are some example items (adapted from Robinson and Rousseau, 1994) for measuring psychological contract violations:

- How well has your employer fulfilled the promised obligations that they *owed you*?
- Has or had your employer ever failed to meet the obligation(s) that were promised to you?

Psychological contracts form during preemployment recruitment, early socialization, and later experiences, so it may be informative to measure expectations of mutual obligations at multiple times throughout the employment process.

Conflict between work and family life is yet another factor. *Work-family conflict* theories focus on the need to balance the demands and

rewards of the work environment and with the demands and supports in the family sphere, and the potential this has to create stress (Hammer et al., 2004; Pittman, Kerpelman, and McFadyen, 2004). Work characteristics can often affect outcomes in the family environment, and experiences at home can also spill over into the work environment. These work and family explanations suggest that organizations should also consider the stressors coming from outside the workplace and the way these external stressors affect their employees at work.

Last, satisfaction is an example of an attitude that may be important in explaining a variety of behaviors, including performance on the job (Spector, 1997). *Job satisfaction* can be measured at the global level by considering all aspects of the job or at the facet level, such as considering as separate constructs one's pay, promotion, opportunities for advancement, and satisfaction with supervision. Global-level job satisfaction measures include a multi-item measure by Brayfield and Rothe, 1951; the Job in General Scale (Ironson et al., 1989); and the job satisfaction subscale of the Michigan Organizational Assessment Questionnaire (Cammann et al., 1979). The Job in General Scale is not publicly available and costs a per administration fee; the Michigan Organizational Assessment Questionnaire and Brayfield and Rothe's measure are publicly available.

At the facet level of job satisfaction, the Job Descriptive Index (Smith, Kendall, and Hulin, 1969) is the most historically popular measure, although a comparison to the Minnesota Satisfaction Questionnaire (Weiss et al., 1964) suggests that the Minnesota Satisfaction Questionnaire may be a better scale for measuring pay, promotion, and coworker and supervisor satisfaction (Kinicki et al., 2002). The Minnesota Satisfaction Questionnaire has a 100-item long version and 20-item short version covering 20 different facets of job satisfaction. Participants respond on a five-point Likert scale to this highly reliable and valid measure of facet job satisfaction. The Minnesota Satisfaction Questionnaire and the Job Descriptive Index are both protected by copyright and require a fee per administration.

Job satisfaction is similar to *family or life satisfaction*, or one's happiness with the nonwork elements of life. Life satisfaction is commonly measured with the Satisfaction with Life Scale (Diener et al., 1985),

which is a global life satisfaction assessment of five items answered with a seven-point Likert scale. Example items include, “In most ways my life is close to my ideal,” and “If I could live my life over, I would change almost nothing.” The Satisfaction with Life Scale has been shown to have high internal-consistency reliability and test-retest reliability. Family dissatisfaction has been significantly predicted by work-to-family conflict (Frone, Russell, and Cooper, 1992; O’Driscoll, Ilgen, and Hildreth, 1992). Therefore, it may also be informative to measure work-family conflict with an instrument such as the multidimensional measures of work-family conflict by Carlson, Kacmar, and Williams (2000), which uses the recommended approach of measuring both work interference with family and family interference with work (Allen et al., 2000).

Topic Area 3: Consequences of Well-Being and Attitudes of Impacts for Organizations and Individuals

The third topic area encompasses a variety of *serious or long-term undesirable consequences for employers and employees* that tend to be exacerbated by negative or unhealthy workplace states and attitudes. For example, the physiological and psychological reactions to stress can lead to a range of undesirable outcomes. In the workplace, such factors as burnout, depression, and trouble sleeping can lead to higher rates of absenteeism and turnover, increased mistakes and accidents, and even intentional acts to harm the organization. The effects can also spill over to employee’s personal lives, resulting in such problems as increasing drinking, family conflict, and driving accidents. Conversely, negative outcomes in the home can also creep into the workplace, for example, increased drinking and drug use could affect productivity in the workplace.

Turning to the third column of the box, organizations have a number of reasons to be concerned about the stress employees experience in the workplace. As previously mentioned, according to a recent fact sheet from the APA Practice Organization (2010), a study estimates that there are substantial costs (up to \$300 billion annually) associated with stress and its relationships with lower productivity, absenteeism,

turnover, and medical and legal expenses. For example, one study indicates that for employees with high levels of stress, health expenditures were 46 percent higher than those for employees with lower levels of stress (Goetzel et al., 1998). The concerns about negative outcomes of stress also go beyond the workplace. When individuals engage in negative personal behaviors or when workplace stress spills over into the home environment, the health and well-being of the employee and the family are at even greater risk. Increased rates of substance abuse, family problems, and automobile accidents are among the many consequences (Allen et al., 2000; Barger et al., 2005; and Sparks et al., 1997). Family conflict and destructive personal decisionmaking can then feed back into the workplace.

This section describes a range of potentially negative workplace and personal consequences that have been shown to be related to workplace stress and negative attitudes and perceptions.

Workplace Consequences

Absenteeism and *turnover* provide substantial costs to organizations and are often key areas of focus as measures of organizational well-being. Absenteeism and turnover are sometimes described as means of withdrawing as a response to job dissatisfaction, exhaustion, burnout, and depression (Maslach, Schaufeli, and Leiter, 2001; Spector et al., 2006). A wide variety of factors can affect absenteeism and turnover, including health, psychological disorders, stress, social norms, culture, conflict with management, and individual differences (for examples of research on several of these topics, see Aldana and Pronk, 2001; Porter and Steers, 1973; and Podsakoff, LePine, and LePine, 2007). For example, family conflict (such as spousal abuse) and unhealthy activities (such as substance abuse) have also been shown to result in higher rates of absence and turnover (Mighty, 1997; McFarlin and Fals-Stewart, 2002). Even environmental factors can also lead to increased rates of absence and turnover. For example, one study found that the amount of sunlight an individual encounters in the workplace has a negative relationship with intentions to quit (Leather et al., 1998).

Because employee absenteeism and turnover are also costly workplace outcomes, organizations commonly measure and track their ante-

cedents (e.g., personal characteristics, work characteristics, attitudes, and well-being) and track absenteeism and turnover rates. Simple turnover quit rates are calculated by dividing the total number of quits by the number of people employed, and exit surveys can be useful tools to assess the reasons for quitting. One can then compare the responses of “leavers” to the responses of “stayers” on satisfaction with key job metrics, such as on Job Descriptive Survey items for general job satisfaction, or perhaps with metrics more tailored to the industry to determine more-specific reasons for leaving. Low overall job satisfaction, low organizational commitment, and low perceived distributive justice are examples of other workplace variables that often predict turnover. Also, personality-based integrity tests have been shown to predict absenteeism (Ones, Viswesvaran, and Schmidt, 1993) and may be an alternative approach to examining employee absenteeism. There may be benefits to including these measures in the exit survey or other information gathering surveys for those who have high rates of absenteeism, have expressed intentions to quit, or have recently quit.

For employees who do remain in the workplace, there is a wide body of literature that documents issues with *productivity*, *quality of work*, and *safety*. Vagg and Speilberger, 1998, describes a survey of employees that was conducted by the Northwest National Life Insurance Company; 69 percent reported that their productivity had suffered from stress. Both burnout and boredom have been shown to be related to issues with productivity (Drory, 1982; Maslach, Schaufeli, and Leiter, 2001). Low productivity can also be an intentional action to address perceived issues with organizational justice or can be a reaction to violation of a psychological contract. Mistakes are more common among individuals who are highly overworked, with 20 percent reporting they often make mistakes, compared to 0 percent of those who are not overworked (Galinsky et al., 2005). We discuss intentional behaviors to harm the organization later, in the section on CWBs.

There are many ways to measure on-the-job performance, injuries, absenteeism, turnover, and CWBs, and there are many considerations for choosing a measure of each. Performance criteria need to be well developed for measuring individual- and team-level performance, and raters require adequate training in how to subjectively rate the per-

formance behaviors with few errors. While no one performance metric or performance instrument can be designed to evaluate all jobs, Wildman et al., 2010, outlines five critical issues to consider when designing a performance management system. Management must consider the measurement's (1) purpose, (2) content, (3) timing, (4) fidelity in the measurement setting, and (5) technique or tools used to evaluate performance. Generally speaking, the performance measure should provide information to the supervisor about the products, services, or tasks the individual or team completes or produces. Wildman et al., 2010, suggests that, for the performance measurement to be useful, whatever is measured should be transferred into metrics that are meaningful to the mission.

The relationship between job characteristics and *mistakes* or *accidents* comes up even more commonly in the literature. A number of studies have found that work hours and shift work are key drivers of mistakes in the workplace. Studies have shown relationships between long working hours and increased risk of occupational injuries for a variety of jobs, including construction workers, nurses, miners, truck drivers, firefighters, and nuclear power plant workers (Dembe et al., 2005). Fatigue and exhaustion can also impact safety among shift worker populations. The number of monthly shifts that are of extended duration has been shown to be related to increases in the number of reported medical errors, preventable adverse events, and attention-related mistakes (Barger et al., 2006). Overtime schedules and 12-hour shifts are found to have strong relationships with occupational injury or illness (Dembe et al., 2005). Shift work that takes place at night is shown to be related to greater levels of fatigue, which then lead to increased rates of mistakes and accidents (Della Rocco, Cruz, and Clemens, 1999). However, a study of air traffic controllers indicates that individuals in daytime shifts are also prone to mistakes when feeling drowsy at work, indicating that fatigue-driven errors are not isolated to nontraditional hours (Della Rocco, Cruz, and Clemens, 1999).

Injuries are additional concerns, especially since accidents are more common and more severe during night shift work. Injuries may be measured in multiple ways, such as the number of injuries per thousand hours worked or the cost to the employer. Ability factors, such as

absentmindedness and poor attention, have also been linked to injuries on the job and may be important to consider when evaluating and preventing on-the-job performance and injuries.

Many other workplace behaviors are also of concern. For example, CWBs, defined as “any intentional behavior on the part of an organization member viewed by the organization as contrary to its legitimate interests” (Sackett and DeVore, 2001), can be disruptive and costly to an organization. According to Spector et al., 2006, CWBs can be categorized into five dimensions: abuse (harmful and nasty behaviors that affect other people); production deviance (purposely doing one’s job incorrectly or allowing errors to occur); sabotage (destroying organizational property); theft (wrongfully taking the personal goods or property of another); and withdrawal (avoiding work through being late or absent). Engaging in CWBs is viewed both as a reaction to workplace stressors and as a means of reestablishing organizational justice when an individual believes that the organization is not treating its employees fairly (Bruursema, Kessler, and Spector, 2012).

Research indicates that CWBs are closely related to job satisfaction. When individuals are dissatisfied with their jobs, they act in destructive ways toward their organizations, or simply decide to put less effort into work (Hershcovis et al., 2007). Some argue that CWB is one way an individual tries to regain control over the job with the hopes that conditions will improve. Organizational climate is also important because it plays a role in the norms that are set around participation in CWB (Barling, Dupré, and Kelloway, 2009). Personality is also believed to be closely related to CWB. Individuals who are more agreeable and conscientious are less likely to use CWB as a means of coping with stress and/or restoring justice to the workplace (Cullen and Sackett, 2003; Bolton, Becker, and Barber, 2010).

CWBs can be measured by the CWB checklist by Spector and Fox (2002). Their checklist includes 45 CWB items divided into two subscales: those directed at the organization (such as “purposely damaged a piece of equipment or property”) and those directed toward a person (such as “refused to help someone at work”). These subscales have been shown to relate to a variety of other established workplace

factors, such as work constraints, distributive justice, procedural justice, and job satisfaction (Spector et al., 2006).

Personal Consequences

Many individuals who are coping with stress in the workplace end up choosing *poor lifestyle habits*. Long work hours are associated with higher rates of heavy smoking, inadequate diet, lack of exercise, and drinking (Sparks et al., 1997). These poor lifestyle choices negatively affect health, adding to whatever health consequences the individual may be dealing with from high levels of stress and exhaustion. In addition to having consequences for physical health, poor lifestyle habits (in particular substance abuse) can lead to issues with productivity. Among U.S. workers, approximately 15 percent report some form of workplace impairment due to alcohol over the past year (Frone, 2006). Unhealthy lifestyle choices can also lead to effects in the home. For example, in a study of U.S. Army soldiers, heavy drinkers were found to be 66 percent more likely to engage in spousal abuse (Bell et al., 2004). Poor lifestyle habits can therefore spur negative outcomes for an individual, the family, and the organization.

There are many existing measures of these lifestyle issues. For example, the Alcohol Use Disorders Identification Test (Saunders et al., 1993) is a well-established instrument used to assess harmful alcohol consumption. Individuals respond to ten questions, each with a unique response scale to indicate the frequency of that behavior. An example item is: "How often do you have six or more drinks on one occasion?" The questions cover three content areas of alcohol use: consumption, related problems, and impaired control.

We previously discussed the blurring of the lines between work and home and the ways in which family demands can affect the amount of stress an individual experiences in the workplace. However, stress from the workplace can also lead to issues in the home. According to one study, more than one-half of all employees report that job demands have recently interfered with responsibilities at home (APA, 2009). Studies have shown that work-family conflict can lead to dissatisfaction at home and in a marriage and can prevent individuals from enjoying the leisure time they do have (Allen et al., 2000). One par-

ticularly concerning outcome related to workplace stress and the family is abuse. Abuse at home can negatively affect emotional stability and performance on the job, increase absenteeism, and negatively impact general health and well-being (Mighty, 1997).

One of the less-studied outcomes of job stressors is how they affect automobile crashes. However, impaired driving because of fatigue is a major issue: More than 1,200 fatalities in 2009 were related to drivers with impaired alertness (National Highway Traffic Safety Administration, 2009). This is a particular problem for individuals who participate in shift work and/or individuals with long commutes to and from work. For example, one study of air traffic controllers found that mental sharpness and driving distance were key risk factors in predicting the likelihood of an accident (Stutts et al., 2003). Individuals in extended shifts have been shown to be more than twice as likely to be involved in an accident (Barger et al., 2005). The commute following a night shift can be particularly dangerous, with individuals reporting having fallen asleep at the wheel at nearly twice the rate (23 percent) of that of daytime commuters (13 percent) (Di Milia and Bowden, 2007).

Summary

In Chapter Three, we discussed previous reports and existing statistics describing the ICBM community's concerns and problem behaviors. There, we noted that one possible explanation for the problem behaviors was the effects of stress, negative attitudes, and perceptions in the workplace. In this chapter, we examined what the research literature tells us about the connection between stress, negative attitudes, and perceptions in the workplace and such concerns and problem behaviors. The research literature is grounded in a conceptual model that shows that stressors and other factors in individuals' environment and quality of life can affect them, such as *occupational* (e.g., work hours, roles, and tasks), *organizational* (e.g., evaluation and reward systems), and *situational* (e.g., weather and commute time) factors; that such stressors can negatively affect workers' attitudes and perceptions about their jobs (e.g., perceptions of fairness or injustice) and their physical

health (e.g., illness and trouble sleeping) and mental health (e.g., burn-out, depression); and that such effects can have serious consequences for organizations, including turnover and absenteeism, CWBs (e.g., accidents, unintentional mistakes), work-family conflicts (e.g., domestic violence), and unhealthy lifestyle habits (e.g., substance abuse).

Within the context of this model, a vast body of research literature exists showing that there are many antecedents to problem behaviors in the workplace. The workplace environment in 20 AF discussed in Chapter Two contains many of the workplace and environmental factors that can trigger stress and negative workplace attitudes and perceptions (such as the climate and commute and the nature and timing of the jobs). Negative attitudes toward the job and stress are two examples of precursors to problem behaviors that employers, such as the Air Force, should be concerned about and that were documented in the concerns previous reports raised and the statistics on problem behaviors collected on 20 AF discussed in Chapter Three. As a result, stressors and negative workplace attitudes and perceptions are something that 20 AF should be concerned about. This concern drove the use of the questionnaire and focus groups that were part of this project to get at how prevalent an issue stressors and negative workplace attitudes and perceptions are. The literature review also identified scales and measures that can be explored for use in evaluating stressors, attitudes, and perceptions in 20 AF in a longer, more detailed survey that is outside the scope of this effort.

Identifying ICBM Job Incumbents' Top Concerns: Results of a Questionnaire and Focus Groups

The previous chapter highlighted how research has consistently shown that perceptions about stress, the job, and quality of life can have serious consequences and that organizations can do things to mitigate the consequences. In the context of that research, the work environment that the ICBM community faces in 20 AF—as shown in the discussion of that environment in Chapter Two—contains many factors that could lead to stress and negative attitudes about ICBM jobs. And the literature discussed in the previous chapter also shows that the work environment could cause the problem behaviors and other concerns discussed in Chapter Three.

Our review of past research on the ICBM force suggests that, although the results of recent studies (such as the DSB reports) have mentioned some key attitudes and stressors in the community, their findings were largely anecdotal. Thus, soliciting the perspectives of the ICBM community in a more systematic and targeted way to better understand the issues they face in their day-to-day lives will add valuable empirical support for existing anecdotal information. It could also provide important insights into the factors personnel feel are most affecting their current quality of life and help prioritize actions that the Air Force could take.

We therefore sought answers to the following three research questions:

- Do current ICBM job incumbents find their jobs stressful?
- What are their top concerns about the job?

- What potential remedies do incumbents believe could address the concerns?

One approach to soliciting answers to these research questions would be to develop a survey informed by a series of interviews with members of the ICBM community. However, well-designed surveys typically take months of development and approvals, months of fielding, and months of analysis. As a result, given the 90-day time frame of this project, a large-scale survey was not a viable option. However, conducting a series of in-depth group interviews (i.e., focus groups) and piloting some questionnaire items to help inform the development of a future survey was within the scope of our time line. This chapter describes the results of that effort.

Focus Group Methodology

Like surveys, interviews are well-established methods of collecting systematic qualitative data for studying workplace issues. Using focus groups to conduct group interviews is also a well-respected method, particularly when there is a need to solicit perspectives from many people in a short time. The research community considers all three methods—surveys, interviews, and focus groups—to be rigorous empirical techniques when the sample, questions, administration procedures, and data analysis methods are well designed and appropriate to addressing the research goals.

Although we could not develop and administer a large-scale questionnaire within the time constraints of this project, the focus group methodology did enable us to pilot some questionnaire items and analyze focus group responses to them. We thus opted to include a short questionnaire during the focus groups to supplement the discussion findings.

The questionnaire data allowed us to capture individual perspectives before they could be influenced by the responses from others in

the group.¹ The questionnaire also allowed us to collect a large amount of quantifiable and systematic information from participants within a short time. Finally, although we knew the questionnaire sample size (and hence our findings) would be limited, we also knew it would allow us to pilot some items for use in a future larger-scale survey and would still permit an initial quantitative assessment of participants' current views and agreement on the issues.

However, the project's tight deadline was not the only reason we opted for the focus group methodology. It also offered important methodological benefits over a survey. We could delve deeper and probe for more information on any issues, allowing us to explore unanticipated topics and identify concrete examples to back up participants' expressed concerns. Thus, the combined approach allowed us to collect not only quantitative information (through the questionnaire) but also in-depth qualitative information (through discussion).

Participants

At each of the three missile bases—Malmstrom, Minot, and F. E. Warren²—we held occupation-specific focus groups for each of the ICBM career fields (missile operators, SFs, maintainers, chefs, and facility managers) discussed in Chapter Two.³ Only those who were

¹ The influence of group dynamics on responses, while commonly a goal of focus groups, was not something we hoped to capture in our focus groups. Instead, we treated the focus groups as group interviews, with the aim of soliciting multiple perspectives in a relatively short time.

² We conducted informational meetings with several other groups that we believed might offer additional insights into the well-being and stressors of the population of interest. Those groups included the wing commanders, group commanders, chief master sergeants, and key personnel who provide services for the population of interest (such as chaplains and health care workers). The primary purpose of the meetings was to identify any key issues that should be raised to better understand any issues that might come up during the focus groups. These meetings provided additional background that further informed the focus group findings; however, they are not explicitly included in the analyses reported in the remainder of the chapter.

³ Because of resource and time constraints, we knew we could not explore every career field of interest. Instead, we asked 20 AF leaders to identify the ones they were most concerned about. They pointed us to the career fields listed in Chapter Two. Although we focused on these seven jobs, we fully acknowledge other career fields might be important to examine as

currently assigned to duties in the missile field and who had at least one year of experience were invited to participate. Because perspectives might differ across grades or position levels and because participants might not feel comfortable voicing their concerns in front of their supervisors, we further separated the SFs and maintenance groups by grade and position level, respectively.⁴ That resulted in eight occupation-specific focus groups. The makeup of the eight groups and the abbreviations we use for reporting the results for each are shown in Table 5.1.

As shown in Table 5.1, we also held focus groups at each base with two additional groups: (1) maintenance and SF squadron-level leaders (typically, master sergeants or majors) and (2) spouses of missile operators, enlisted maintainers, and SF. Although squadron leaders and spouses do not serve in the missile field themselves, they regularly interact with the personnel serving in the missile field. Thus, we expected them to offer additional insights into the issues personnel face in their work and personal lives and included these leaders and spouses as integral members of the ICBM work world. Adding these two groups brought the total number of focus groups to ten per base.

Because a few vocal participants can sometimes bias the other members of a focus group, we replicated the AFS-specific groups across the three base locations. This resulted in a total of 30 focus groups overall (ten at each of the three bases). Sample sizes in each of the 30 groups were small in most cases (i.e., less than five), so, to protect confidentiality of participants, we do not report results by base. In total, 112 military personnel (102 male) and 15 spouses (all female) participated. Table 5.1 reports the number of participants in each of the ten AFS-specific groups (summed across all three base locations).

well. For example, the nuclear weapon career field (2W2XX) and other personnel from the bomber wings at Minot might be experiencing some of the same stressors as the personnel in our study. Moreover, in some of our meetings with the medical personnel, they noted that the health care workers at these bases were under a great deal of stress because of the paperwork burdens of PRP. This suggests that closer examination of these other populations might be worthwhile.

⁴ The remaining career fields consist largely of personnel of similar grade groupings and were therefore not separated.

Table 5.1
Total Number of Participants in Each Focus Group Category

Group No.	Abbreviation	Group Composition	Number of Participants
1	Ops	Missile operators 13SX; captains and below and not serving as flight commanders or shop section chiefs	13
2	SF Jr	SF 3P0XX; senior airmen and below	20
3	SF Mid	SF 3P0XX; staff and technical sergeants	17
4	SF 1LTs	SF 31PX; first and second lieutenants	11
5	Mnx Jr	Missile maintainers 2M0XX; non-team chiefs	9
6	Mnx TCs	Missile maintainers 2M0XX; team chiefs	8
7	FMs	Missile facility managers 8S0XX	9
8	Chefs	Chefs 3M0XX	6
9	SF/Mnx Sr	SF and maintenance squadron-level leaders	19
10	Spouses	Spouses of maintainers, security forces and missile operators	15
Total			127

In addition, we were acutely aware that the method of recruiting itself can bias or influence the results of a study. For that reason, we selected our recruiting method carefully. A study announcement was emailed to personnel through their AFS-specific supervisors; however, supervisors were provided with specific language to use in describing the study, and they were instructed that participation was to be completely voluntary.

In the email, personnel were given an information sheet stating the following:

This study is being conducted by the RAND Corporation, located in Santa Monica, CA. The research is being sponsored by Gen Carey (20th AF/CC) to help him understand how ICBM work demands are affecting the health and well-being of ICBM personnel and their families. This study is a small effort that will

be completed by March and is only intended as a first look at these issues.

As part of that first look, RAND is conducting focus groups with ICBM personnel (specifically those who work at the missile alert facilities or the missile sites) at Minot, Malmstrom, and F. E. Warren to learn more about your work environment, your work hours, your job duties, your thoughts about what you or your family likes or doesn't like about your job, and what changes could be made that might help contribute to you or your family's well-being.

In the focus group, RAND researchers will ask you questions in a group setting, but they will also ask you to fill out a paper and pencil questionnaire where you can express your views privately. Your responses to the questionnaire will not be shared with the group. Only you and the researchers will see them.

VOLUNTARY PARTICIPATION

Participation in this focus group is entirely voluntary. You are not required to attend the focus group. If you do agree to participate, you are not required to answer every question.

CONFIDENTIALITY

The researchers will NOT report your answers from the focus group or the questionnaire in connection with your name. RAND does plan to use some comments from the focus group and questionnaire as part of the results; however, all comments will be reported as anonymous, and will not contain any information that would lead you to be identified.

RAND researchers will be taking notes during the focus group, but they will not write down your name.

The email also provided the RAND researcher's contact information and clear instructions to contact the researchers to sign up or if personnel had questions about the project. It also stated the location and time at which the focus group would take place and the criteria for participation (membership in one of the seven AFS grade or level groups specified in Table 5.1 and experience working in the missile

field). Basically, everyone in the occupation who posts to the field was invited to participate. Leadership was not informed of who actually showed up for the focus groups. Notices listing the times and criteria were also posted for members of the career field to reference.

Although our sample sizes were small by most standards, we were satisfied with the resulting turnout for several reasons. Because of the short time frame for the project, we had very little lead time for recruiting. At the first location (F. E. Warren), invitations went out to participants the day before the first set of focus groups. The other two locations also received fairly short notice, with emails going out only a few days in advance. Because of our tight time line, we also had to establish a strict schedule of AFS-specific focus group times in advance. We could not reschedule if the times proved inconvenient for participants. Finally, we impressed on 20 AF and wing leadership that participation needed to be voluntary and participants should not feel coerced to participate. Given that all three factors (voluntariness, short notice, and inflexible schedules) were at play in this project, we were pleased with the level of participation.

Content

Focus groups lasted approximately 90 minutes and were completed in two stages. Stage 1 started with a short open-ended questionnaire, followed by discussion. Stage 2 started with a second questionnaire asking participants to provide individual ratings about potential workplace issues and was followed by more discussion.

Stage 1 Questionnaire and Discussion

The first stage of the focus group was designed to be largely exploratory, meaning our goal was to see what issues participants would raise without being prompted. Questions were, therefore, broad and chosen to avoid leading or priming anyone to discuss a particular issue. For all issues raised, we followed up with additional in-depth questions to probe for more information (for example, if manning was raised as an issue, we asked why they thought they were undermanned and how the manning problem could be fixed); however, only issues the group

raised were discussed in Stage 1. If participants did not raise a topic, we did not ask about it.

Questions on the questionnaire and in the discussion differed slightly for military participants and spouses. For military participants, we asked the following open-ended questions:

- What do you worry most about when you are at work?
- Are there things about your work that you wish could be changed? If so, what are they?
- What are the best and worst things about your work here compared to your last assignment or job?
- If you could make changes to your job, or to the environment here at this base or the surrounding area, what would you change? Why?

The spouse questionnaire also asked demographic questions plus the following:

- What do you worry about most when your spouse is at work?
- How does your spouse's job affect you and/or your family?
- What could the Air Force do to improve your and/or your family's quality of life here?
- What are the best and worst things about living here compared to the last place you lived?
- If you could make any changes you wanted to the environment for you and your family here, what would you change?

After the group completed the first questionnaire, we began the first round of group discussion. For all participants, we started with general background questions (e.g., Tell us a little about your background. How long have you been here? Where are you from originally? How do you like living here? What does your family think about it?). For military participants, we then asked the following questions:

- What does a typical shift at work look like for you?
- What do you like most and least about your job?
- What are the best and worst things about living here?

- Which aspects of your job do you or your coworkers most wish you could change? Why?
- How would you say morale is in your career field?
- What could the Air Force do to improve life for you, your spouse, and your families?

And for spouses, we asked the following questions:

- Do you work outside the home? If so, what do you do?
- What are the best and worst things about living here?
- What do you worry most about when your spouse is gone?
- Which aspects of living here do you most wish you could change?
- Which aspects of your spouse's job do you most wish you could change?
- What could the Air Force do to improve life for you, your spouse, and your families?

Stage 2 Questionnaire and Discussion

Stage 2 of the focus group was intended to be confirmatory (rather than exploratory, as in Stage 1). We presented participants with a questionnaire covering a number of factors that were hypothesized to be issues in the ICBM community to determine whether ICBM personnel in fact perceived them to be issues. It was also used to pilot potential survey items and collect a small set of baseline responses to inform future efforts to study these issues. Appendix B provides a complete list of the Stage 2 questionnaire items. They covered three different topic areas.

The first was job-related stress. This was assessed using an established ten-item job burnout questionnaire from Malach-Pines (2005) (described in Chapter Four) and a single additional item (developed specifically for this project) "how stressful do you find your job?" rated on a scale of 1 to 7 (not stressful at all = 1, moderately stressful = 4, extremely stressful = 7).

The second topic area solicited attitudes and perceptions about potential issues Air Force leadership had previously identified about the job and the northern-tier lifestyle, as well as global job attitudes. Example issues included driving in dangerous weather conditions, the

base location, rundown living conditions at the MAF, PRP, spousal support, emphasis on perfection, career opportunities, and manning. Many were similar to those the 2009 ICBM survey covered (discussed briefly in Chapter Three).

For each item listed, participants provided two ratings on a scale from 1 to 5. First, they evaluated how often they faced the issue (never = 1 to always = 5) or how much they agreed with the statements (strongly disagree = 1 to strongly agree = 5). Second, they evaluated how much they were bothered by the issues (not bothered at all = 1 to bothers me a lot = 5). Job attitude items, such as “I enjoy my job,” “I wish I had a different job in the Air Force,” and “my job is important,” were rated on a scale from 1 to 5 (strongly disagree = 1 to strongly agree = 5).

The third topic area solicited attitudes about several potential actions the Air Force could take to improve life for personnel or their families or mitigate the issues they faced on the job. Respondents rated how much better things would be if there were more to do on and off base; if there were more work opportunities and support for spouses; and if there were better equipment, better upkeep of the missile facilities, more recognition, and better career advancement opportunities. In addition, we asked an open-ended question: What else could be done to help improve things?

After completing the questionnaire, we started the second group discussion by asking the following question: “Now that you have seen the items on the second questionnaire, did it make you think of anything important that has not been discussed already?”

Following the responses to that question, we probed further by asking about specific issues not raised previously in discussions. For example, when it had not been discussed already, we asked how they felt about PRP and whether they felt they had adequate equipment to do the job.

At the end of the focus groups, participants were asked the following closing question:

- Is there anything else we should know to help make sure that you have a good working environment, are not under undue stress, and have the resources you need; that you and your families are

healthy and happy; and that people are not getting into trouble on duty or off duty?

Analysis of Focus Group Comments⁵

To summarize the open-ended responses to the Stage 1 questionnaire and focus group discussions, we created a set of coding categories derived directly from participant responses. Any topic that was mentioned in the written or oral responses received a category label. This led to over 60 topic categories. The majority reflected negative sentiments (e.g., we are undermanned); however, in some cases, respondents mentioned something positive about the same topic (e.g., we are not undermanned; manning is fine). When respondents mentioned something positive, we added a category to reflect the positive comment. Therefore, for some topics, we report results for two categories (positive and negative). When only negative comments were made about a topic, we report results for only one category (i.e., only the negative comments). A random subset of responses was independently double-coded by a second researcher to ensure consistency and accuracy in coding. When the two coders disagreed, the topic category was revised to further clarify the coding, and responses were recoded.

After coding all written answers and all interview notes into the final set of 60-plus topics, we grouped the subtopics into 12 overarching themes. Subtopics corresponding to each theme are described in detail in the remaining sections. We calculated the percentage of respondents and focus groups mentioning at least one positive or negative subtopic within each theme.

As a reminder, we collapsed the results over the three base locations to protect participant confidentiality. A small subset of the comments or concerns expressed in the focus groups were base-specific. We have noted these and provided example comments and in the discussion of the results. However, the overarching themes were remark-

⁵ This method of creating coding categories, coding of responses by more than one researcher to check the accuracy of coding, and producing quantified estimates of comment frequency is consistent with best-practice approaches to systematically analyzing focus group and open-ended questionnaire data.

ably similar across the AFS-specific groups, regardless of the base location. The finding that the overarching themes were replicated across base locations provides further support that the concerns participants expressed are not localized or obscure sentiments.

Focus Group Results

Table 5.2 provides a broad overview of the themes that came up in discussion and written responses in each of the ten focus groups. The table includes the percentage of participants who mentioned each category at least once in their written comments. Due to the small sample sizes in many of the groups, the exact percentages and their rank ordering would be expected to vary somewhat if the project were replicated. This would be more pronounced for the groups with smaller sample sizes (such as the chef, facility manager, and maintainer groups). For that reason, we caution readers not to overemphasize differences that are small or that result from a difference of one or two participants. Instead, we suggest that readers pay greater attention to the overall trends in the table. Toward that end, we use highlighting to illustrate these general trends. Specifically, if there are no responses in a table cell, the cell is white; cells with percentages higher than zero are highlighted with progressively darker shades of purple as the percentage increases.⁶

As shown in the table, the topics mentioned most frequently differ by group. For example, the two top topics spouses mentioned were Airmen being away from the home for extended periods and concern about the Airman’s stress levels. Neither was a top comment in other groups. Needing ICBM benefits (such as incentive pay or more base services) is another example of a topic area that some groups mentioned

⁶ Many respondents mentioned multiple subtopics within the same overarching theme or mentioned the same subtopic multiple times; however, the results presented here reflect only the number of respondents mentioning the theme, not the number of times the theme or subtopic was mentioned. Thus, if someone mentioned multiple subtopics or the same topic multiple times, the topic was counted only once in computing the percentage of respondents mentioning the subtopic.

Table 5.2
Percentage of People Mentioning Each Topic in Their Written Comments

Themes	Security Forces				SF/Mnx	Maintainers				
	Ops n=13	Jr n=20	Mid n=17	1LTs n=11	Sr n=19	Jr n=9	TCs n=8	FMs n=9	Chefs n=6	Spouses n=15
Manning (negative)	85 (11)	60 (12)	47 (8)	91 (10)	79 (15)	67 (6)	100 (8)	56 (5)	100 (6)	73 (11)
Leadership and organizational culture	92 (12)	40 (8)	59 (10)	82 (9)	58 (11)	56 (5)	63 (5)	56 (5)	83 (5)	0 (0)
Lifestyle (negative)	38 (5)	50 (10)	35 (6)	36 (4)	37 (7)	44 (4)	38 (3)	78 (7)	33 (2)	100 (15)
Working conditions	62 (8)	50 (10)	35 (6)	45 (5)	53 (10)	44 (4)	38 (3)	67 (6)	33 (2)	33 (5)
Career (negative)	46 (6)	30 (6)	29 (5)	64 (7)	11 (2)	22 (2)	50 (4)	33 (3)	50 (3)	33 (5)
Improve ICBM benefits or assignments	46 (6)	45 (9)	47 (8)	55 (6)	21 (4)	0 (0)	13 (1)	22 (2)	17 (1)	53 (8)
Being away from home	15 (2)	15 (3)	24 (4)	18 (2)	21 (4)	0 (0)	13 (1)	22 (2)	17 (1)	87 (13)
Stress (negative)	15 (2)	25 (5)	18 (3)	18 (2)	0 (0)	0 (0)	38 (3)	0 (0)	33 (2)	73 (11)
Lifestyle (positive)	8 (1)	20 (4)	41 (7)	18 (2)	21 (4)	56 (5)	25 (2)	11 (1)	0 (0)	20 (3)
Commute and finances	23 (3)	20 (4)	12 (2)	18 (2)	21 (4)	33 (3)	13 (1)	11 (1)	17 (1)	33 (5)
Coworkers	31 (4)	10 (2)	0 (0)	27 (3)	16 (3)	11 (1)	50 (4)	33 (3)	17 (1)	0 (0)
Family problems	8 (1)	25 (5)	24 (4)	0 (0)	21 (4)	0 (0)	0 (0)	33 (3)	0 (0)	47 (7)
Coworkers (positive)	38 (5)	0 (0)	0 (0)	9 (1)	11 (2)	11 (1)	0 (0)	0 (0)	0 (0)	47 (7)
PRP	15 (2)	15 (3)	12 (2)	9 (1)	11 (2)	11 (1)	25 (2)	0 (0)	0 (0)	7 (1)
Career (positive)	0 (0)	5 (1)	0 (0)	36 (4)	11 (2)	0 (0)	0 (0)	11 (1)	17 (1)	0 (0)

Table 5.2—Continued

Themes	Ops n=13	Security Forces			SF/Mnx	Maintainers		FMs n=9	Chefs n=6	Spouses n=15
		Jr n=20	Mid n=17	1LTs n=11	Sr n=19	Jr n=9	TCs n=8			
Manning (positive)	0 (0)	10 (2)	0 (0)	9 (1)	0 (0)	0 (0)	13 (1)	22 (2)	0 (0)	0 (0)
Stress (positive)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	11 (1)	0 (0)	0 (0)

NOTES: Table 5.1 provides complete definitions of column header abbreviations.

TO help put the proportions in context, numbers of participants mentioning each category are shown in parentheses. If there are no responses in a table cell, the cell is white; cells with percentages higher than zero are highlighted with progressively darker shades of purple as the percentage increases. Due to small sample sizes, proportions and their rank ordering would be expected to vary if the project were replicated.

more frequently (i.e., operators, SF, and spouses) than others. There is also variation in the intensity of endorsement of the topics across groups, with some groups approaching 80 percent or more participants mentioning certain topics. Groups with lower agreement in general may have less strongly shared opinions within the career field.

Regardless of the differences, Table 5.2 shows that nearly all groups repeated several key themes—such as manning, culture, life-style, and working conditions. The following subsections provide additional details on each of these topics, grouped according to the three research questions we presented at the start of the chapter.

Are Participants Stressed?

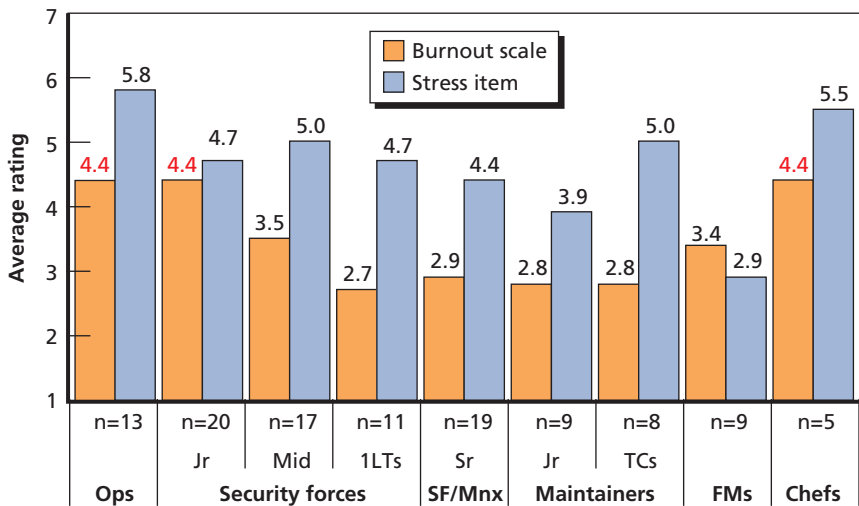
The short answer is yes. As described above, we included two measures of stress in the Stage 2 questionnaire. The first was a single item evaluating how stressful respondents perceived their jobs to be, and the second was a scale measuring job burnout. Both ranged from 1 to 7, with higher scores indicating greater stress or burnout.

Average participant responses to the stress item (Figure 5.1) show that, in all but two of the career field groups (junior-level maintainers and facility managers), participants perceived their jobs to be more than moderately stressful (i.e., participants reported average ratings higher than a 4.0). The figure also shows that, on average, the participants in three career field groups (chefs, operators, and junior-level SFs) were experiencing job burnout (i.e., reporting an average burnout score of 4.0 or higher). Midlevel SFs and facility managers also reported average levels of burnout that, although lower than the 4.0 cutoff, are considered signs of possible burnout in the future.

A number of other questions on the questionnaire (e.g., levels of responsibility, boredom with the job, being overwhelmed on the job, enjoying the job) provide additional insights into workplace factors known to influence stress and burnout. Table 5.3 shows the average responses (ranging from strongly disagree = 1 to strongly agree = 5) for some of these items.⁷ To help highlight the differences in average responses across occupation groups, we color-coded the averages, using

⁷ See Appendix C for data on the remaining items.

Figure 5.1
Average Levels of Stress and Burnout by Occupational Group



NOTES: Stress was measured with a single item ranging from 1 to 7: “How stressful do you find your job?” (not stressful at all = 1, moderately stressful = 4, extremely stressful = 7). Responses for the ten-item burnout measure are averaged to create a scale score ranging from 1 to 7. Stress and burnout items were not included on the spouse questionnaire. Average scale scores of a 4 or higher are considered indications of job burnout; focus groups with average scores of 4 or higher on the burnout scale are marked in red lettering.

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pink to indicate agreement, blue to indicate disagreement, and white to indicate neither agreement nor disagreement with an item. The greater the agreement with an item, the darker the pink is; the greater the disagreement, the darker the blue is. The gray cells with no numbers indicate that the question was not asked of that group.

Table 5.3 has a number of interesting findings. For example, all groups report having a lot of responsibility in their job, even those in some of the lower grade groups (the first row). This is unusual, given that responsibility is usually limited in lower-level positions; however, it was not unexpected. Many of the people we spoke with (20 AF squadron, wing and command leadership, and focus group participants at all levels) commented that many ICBM jobs have much higher levels of responsibility than jobs at same pay-grade levels elsewhere in the Air

Table 5.3
Questionnaire Items Related to Stress

	Security Forces				SF/Mnx	Maintainers				
	Ops	Jr	Mid	1LTs	Sr	Jr	TCs	FMs	Chefs	Spouses
I have a lot of responsibility on the job	4.4	4.4	4.1	4.8	4.3	3.7	4.5	3.4	3.8	
I enjoy my job (My spouse enjoys his or her job) ^a	2.4	2.6	2.8	4.1	3.9	3.0	4.1	3.2	1.8	3.1
I am often overwhelmed on the job	3.3	3.5	3.3	3.2	3.0	3.0	2.8	2.3	4.2	
I am often really bored while on the job	3.5	4.3	3.7	2.0	2.1	3.2	2.4	2.7	2.2	
<div> <div>Strongly Disagree</div> <div>Disagree</div> <div>Neutral</div> <div>Agree</div> <div>Strongly Agree</div> </div>										

NOTE: Table 5.1 provides complete definitions of column header abbreviations.

^a The direction of the wording of this item is different from those of the other items in the table: Higher scores are associated with more positive views about the job.

Force. In addition, the consequences of mistakes in the ICBM jobs are significant. As an example, a mistake by a first-term Airman at 3:00 AM could cause the President to be awakened and briefed in the middle of the night. In other jobs, more senior ranking personnel are in the chain of command, and in very few jobs would a first-term Airman's mistake require an immediate briefing to the President. Although we also found that many felt as though they were being micromanaged and not being allowed to make decisions for which they were qualified (this is discussed in a later section), they did note that very few senior personnel serve in the missile fields. This means that work in these fields, mostly staffed by first-term Airmen, is largely unsupervised. This is at least part of what accounts for the difference in perceived responsibility. This perceived high level of responsibility in ICBM jobs may offer some insight into why many of our participants perceive their jobs as stressful.

Another interesting finding is that some groups agreed that they enjoy their jobs, while others did not (the second row in Table 5.3). The groups that tended to enjoy their jobs and were not overwhelmed or bored by them (SF 1LTs, Sr SF/Mnx, and both Maintainers groups, as shown in the bottom two rows in the table) also tended to be those that did not show signs of job burnout, even when reporting higher than moderate levels of stress. This suggests that enjoying the job might mitigate the effects of job stress or the experience of job burnout symptoms: If a job is stressful but the personnel generally enjoy the job, they may be less likely to burn out. This explanation is consistent with research showing that such factors as job enrichment and autonomy can significantly affect symptoms and perceptions of stress in the workplace (see, for example, Spector, 1986, and Thompson and Protas, 2005).

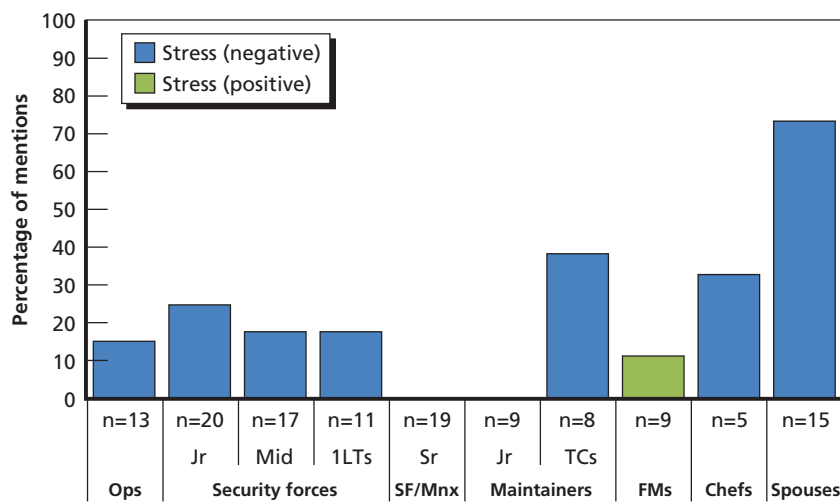
Although our open-ended focus group questions were not designed to elicit comments about stress, some respondents did provide comments related to it. Table 5.4 provides examples. As Figure 5.2 shows, the proportion of respondents mentioning it in their written comments was generally small. Two groups of participants did not mention stress in their written comments at all. One group, the facility managers (FMs), mentioned stress in a positive way, and no one in that group mentioned it negatively. For the rest of the groups, stress was

Table 5.4
Types of Comments Assigned to the Stress Theme

Subtopic	Description	Example Comments ^a
Stress (negative)	The job is stressful, leads to high stress. Participant is stressed (or spouses expressing that their partner is stressed).	From a spouse: "[I worry about] his stress level. I am concerned by the amount he works and is over worked. I find it believable that he will have a heart attack or stroke from the amount expected from him on a daily basis in maintenance."
	Issues sleeping on or off duty.	"On our days off, it is very hard to get good, lengthy sleep."
Stress (positive)	There are no real stressors, don't feel stressed.	Posting facility managers have no stressors.

^a Quotation marks indicate a written response. Items without quotation marks are paraphrased from the focus group notes. Except where noted, example comments are from the military respondents.

Figure 5.2
Percentage of Individuals Mentioning the Stress Theme



mentioned negatively but not with high frequency. Spouses, maintenance team chiefs, and chefs have the highest proportions.

What Are Participants' Concerns About the Job?

As shown in the overview table (Table 5.2), manning and leadership or organizational culture issues topped the list of concerns for the majority of the career field groupings. Following these issues were the ICBM lifestyle, working conditions, career progression, and being away from home for extended periods.

For each of these most frequently mentioned topics, we next summarize some of the questionnaire findings and present an overview of the proportion of respondents mentioning each theme. We also provide examples of the participants' comments, along with extended explanations of the comments when necessary. Comments listed within quotation marks indicate that they were exact quotes pulled from the written responses. Comments without quotation marks are paraphrased from the focus group discussions. Appendix D provides examples of comments related to other concerns raised during the focus groups.

Manning Issues

Manning issues were discussed emphatically in the majority of the focus groups and the written open-ended responses.⁸ As Table 5.2 shows, very few comments about manning were positive. Table 5.5 provides examples of both. Strong views about manning were also expressed on related questionnaire items. As Figures 5.3 and 5.4 show, nearly all participants believed they worked more hours than most Airmen, and nearly all career fields agreed or strongly agreed that they were understaffed. Appendix C reports mean scores on other staffing-related items. When a group discussion brought up manning problems, we probed for more information about why they considered it a problem. The following reasons were provided.

⁸ Note that we use the terms *manning* and *manning issues* broadly to refer to any types of personnel shortages. For example, the category includes comments about not having enough people PFD to complete the required ICBM duties. Even if the manpower standard is set properly and if the job is 100 percent manned (i.e., all allotted assignments for a given career field are filled), PFD rates could still be insufficient, causing manning issues.

Table 5.5
Types of Comments Assigned to the Manning Issues Theme

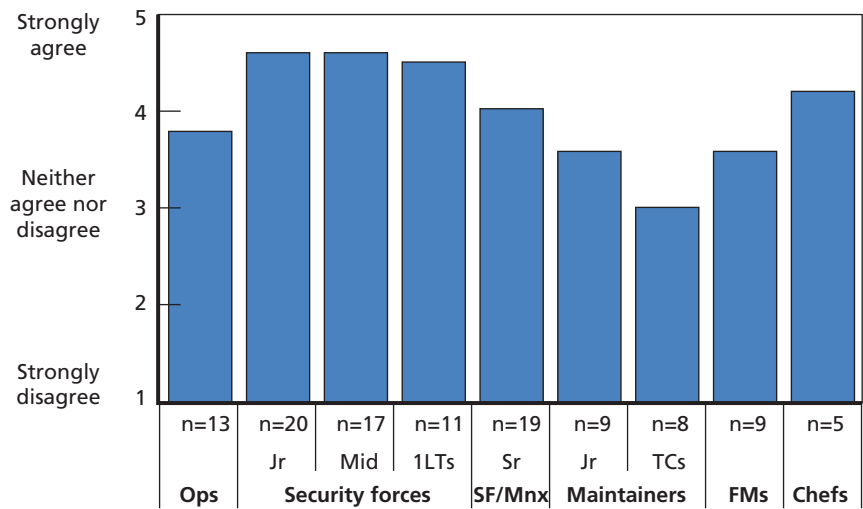
Subtopic	Description	Example Comments ^a
Manning—negative	Manning is insufficient due to PRP, training, or other issues.	I was happy to go to big missiles, but there are problems with it here; we don't have the manning to work the schedule we're supposed to be working. "Morale is low and it comes a lot from low manning. Due to low manning we can't go on leave, we work more, and we have less time off."
Manning—positive	There are no manning issues; mission has sufficient manpower.	With better manning, now I don't have to do the EPRs for the chefs.
Inspections and inspection prep	Quality assurance is excessive. There are too many inspections; inspection preparation is onerous.	A mission capable unit can't be inspection ready and an inspection ready unit can't be mission capable. But we can't get rid of the ramp up because we have seen it work. "All the inspection preparation makes for an extremely stressful environment."
Days off are lost	Days off are being committed to extra training, paperwork, appointments, covering for coworkers, etc., and not being able to take leave.	"I was home two days in all of February."
OPTEMPO	Work too many hours, OPTEMPO is too high, higher than elsewhere. Does not include descriptions of extra tasks or days off being taken away.	"This base is significantly more work than a fighter maintenance base."
Extra hours, useless tasks	Doing extra work because of weather, manning, or badly written regulations or doing meaningless, inefficient work.	"We receive monthly training on tasks that we accomplish daily or weekly while on alert."

Table 5.5—Continued

Subtopic	Description	Example Comments ^a
Scheduling—negative	Schedules are unpredictable, change often and without warning.	"A schedule should stay relatively constant and shouldn't be constantly changing biweekly. I have a family and it is darn near impossible to schedule a life when you never know when you're working."
Scheduling—positive	Schedule is not too taxing, is a positive aspect of work.	"I do have more days off as an facility manager [than at my last assignment]." "I love the timing and schedule of my job which is fast paced and busy but still gives me time for myself and to work on my Master's program."

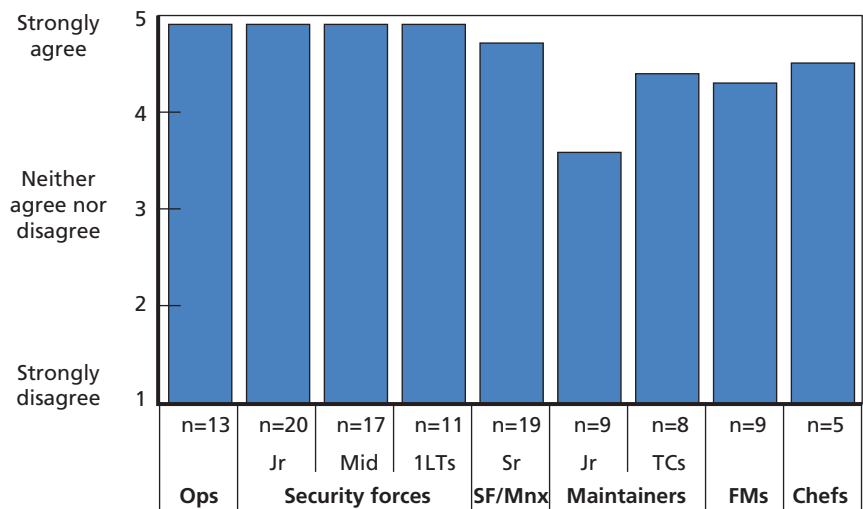
^a Quotations indicate a written response. Items without quotation marks are paraphrased from the focus group notes. Except where noted, example comments are from the military respondents.

Figure 5.3
Average Response to the Survey Item: I Work More Hours Than Most Airmen



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Figure 5.4
Average Response to the Survey Item: We Are Understaffed



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Personnel Reliability Program

On any given day, some number of personnel is deemed not fit for duty for PRP reasons. This means they are not allowed to work at the missile site because of events in their lives that might lead to diminished capacity to do the job. This is sometimes referred to as “going down on PRP.”

People frequently go down on PRP with little to no notice. The change in status is often temporary (lasting anywhere from a few hours to weeks) and can occur for many reasons, including having a fight with a spouse, taking a new medication, or becoming injured. There are exact specifications about the number of personnel required to fill specific roles at the sites (e.g., there must be two operators in the launch control facility capsule at all times). Therefore, when someone unexpectedly goes down on PRP, someone else must come in to cover the shift. As a result, personnel are called in on their days off.

According to respondents, the number of people down on PRP can vary day to day. It can depend on a whole host of factors, including the following:

- *How quickly PRP recertification can be completed.* For example, a death in the family, a prescription from a doctor, or a visit to the dentist triggers the need for the event to be reviewed by a certifying official. A review of that event can take hours or even days. Such backlogs in the review process can significantly and unnecessarily reduce PFD rates. Participants believe the recertification process takes too long. Many suggested that improving the speed of processing these reviews would help immensely.
- *The sensitivity level of PRP.* There is no list of officially reportable life events. Instead, the types and severity level of the reportable events is at leadership’s discretion. Historically, the sensitivity level has fluctuated. Some participants who had served in the ICBM community for many years noted that leadership’s current sensitivity level for reporting is high (relative to times in the past), with many life events now triggering reporting and review. When more events are considered reportable, more people go down on PRP.

- *Heath issues.* Flu season could see multiple people falling ill at the same time, particularly in clusters that work and sleep in close quarters.⁹
- *Assignment problems.* Several issues with assignments were mentioned as causing personnel shortfalls. First, many people cannot meet the strict set of PRP requirements for working with nuclear weapons (willingness to work with nuclear weapons, security clearances, and mental and physical health status). This limits the Air Force's pool of people available for ICBM careers. Second, a number of personnel are aware that, to get out of an assignment to a missile base, all they need to do is say something that will exclude them from qualifying for PRP. This means that many successfully game the system, further limiting the number of people who can be sent for ICBM assignments. Third, those who are new must be certified for PRP after arriving, a process that can take weeks or longer. In the meantime, they are counted as contributing to the ICBM force for manning purposes. Fourth, some personnel are sent to an ICBM position to fill a manning slot, but after arriving, new information that disqualifies them is uncovered. Until they leave, the slot is considered as officially staffed.
- *Unwillingness to work.* Many participants mentioned that some people fake PRP issues to avoid having to go to work or deploy to the ICBM field. Rates of faking could be expected to increase as commitment to the job goes down. High levels of stress and dissatisfaction with the job are likely to reduce organizational commitment. In addition, if days off are regularly lost because of insufficient PFD rates, people could increasingly turn to PRP to create their own time off from the job.

⁹ It would also not be surprising for rates of illness to increase as stress levels and sleep deprivation increase, although no participants mentioned this. Several participants, including maintainers, chefs, and operators, did mention trouble getting enough sleep. This could create a problematic cycle that can be difficult to break. If manning is low, stress levels and loss of sleep will likely increase. This, in turn, will likely cause more people to fall ill, leading to additional manning shortfalls.

Inspections and Inspection Preparation

Many commented that, in preparation for an inspection, leadership requires a significant amount of additional activities that are not standard practice on the job. This translates to a higher than normal OPTEMPO. Inspection preparation activities can take place continuously over months leading up to the inspection, meaning that high OPTEMPO may be sustained for long periods. Many feel as though they are frequently in a state of inspection preparation and that much of the inspection preparation is unnecessary or that the expectations for performance during the inspections are set too high.

Special Duties, Useless Tasks, Training, Distinguished Visitors, and Stand-Downs

All Air Force personnel are regularly required to perform forcewide training (e.g., sexual harassment training, physical training, distance learning courses), and many have special duties beyond those required in their typical workday. However, respondents noted that many do not have reliable access to the Internet or computers while on the job; that the activities, information, or programs are only available back on base; or that their job requires constant attention, thus preventing them from squeezing the extra work in during the regular workday. Many stated that these extra tasks cannot be completed easily during their regular ICBM workdays. Instead, they are completing the tasks on their off days. With growing budget cuts, personnel also reported feeling like they are continuously being asked to do more with less.

Other activities can also interrupt and displace regular ICBM duties, creating a backlog of work. For example, the ICBM community regularly hosts distinguished visitors at missile sites. These visits are vital for ensuring that leadership and the public understand the ICBM work; however, they can also be disruptions or distractions in the workplace. Several participants also mentioned stand-downs. (On one of the days the focus groups took place, the base was experiencing a stand-down in response to a suicide attempt that occurred the previous night.) Participants, frustrated by the perception that they were undermanned, noted that holding a stand-down requires people to come in on their days off or postpone their work duties to another day.

They noted that losing days off is a major stressor for them. Hence, the stand-down, intended to decrease stress, may have done just the opposite of its intent and increased stress.

Operational Inefficiencies

SFs and maintainers view many of their procedures as time consuming and burdensome. For example, maintainers load their trucks at the start of the day and inventory their equipment prior to departing. At the end of the day, they return to base and unload the trucks. The loading and inventorying process is repeated at the start of the next day. Comments included that standard pieces of equipment are always needed on the truck. Unloading and reloading is time consuming and serves little purpose, aside from verifying that nothing has gone missing from the previous day. They proposed that keeping the equipment on the truck overnight could significantly improve efficiency. Maintainers also noted that, because of outdated, broken, or inappropriate equipment, the work often takes longer to complete than it should.

Both maintainers and SFs commented that waiting for authorization to proceed from someone on base wastes a lot of their time. If the decisionmaker is busy and unavailable when needed, the wait for the go-ahead can take minutes to hours. In addition, some of the approval procedures are perceived as unnecessary micromanagement. SF personnel also noted that delays in a maintainer's workday directly affect the length of their own workday when they are responsible for securing the missile sites during maintenance activities. SF delays similarly lead to delays for maintainers, because a minimum number of SFs must be present to secure the missile site during all maintenance activities.

Leadership or Organizational Culture Issues

Another set of concerns expressed frequently during the focus groups related to leadership and organizational culture issues. Because this topic area was not one that we anticipated a priori, our questionnaire items were not designed to tap these issues directly. However, given that the topics came up so frequently during the focus groups and open-ended comments, future surveys should include items on these issues. Table 5.6 provides examples of the types of comments that came up, and we elaborate on them below.

Table 5.6
Leadership and Organizational Culture

Subtopic	Description	Example Comments ^a
CYA	Focus is on avoiding getting in trouble rather than on the mission itself. There is a culture of excessive caution to avoid punishment.	<p>"It doesn't feel like I'm coming in to do maintenance, just trying to make sure at the end of the day I have all my stripes."</p> <p>"We don't care if things go properly. We just don't want to get in trouble."</p>
Leadership unaware	Leadership does not understand the work requirements or the skills of troops.	But I think our MAs don't have the type of experience to make these calls. I wish that an officer had to spend two weeks on EWO and had to stay over like we do.
Listening	Leadership does not listen to suggestions. Have offered solutions, complained about problems, but no action.	<p>"They should listen to the results of this. They should come grab some of the people here who don't mind talking in front of the leadership and have a group like this. Our leadership is there so we never feel comfortable. When they ask, they look at me and give me that look, or that stare, like don't say it."</p> <p>"I highly doubt that this will lead to any positive changes but I remain hopeful. I am glad that Gen. Carey wants to know more about the state of his command."</p>
Micromanagement	Are not being given enough autonomy in work, are infantilized and not trusted by leadership.	"We are expected to be acting as officers/leaders, but we are so micromanaged there is no room for growth/development until we are about 3 months from leaving the base."

Table 5.6—Continued

Subtopic	Description	Example Comments ^a
Subordinates	Subordinates facing hardship, concerned for subordinates. Try to protect subordinates from overwork or higher-ups.	"I mainly worry about my airmen. I worry that they are over worked and just tired. It seems to me that they work longer and harder than the other services/career fields."
Incentives misaligned	Incentives are misaligned. Those who work hard are punished. Those who do not or who misbehave are rewarded. Promotions are not based on merit, based instead on favoritism or not making trouble.	"Job openings are hard to come by because of favoritism." I know three people who got Article 15s; they were immediately sent elsewhere. Others are jealous and think, why shouldn't I do that?
Perfectionism, culture of fear	There is too much responsibility and the expectation of perfection is unrealistic, stressful. Worry about making mistakes. Blamed for things outside of own control.	"[I worry about] making a mistake that will result in a major incident."
Punishment	Punishments are excessive, worse than at other bases, unfair. Claim that increased discipline is due to increased scrutiny.	"[I worry about] my stripes. We're unique in the way that everything we do can come back to us, and the state of the Air Force today is 'make it the Airman's Fault.'"

^a Quotations indicate a written response. Items without quotation marks are paraphrased from the focus group notes. Except where noted, example comments are from the military respondents.

Lack of Listening

Many commented that leadership (from their direct supervisor to the highest levels of the Air Force) is not listening to or does not fully appreciate or understand their concerns. For example, a few participants commented that our project was just one of a long line of studies asking for suggestions for improvement. They noted that, just as in all the other studies, they believed that feedback from our project would ultimately not lead to any changes. Some commented that, when leaders ask for their opinions, others in the chain of command pressure them to keep quiet. They generally do not feel encouraged to provide suggestions for improvements or believe there might be negative repercussions for doing so. Therefore, they have learned it is best to stay silent when asked. Participants also stated that, when some positive changes are attempted, someone else in the chain of command intervenes to impede the implementation of that change. Some of the supervisors who participated indicated that they are constantly trying to protect their people from negative attitudes and backlash from those higher up in the chain of command (e.g., some in the chain of command believe the lower-level personnel are lazy or unwilling to work, while their direct supervisors believe they work very hard). Participants also noted that some attempts at improvements can also be misguided (i.e., in an attempt to improve things, they make a change that is not helpful) or can result in other unintended consequences that are equally problematic. One example given was requiring HMMWVs, which are not well suited to the missile field terrain.

Culture of Fear and Perfectionism, Micromanagement, "CYA" Mentality, and Misaligned Incentives

Many expressed a constant fear of making mistakes. Such fear, over time, could end up being a major source of job-related stress. It is easy to understand how the ICBM environment invites the belief that a single mistake is unacceptable. But people make mistakes, and expecting differently is unreasonable. That is exactly why there are many redundancies, safeguards, and checks and balances built into the systems and procedures surrounding nuclear weapons. For example, with two people in the launch control facility, if one makes a mistake, the

other is there to catch it. Closely following checklists further ensures that important items will not be missed; also, by drilling continuously on event scenarios, personnel are well-prepared to handle real events. Ultimately, however, individual errors are to be expected.

Inspections may be one factor driving this unreasonable culture of fear and perfectionism. We cannot confirm whether the inspection expectations of individuals are unrealistic; however, according to many participants, inspection preparation reflects a significant increase above the standard OPTEMPO. They have to do more to pass the inspections than would be required on the job under normal circumstances.

It not clear whether the current emphasis on individual perfection is a recent change in response to the 2007 and 2008 incidents or whether this attitude has persisted for decades. Regardless, an expectation of perfection is not realistic, healthy, or sustainable. That is not to say that the community should not continuously strive for improvement, but the ICBM world should expect individuals' mistakes and accommodate them. Attention should be redirected away from the individual and back toward team-level or aggregate-level successes or failures. The unauthorized transfer of nuclear equipment that occurred in 2007 and 2008 was not the result of one individual's mistake. Rather, it was the result of a whole series of mistakes across a whole series of individuals.

Because of the emphasis on perfection, many personnel come to work fearing that they will make a mistake and be punished or demoted. Many people also mentioned that the only time anyone ever gets recognized is when they do something wrong.

Micromanagement was another major concern. Personnel believe that they will be held responsible for the actions of their subordinates, even when the actions are beyond his or her control. This has led many to distrust the judgment and actions of those below them. To ensure control over subordinates' actions, personnel at all levels are micromanaging them. And those being micromanaged perceive micromanagement as a big concern. Many, especially those who have experience working at other types of bases, see this as a stark difference between the ICBM world and other jobs. Even the higher-ranking personnel who participated feel their judgment is disregarded by those above them.

Overall, participants feel that they have a huge amount of responsibility on their shoulders but are not empowered to actually manage it.

Some leaders are viewed as having a “CYA” mentality and being concerned only with protecting their own careers, sometimes even at the expense of the mission.¹⁰ This manifests itself as a perceived distrust of the advice of experienced personnel at all levels and, again, micromanagement. Several people raised this concern, often with reference to leadership who will eventually move on to assignments in other areas of the Air Force, such as wing leadership. However, many of the participants who raised this concern did not have suggestions for how to remedy it. They speculated that part of the problem may stem from a lack of in-depth experience with the day-to-day environment in the ICBM world for those just passing through. Instead of trusting the judgment of others with experience and expertise in the ICBM world, such individuals expect all personnel (from junior to senior levels) to explain and justify their recommendations in detail. Having a colonel who has always worked in the ICBM field as a close trusted advisor might help. However, wing leaders who lack experience in the ICBM world would still need to be willing to trust that advisor for it to be successful. In the past, the vice commander position was held by someone who had spent his entire career in the ICBM world. In recent years, this practice has changed. Some commented that, since wing commanders and the vice wing commanders are now both relatively inexperienced with the ICBM world, the problem has been more pronounced. The “CYA” mentality also was described as occurring among some lower-level supervisory personnel and at other levels of leadership.

Finally, many commented that incentives in the ICBM community are misaligned. People who work hard and do a good job are rewarded by being asked to stay in their current positions in the missile field to pick up the slack. Those who make mistakes or misbehave are moved to other locations or even sent to other bases. Because many are unhappy working in the missile field and unhappy living and working at the northern-tier locations, they feel slighted when their hard work is not rewarded in some way. They feel even more unfairly treated when

¹⁰ “CYA,” or cover your ass, was a term used in the focus group discussions.

their requests for recognition or rewards are viewed as laziness, complaining, or whining.

Personnel Reliability Program Culture

PRP is a tricky cultural issue. On the one hand, many believe that some people abuse the process and use it as an excuse to get out of work. For that reason, it seems reasonable to discourage people from going down on PRP by putting them to work doing undesirable jobs until they are recertified for PRP duties (e.g., some cited cleaning bathrooms as an example of work that is sometimes used to discourage abuse). On the other hand, if going down on PRP is discouraged, people may fail to do so when their work or their mental or physical health is in jeopardy. We heard both concerns (people abusing the system and people avoiding going down on PRP for valid reasons) from participants. For example, some stated that, because people who are down on PRP are often asked to work alongside people who were being punished for other bad behavior (such as DUIs), they feared that their coworkers might presume that they had done something bad too. For similar reasons, they have avoided seeing a doctor or seeking help from a mental health professional.

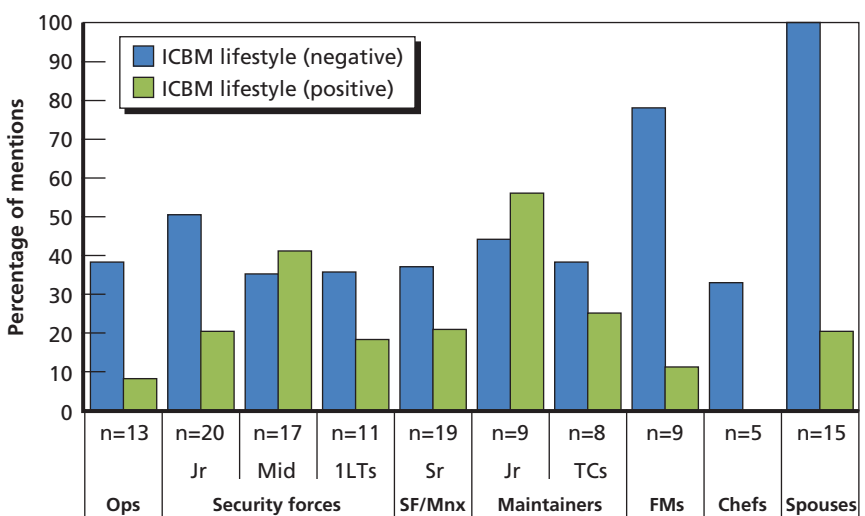
Peer pressure and guilt also make many reticent to go down on PRP. Recognizing that going down on PRP might cause a coworker to be called in on their day off, many participants expressed an unwillingness to take care of medical issues they viewed as minor. Some also mentioned the embarrassment and shame involved in telling their commander (and possibly others) why they are going down on PRP. For example, one participant described needing to go to counseling with his spouse to save his marriage but commented that it was especially difficult for him because he was ashamed to tell his commander. Another participant described a coworker who repeatedly delayed seeing a doctor for abdominal pain to avoid going down on PRP. When he finally did seek medical care, he was diagnosed with a life-threatening condition that should have been caught and treated much earlier. Although we did hear these examples of mental and physical health issues that were not being treated, participants were quick to point out that the pressures were not leading people to show up to work

unable to do the job. It seems that participants do believe PRP is doing its job of ensuring people are fit for duty in the ICBM environment. Nevertheless, given these examples of people who were unwilling to seek help when they needed it, we caution leadership to ensure that pressures to avoid going down on PRP are tempered.

ICBM Lifestyle, Working Conditions, Career Advancement, and Being Away from Home

All groups mentioned ICBM lifestyle issues; however, as Figure 5.5 shows, not all comments were negative. The groups with the highest proportion of negative comments were the spouses and the facility managers. The ICBM lifestyle hardships most often mentioned were the northern-tier weather and the lack of entertainment, job opportunities, and shopping options in the local area and on base. Participants described these hardships as being particularly difficult for families just arriving at the missile bases and noted that many families struggle to adjust to these lifestyle issues the entire time they are stationed there. Facility managers echoed the difficulties new families face, particu-

Figure 5.5
Percentage of Individuals Mentioning the Lifestyle Theme



larly in reference to the personnel they were overseeing. Because facility managers explicitly volunteered to be assigned to the missile bases, they were generally satisfied with the lifestyle; however, they did tend to prefer certain ICBM base locations over others.

More than 30 percent of participants in the remaining career groups also mentioned negatives about the lifestyle. However, in nearly all groups, some participants mentioned some positives. The negative comments included the following: The town is unfriendly toward the military, backwards, unpleasant, and does not have enough resources or entertainment. There is not enough for children to do in town or on the base. The base is isolated, does not offer sufficient services (e.g., child care, clinics), or has inconvenient hours and poor service. The weather is extreme, unpleasant, and dangerous to live and work in (not including dangers of driving in weather). Living conditions on the base are lacking, including lack of entertainment, dorm living, and resources. Example comments were as follows¹¹:

This town is a good old boys club, hard to break in without connections.

The community here feels hostile toward the military.

"Some of the worst things about this place is [sic] there really isn't much to do in the public area: places to shop or for the kids to do things."

"Not a big city. Not a lot to do if you're not an outdoor person."

I never knew what negative 60 felt like till I got here. The support services are horrible. Bowling, theater closed. No wood shop. Auto hobby shop closed.

Daycare center closes at 1730. It's open 6:00 to 5:30. I was in class and I had to have someone pick up my kid when my husband was in the field.

¹¹ As in the tables, quotation marks indicate direct quotations; other statements are paraphrases.

Positive comments included the following: Nearby towns are pleasant, have resources, entertainment, etc. There are good outdoor activities; the surroundings are beautiful. The base is pleasant and has enough resources. The following are some specific examples:

“I love Cheyenne.”

“I enjoy hunting and fishing. There is plenty of that here.”

“Malmstrom AFB is a nice base.”

Table 5.7 lists questionnaire items that addressed ICBM lifestyle issues. Not surprisingly, the people who are most bothered by living in the northern-tier locations are those who tend to be there involuntarily (spouses, chefs, operators, and enlisted SFs). Maintainers are the exception. Non-team chief maintainers (i.e., the junior-level group) were also the group most likely to say positive things about the lifestyle in their written comments. Groups with more-seasoned personnel (facility managers and higher-level SFs and maintainers) tended to respond more positively to these items on the questionnaire.

All groups frequently mentioned working conditions (see Figure 5.6). Comments covered a wide variety of topics. Some described a general lack of safety with the equipment from physical wear and tear, noting that equipment is aging, low quality, or inappropriate, leading to poor outcomes and increased workloads. HMMWVs are believed to be dangerous or inappropriate; there is a perceived need for different vehicles—they have too many miles on them or they are too old. Living and working conditions in the field or at the MAF (excluding capsule issues and MAF food) are seen as poor or insufficient. There are problems with the basic allowance for subsistence, the cost or quality of food at MAFs, and the availability of healthy food. Personnel are unable to get food for long periods or are unable to use the kitchen. Capsules are unclean, unsafe, and unpleasant to work or live in. The following are example comments:

“[When I’m at work I worry most about] hazards from falls to electrical as well as chemical [exposures].”

Table 5.7
Average Ratings on Items Related to ICBM Lifestyle

How much does the following bother you?	Security Forces				SF/Mnx	Maintainers				
	Ops	Jr	Mid	1LTs	Sr	Jr	TCs	FMs	Chefs	Spouses
Having to live here	3.8	3.2	2.8	2.6	1.8	2.4	2.8	1.7	3.3	4.2
I (we) don't have enough fun things to do on my (our) time off	3.5	4.0	3.1	2.7	1.8	2.3	2.1	2.2	3.6	3.9
I (we) don't have enough relaxing things to do on my (our) time off	3.1	3.5	2.9	2.2	1.9	2.1	1.9	1.7	3.0	3.7

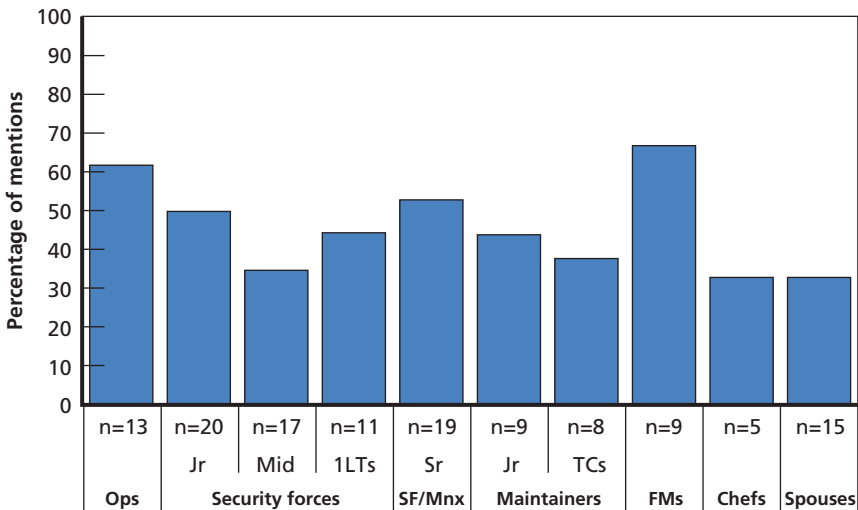
Doesn't bother me at all = 1

Bothers me a little = 3

Bothers me a lot = 5

NOTE: Table 5.1 provides complete definitions of column header abbreviations.

Figure 5.6
Percentage of Individuals Mentioning the Working Conditions Theme



RAND RR592-5.6

“Equipment concerns such as HMMWV’s breaking down create problems in ensuring proper security.”

“Vehicle Accidents are a major concern. There have been a few recently and people have gotten hurt.”

“Upgrade the MAF with better sleeping areas.”

“Everything is old at the MAF. Like 75% of it is.”

“More choices of food in the field.”

“The cheapest items on the menu are the fried items with less and less emphasis being placed on healthy items.”

“Clean the capsules.”

General lack of cleanliness in the capsule: carpet on the ground, on the ceiling, air quality. There’s a radon study that we haven’t heard about.

“Some shops have issues getting cold weather gear.”

“Our equipment is old and not very reliable.”

That personnel were in the missile field and away from home for long periods was of particular concern to the spouses (see Figure 5.7). The following are examples of their comments:

“The household feels like a one parent house. My children say goodbye to their daddy more than anything.”

They took the government phones. There is bad cell service at the MAFs, it's always roaming. There's no way to get ahold of your spouse.

Career advancement concerns also came up frequently in the groups. Figure 5.8 shows the percentages making positive and negative comments in their written responses. Examples of negative comments about career advancement include the following:

It would help if the Air Force backed up that they recognize us and realize we're important.

Figure 5.7
Percentage of Individuals Mentioning the Being Away from Home Theme

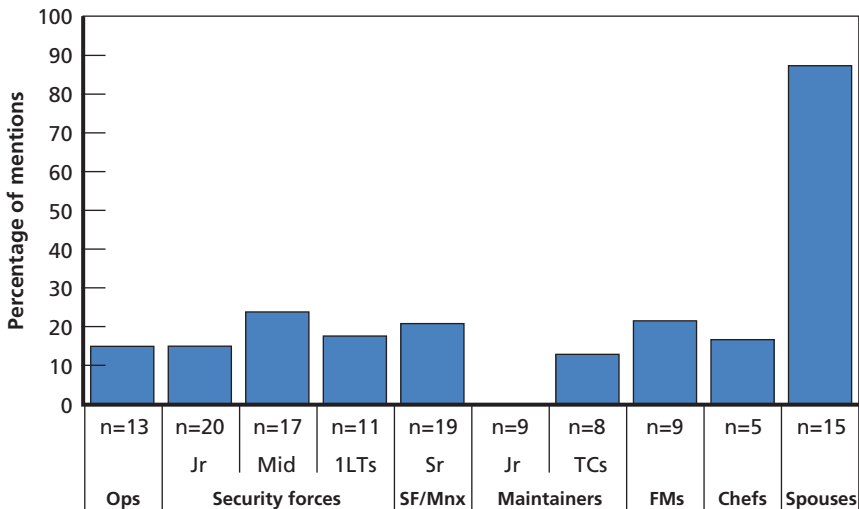
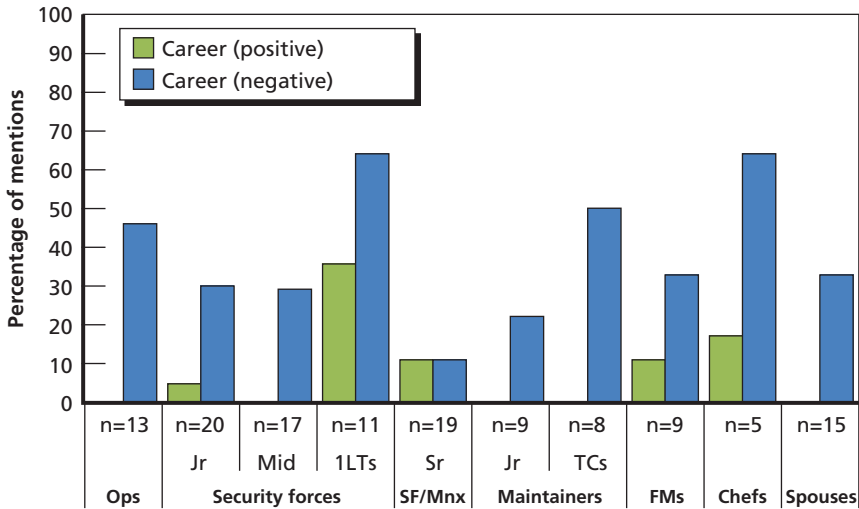


Figure 5.8
Percentage of Individuals Mentioning the Career Advancement Theme



RAND RR592-5.8

“[I would change] more schools offered and better and more realistic training.”

“Nonrated operators have lower promotion rates than peers and few opportunities for advancement.”

The following are examples of positive comments:

“I feel like what I do is very important, I feel accomplished.”

“Overall, this is a great career field.”

“Got some award written up for a team chief in the shop for doing something for some amount of time . . . had never heard of that . . . supervisor actually taking the time to recognize the person.”

“I feel lucky I got a job that could take me places.”

“The supervision trusts my judgment and allows me to do my job.”

What Are Participants Suggesting to Remedy Their Concerns?

Many participants provided a number of suggestions for improvements to ICBM benefits and assignments during the focus group discussions. Table 5.8 offers examples of their comments and concerns. We also anticipated many of the concerns and, therefore, listed several ideas for changes in the questionnaire and asked participants how much better things would be if the changes were implemented. Table 5.9 shows the average responses. As shown in Table 5.9, the strongest levels of endorsement were for better equipment, more recognition from leadership and the rest of the Air Force, more opportunities for advancement, and better upkeep of base and missile facilities. The enlisted SFs, the facility managers, and the spouses also endorsed better services and support for families.

Summary

At each of the three missile bases—Malmstrom, Minot, and F. E. Warren—we held eight occupation-specific focus groups, as well as focus groups with maintenance and SF squadron-level leaders (typically master sergeant or major) and spouses of missile operators and enlisted maintainers and SFs. All told, there were a total of ten focus groups involving 127 participants—112 military personnel (102 male) and 15 spouses (all female). We also included a short questionnaire in the focus groups to supplement the discussion findings. The ultimate goal of the focus groups and questionnaire was to answer three research questions: (1) Do current ICBM job incumbents find their jobs stressful? (2) What are ICBM job incumbents' top concerns about the job? and (3) What do they believe are potential remedies to address those concerns?

In answer to the first question—whether ICBM job incumbents find their jobs stressful—the short answer is yes. We included two measures of stress—a single item evaluating how stressful individuals perceived their jobs to be and a scale measuring job burnout. Both ranged from 1 to 7, with higher scores indicating higher stress or burnout. Average participant responses to the stress item showed that, in all

Table 5.8
Comments Related to Improving ICBM Benefits and Assignments

Subtopic	Description	Example Comments ^a
Volunteering	Job should be a volunteer duty; volunteers are more motivated.	They should only look for volunteers. "Personnel who perform facility manager duties are volunteers. They are motivated and overall want to do a good job."
Tour length	The length of the tour is too long; it should be a controlled tour.	"I think troops posted in the field should only do two years in the field. In my experience it is about the time troops get 'burned out.'"
Incentive pay	Extra pay is needed, given the conditions of work, notably for PRP and for posting. Deployment pay is included in this category but not deployment benefits.	Pilots get incentive pay, why not us?
Deployment benefits	The conditions of work necessitate deployment benefits (excluding extra pay). Posting should be treated as a deployment.	We're deployed half a year and have nothing that says that. That's a big thing for our career field: no extra pay, no deployment credit, nothing that matches us with our peers.
I feel trapped	Feel trapped in missiles, there is "no light at the end of the tunnel," no way to get out of missiles without separating from the Air Force entirely.	With PRP coding, we can never do anything besides PRP ever in our career. This needs to be changed. If I stay in, I will be coming back. It's been decided for me.
Too much uncertainty	Career progression is unclear. Don't know where next assignment will be, not sure when leaving.	"I shouldn't be finding out that my tour is being extended the day of when I already prepared to go home by packing and doing end of tour work."

^a Quotations indicate a written response. Items without quotation marks are paraphrased from the focus group notes. Except where noted, example comments are from the military respondents.

Table 5.9
Questionnaire Items About Suggested Improvements

How much better would things be if there were:	Ops n=13	Security Forces			SF/Mnx	Maintainers			Chefs n=6	Spouses n=15
		Jr n=20	Mid n=17	1LTs n=11	Sr n=19	Jr n=9	TCs n=8	FM's n=9		
More for me and my family to do on base	2.9	3.4	3.7	2.8	2.5	2.6	2.0	3.6	2.2	4.2
More for me and my family to do off base	4.1	3.7	4.1	3.2	2.9	3.5	2.9	3.8	3.2	3.9
More work opportunities for my spouse ^a	2.9	3.5	3.4	2.9	2.7	3.2	2.6	4.6	1.5	3.6
More services to help support my spouse or family while I'm at work (me while my spouse is at work)	2.8	3.6	3.9	2.4	3.2	3.0	2.0	3.4	3.8	3.9
Better equipment	4.7	4.6	4.2	4.4	3.7	4.9	3.4	4.6	5.0	
More recognition by leadership	4.3	4.4	4.0	3.1	3.1	3.8	3.7	4.0	4.3	
More recognition by the rest of the Air Force	4.5	4.4	4.1	3.7	3.3	3.9	3.3	4.1	4.7	
More opportunities for advancement	4.5	4.9	4.6	3.5	3.2	3.8	3.0	4.6	4.5	
Better upkeep of base facilities	3.9	4.3	3.9	4.0	3.4	4.1	3.1	4.5	4.3	
Better upkeep of missile facilities	4.4	4.4	4.0	4.0	3.4	4.2	2.9	4.9	4.3	
<div> <div>Not really any better = 1</div> <div>Somewhat better = 3</div> <div>A lot better = 5</div> </div>										

NOTE: Table 5.1 provides complete definitions of column header abbreviations.

^a For spouses, the item was phrased "more work opportunities for me."

but two of the career field groups (junior-level maintainers and facility managers), participants perceived their jobs to be more than moderately stressful. On the second scale, on average, the participants in three career field groups (chefs, operators, and junior-level SFs) were experiencing job burnout. Midlevel SFs and facility managers also reported average levels of burnout that, although lower than the cutoff, are considered signs of possible burnout in the future.

In answer to the second question—what ICBM job incumbents' top concerns about the job are—the focus group responses and questionnaire answers led to 12 broad themes that were concerns to the participants. Of the 12, manning and leadership or organizational culture issues topped the list of concerns for the majority of the career field groupings. The next themes on the list were the ICBM lifestyle, working conditions, career progression, and being away from home for extended periods.

In terms of *manning*, nearly all participants believed they work more hours than most Airmen, and nearly all career fields agreed or strongly agreed that they are understaffed. There were a number of reasons for this perception, including issues with PRP; inspections and inspection preparation; special duties, useless tasks, training, distinguished visitors, and stand-downs; and operational inefficiencies.

In terms of leadership or organizational culture issues, many commented that leadership (from direct supervisors to the highest levels of the Air Force) is not listening to or does not fully appreciate or understand their concerns. Other issues noted include a culture of fear and perfectionism, micromanagement, a CYA mentality, and misaligned incentives. PRP culture was also raised, both in terms of people abusing the process to get out of work and, conversely, avoiding the process out of peer pressure and guilt.

ICBM lifestyle, working conditions, career advancement, and being away from home represented another set of key themes. In terms of ICBM lifestyle, the groups with the highest proportion of negative comments were the spouses and the facility managers. Hardships most often mentioned were the northern-tier weather and the lack of entertainment, job opportunities, and shopping options in the local area and on base. All groups frequently mentioned working conditions,

with comments covering a wide variety of topics. Some described a general lack of safety with the equipment from physical wear and tear, noting that equipment is aging, of low quality, or inappropriate, leading to poor outcomes and increased workloads. Being deployed to the missile field and away from family for long periods was a major concern for the spouses, and the lack of recognition, incentives, or rewards for ICBM jobs was a common concern across all groups.

In answer to the third question—what they believe potential remedies to address those concerns are—the strongest levels of endorsement were for better equipment, more recognition from leadership and the rest of the Air Force, more opportunities for advancement, and better upkeep of base and missile facilities. The enlisted SFs, the facility managers, and the spouses also endorsed better services and support for families.

Going Forward—Recommendations for the Air Force

Chapters Three through Five provided the results of our efforts to answer the first question posed in Chapter One: *What are the sources of the problem behaviors within 20 AF?* Based on the findings presented in those chapters, we offer some suggestions here to answer the final two research questions in Chapter One: *What could the Air Force do immediately to reduce or mitigate the problems in 20 AF?* and *What continuing investigation is needed?*

Next Steps for Fixing the Concerns of the ICBM Force

Later in this chapter, we recap the areas that personnel identified as concerns and suggest how the Air Force could address them. But first, we offer some comments about our overall recommendations and some caveats and notes of caution for those attempting to address these recommendations.

Attitudes, Perceptions, and Employee Well-Being Are Important; Steps Should Be Taken to Improve Them

As noted in Chapter Four, attitudes, perceptions, and employee well-being may be a central element in explaining the issues within 20 AF. We therefore directed the majority of our effort toward understanding the many well-studied topics in research (such as employee attitudes and well-being) that relate to these concepts. Among these are job

satisfaction, life satisfaction, emotional and physical well-being, perceptions of organizational justice and organizational support, and the belief that the work matters, just to name a few. These are also examples of the very topics that our focus group participants raised repeatedly and emphatically as areas within the ICBM community they wanted to see improved.

To sum up, the findings of past studies suggested that attitudes, perceptions and well-being may be suffering within the ICBM community—or are at least lower than they could be. This project adds further support to that conclusion. Thus, our overarching recommendation is to address the concerns members of the ICBM community have raised. We therefore recap our suggestions for which aspects of well-being and which attitudes and perceptions are most in need of changing in the later sections of this chapter.

Well-Being, Attitudes, and Perceptions Are Difficult to Change; Patience Will Be Needed

There is no quick and easy fix for things as complex as attitudes, perceptions, or employee well-being. Changing these will take time and effort. Evidence that the changes have been successful (that is, that attitudes, perceptions, and well-being of personnel are generally very positive) may take months or even years to be fully realized. Mistakes on the job may continue; unhappiness may linger; and problem behavior may still occur at higher rates while the Air Force is taking steps to improve them. The public, leadership, and the people of 20 AF will need to be patient while change efforts are under way.

We also caution leaders to be wary of change that seems too good to be true. When the ICBM community responds that morale is great here now, no need for concern, we suggest viewing this with cautious skepticism, especially if it happens quickly after others have voiced concerns to the contrary. Perhaps some real improvement might have happened quickly; some change efforts could yield immediate positive results. However, others could produce results that are superficial or

fleeting, or the improvements can wane over time.¹ Ask for additional evidence to confirm that immediate improvements have occurred in the attitudes, perceptions, and well-being of personnel and continue to ask for evidence that those improvements are enduring over time.

Determining How to Change the Attitudes and Well-Being of 20 AF Is a Critical Next Step

The work we present here offers a diagnosis of the problems, but not a clear treatment plan for fixing them. Specifically, we have identified the concerns at the forefront of the ICBM community's minds. However, the more difficult question of *how* to implement the changes is still largely unanswered. Identifying the actionable approaches to changing the current climate in the ICBM community goes far beyond the time and resource constraints of the present project. So, for most of our suggestions, we cannot and therefore do not go beyond a restatement of the factors identified as problems to offer an actionable remedy. Instead, we recommend that those in charge of creating an action plan consider a variety of factors in deciding the course of action to take and regularly revisit their action plans to ensure that they are in fact working as intended.

Part of the reason we avoid offering specific actionable recommendations for remediation at this point is because we cannot, at present, claim to understand of all the complexities involved in imple-

¹ The Hawthorne effect, first proposed in a study of factory workers, is one illustration of the type of fleeting improvement that should be watched for carefully. Although the research explored many aspects of the work environment (see Parsons, 1974, on the original study), the study is often explained as a study of the effects of lighting on the performance of factory workers. The researchers raised the lighting, and performance went up; when they lowered the lighting, performance again went up. To explain the perplexing findings, the researchers concluded that it was the social situation—the attention and observation of performance by the researchers—that led to the improvements, not the changes in the lighting. This phenomenon of improvement when none should be expected could also be described as a placebo or experimenter effect. Although the explanation has been heavily criticized (see, for example, Bramel and Friend, 1981), the concepts could still be important here. Recognition of the value of the work was one factor perceived as lacking within 20 AF. If leadership shines a spotlight on performance of ICBM personnel, it may help address that perception of recognition and behavior could improve in the short term. But once that spotlight is removed, behavior could return to previous levels.

menting them. As a result, we cannot anticipate or offer satisfactory solutions to address the complexities. For example, in the section on improving leadership styles and organizational culture we recommend establishing open lines of communication, but doing so is challenging in a hierarchical organization, especially one in which everyone from the very highest levels of leadership in the Air Force to the one-striper may be concerned about being fired for a misstep related to the nuclear environment. The reasons that open lines of communication do not flourish are complicated, and opening such lines is nontrivial. And some means of opening them might lead to negative unintended consequences, such as a breakdown in command authority. As another example, we recommend changing the perceptions that PRP is a career killer and that people are sent to an ICBM job for punishment, which are both important concerns for the SFs. Yet these are widely held perceptions that exist outside 20 AF, in places and ways that 20 AF cannot alone affect. Similarly, the recommendation to protect days off for maintainers faces complexities. The problem is not necessarily that the wings do not want to protect days off but rather that the burdens of PRP and similar issues with the current manning levels prevent it. How exactly can they protect days off until manning issues are solved? These are just a few examples of how identifying actionable plans for execution of these recommendation is not so simple.

Exploring the potential ramifications of changes and being mindful of unintended consequences is also absolutely necessary for ensuring the success of any efforts to change the problems in the ICBM community. Although this project goes a long way to indicate areas where the concerns are most acute, we have not addressed how to fix those concerns and whether something else might break in the process. Identifying unintended consequences of these recommendations and balancing the resource needs to implement them with the needs across the broader Air Force, although necessary, were simply beyond the scope of this effort. For that reason, we recommend that leaders carefully examine the list of suggestions we provide below with an eye to possible unintended consequences. One example is a recommendation we make for the SFs and FMIs. We recommend delegating more authority to them because they have expressed concerns about being

micromanaged. However, we do not clarify what authorities should be delegated because we are not in a position to know what can and cannot be delegated safely. We suggest asking a series of follow-on questions to help further define the recommendation. For example, what is the view of the commander or supervisor on this? Why are the authorities now limited, and what might go wrong if they were expanded? It may be true that greater authority on the job might make SFs and FMs happier, but it could cause other problems operationally.

As another example, for the operators, we suggest professionally cleaning the capsules on a routine basis. But getting a cleaning crew into the LCCs is a major undertaking and takes the missile off alert. This intrusion will add a lot of labor, decrease the alert rate, increase the teams in the field, and cause some grief. Are the benefits enough to justify the drawbacks?

Lastly, care should be taken to ensure that the solutions offered are not inadvertently a square peg for a round hole. One example is the use of HMMWVs in the missile fields. Although many have recognized that armored vehicles are appropriate and necessary for those in the business of protecting nuclear weapons, many in the ICBM community have questioned the suitability of the HMMWV for that purpose. It may be dangerous for use in the northern-tier weather and terrain, and perhaps other better options exist.

Put simply, we recognize that there are trade-offs, and we acknowledge that the perspectives we gleaned from the focus groups represent only one side of the issue. The bottom-line recommendation from this project is that satisfaction with ICBM jobs and the accompanying lifestyle is low and should be lifted and that the members of our focus groups have indicated possible areas to explore to do so. However, actionable recommendations for how to do that should be further explored with an eye to possible trade-offs and unintended consequences.

Start by Responding to the Suggestions and Ideas from 20 AF Personnel

Based on the focus group findings in Chapter Five, we recommend that the Air Force direct efforts toward reducing the negative attitudes and perceptions and reduce or mitigate stress levels in ICBM jobs. In the following subsections, we restate and highlight the areas that our focus group participants identified as ones they would most like to see changed. As a reminder, we are suggesting that the Air Force attend to the factors we identified as most needing change. That would be the first step in coming up with actionable remedies, but it is incomplete as a recommendation for action.

In several cases below, we offer ideas for actions that the Air Force could take that might help institute the desired change but also acknowledge that many of the suggested remedies stem directly from comments provided by the members of 20 AF. Although the personnel believe strongly that some of these remedies would positively affect their work and personal lives, we also acknowledge that we have no way of knowing whether the changes would be effective at improving attitudes, perceptions, or stress or if there are unintended consequences that might have the opposite effect (as noted in the previous section).

Make AFS-Specific Changes to Reduce Stress

Each ICBM career field expressed unique concerns. We therefore advise 20 AF to engage the members of these career fields in an open dialogue about their concerns. There should also be avenues in place to regularly solicit suggestions and feedback from each community. Based on our limited discussions with each of the career fields, we identified several career-specific suggestions. Note, however, that these are likely not an exhaustive list. In the case of chefs, we also provide some additional explanation about the suggestions.

Security Forces

The following are AFS-specific suggestions:

- Improve mentoring for SFs.

- Change the perception that PRP is a “career killer” and that people are sent to an ICBM job for punishment.
- Reward or incentivize those being selected for PRP duties.
- Rotate SFs to other locations (e.g., deploy overseas).
- Improve coordination and efficiency to reduce the amount of “hurry up and wait.”
- Delegate more authority to the SFs.
- Provide mechanisms for accomplishing extra duties (including training activities) at the MAF.

Maintainers

The following are AFS-specific suggestions:

- Improve mentoring for maintainers.
- Replace and modernize old and broken maintenance equipment.
- Allow rest overnight at the MAF, rather than requiring maintainers to come back the next day (maintainers mentioned they would get more sleep if they did not have to commute back to base, unpack the truck, return to load the truck, and commute out again the next day).
- Communicate the maintainers’ statuses to their spouses while in the field (if they have to rest overnight, it is usually unexpected; in many cases, spouses are not notified and have no idea when to expect them home again).
- Confirm that the manning numbers are set appropriately.
- Protect days off.

Facility Managers

The following are AFS-specific suggestions:

- Provide more or better opportunities to mentor.
- Provide better MAF bedding options (e.g., sleeping bags).
- Provide cars with larger cargo space for transporting supplies to and from the MAF.
- Ask for input from facility managers.
- Delegate more authority, autonomy, and responsibility.

Operators

The following are AFS-specific suggestions:

- Enforce crew rest and sleep requirements.
- Record hours slept at home and on shift to determine whether they are getting enough rest on and off duty.
- Share the results of any occupational environmental quality studies (e.g., radon and air quality studies) with the operators.
- Confirm that the manning numbers are set appropriately
- Professionally clean the capsules on a routine basis (carpet, beds, etc.).
- Repair broken equipment (some equipment was cited as not working properly).

Chefs

With respect to the chefs, we have several AFS-specific suggestions. To help clarify their unique concerns—concerns that appear to be less well understood in the community—we describe the suggestions here in greater detail.

Given the comments from our six chef participants and additional extended discussions about the chefs with the facility managers, we believe that the chef population may be at risk for many of the problem behaviors. Chefs experience a variety of on-the-job stressors when working in the missile field that are unlike those they may experience in other potential job locations, and they may not be well-equipped to handle these stressors.

Many people are counting on the chefs for their every meal while at the MAF, and there is only one chef in the kitchen at a MAF. This is an unusual level of responsibility relative to other Air Force chef positions, where chefs usually work in teams. There is also no one else like them at the MAF. Multiple SFs are stationed at the MAF at one time, and the SFs stick together. Thus, the chefs feel like outsiders, not members of a group. Facility managers also mentioned that chefs have no long-term consistent mentor because the facility manager in charge of them changes from week to week because of differences in rotations.

Chefs also tend to have other characteristics that may put them at risk. For example, many are first-term Airmen, so they are young, largely inexperienced in a kitchen, and not used to the level of responsibility. Some are personnel who have washed out of other AFSs, suggesting they may have had trouble adjusting in other settings. None are subject to PRP, so they have not been prescreened for an ability to handle stress in the same way that the young SFs, maintainers, and operations personnel have been.

Focus group comments also indicated that:

- Morale is low.
- Some chefs are being called in on their days off.
- Chefs can end up working long hours.
- The expectation for perfection is higher than at other bases (according to a few participants who had worked at other locations).
- Chefs do not have all the appropriate supplies (e.g., cleaning supplies) needed to pass inspections.
- Chefs see “no light at the end of the tunnel,” meaning it seems like they will never get a chance to leave and go to a non-ICBM base.
- Chefs cannot meet their five-level skill requirements while working at the MAF, so ICBM jobs hinder advancement.

Thus, the following chef-specific changes are suggested:

- Staff MAFs with more-senior chefs to ensure they have better coping skills and more experience.
- Prescreen chefs for ability to handle stress and isolation.
- Rotate base-side and MAF assignments more to share the burden, reduce loneliness, add variety, and give chefs more experience and exposure to mentors.
- Improve mentoring opportunities by consistently placing the same facility managers and chefs together whenever possible.
- Make chef duties a two-year maximum tour at the missile field.
- Examine chef manning.

- Explore whether kitchen inspections are more stringent than what occurs at other bases.
- Ensure availability of needed supplies.
- Involve chefs in the decisionmaking process for changes.

Address Manpower Concerns

Based on the focus group indications that manpower issues are a significant perceived problem area and our review of the available information on existing manpower studies (see discussion in Chapter Three), it appears that the current manpower process may not be capturing several aspects of the job that are relevant in the ICBM community. The following factors need to be explicitly measured or addressed in the manpower standards:

- increased OPTEMPO associated with inspections and inspection preparation
- the range in the number of people that might go down on PRP or be PFD on any given day²
- the absolute minimum number of jobs that must be filled 24/7.³

We therefore recommend changing the way in which manpower studies are conducted for the ICBM community. Specifically, two actions should be taken:

- 20 AF should collect and retain its own data on all aspects of the job that affect manpower requirements. Examples include daily numbers of personnel down on PRP; number of training days logged by personnel; number of protected days off; time spent on extra duties, stand-downs, forcewide training, and other unaccounted-for activities; commute times; weather-related delays; hours spent on inspection preparation; and time to com-

² This information is not currently tracked on a daily basis and retained. Fluctuations may be problematic, given the 24/7 nature of positions in the ICBM field.

³ Manning numbers should then be raised to allow a large enough cushion that all positions can, with rare exception, be filled without having to call in personnel on their days off.

plete various maintenance events. Doing so will arm it with facts to support more-accurate manpower studies and potentially refute personnel's perceptions that ICBM jobs are understaffed.

- The Air Force should commission an in-depth analysis of ICBM manpower needs using a methodology that explicitly accounts for the issues participants raised.

If the results of the new manpower analysis show unequivocally that there are, in fact, no manning shortfalls related to the factors participants mentioned, efforts should be taken to understand what is driving the perceptions, and steps should be taken to change them.⁴ Last, perceptions of being understaffed should continue to be monitored regularly to measure changes in perceptions over time.

Improve Leadership Styles and Organizational Culture in the ICBM Community

There is clearly an overarching perception that leaders are not listening, or that when they do listen, they misunderstand. The best remedy to this would be to establish open lines of communication at all levels, allowing feedback in both directions. Leadership needs to seek feedback and suggestions for improvement from the community. Their actions in response to that feedback should also be shared with and vetted by that community. Even if leaders listen and take action on the basis of recommendations from personnel, if they fail to communicate that they have heard the concerns and are taking action, the perception that leadership is not listening will remain. The process needs to be reciprocal and continuous. Personnel also need to feel that those voicing their opinions or suggestions will not be punished for doing so. Currently, not all personnel feel free to speak up. The feedback from

⁴ Although it appears that there are strong perceptions that there are manning shortfalls, our study cannot estimate how many personnel would be needed or the types. Moreover, we were only able to confirm that there is a strong perception that manning is a problem. It has, however, been pointed out that a perception that personnel are undermanned does not necessarily reflect actual staffing shortfalls. As a result of both of these limitations of our findings, we recommend, at a minimum, following up on this perception with a carefully designed manpower study to further quantify and confirm it.

our focus groups suggests that increasing two-way communication is an area in which significant improvements are possible.

Provide Incentives and Rewards for ICBM Service and Modify Assignment Policies

The ICBM community made a wide variety of suggestions about incentives and rewards (as discussed in Chapter Five). Some were relatively inexpensive propositions that were purely symbolic. Examples included instituting an ICBM medal to show recognition for ICBM service. Others would be more costly to implement, such as instituting incentive pays to encourage people to volunteer for positions or to compensate for involuntary assignment to ICBM duty. Deployment credits and deployment benefits were also discussed, since many in the ICBM community deploy to the missile fields and are away from their families for a sizable portion of the year. Implementing at least some of these types of rewards could go a long way toward changing the perception within the ICBM community that the highest levels of leadership do not value that community. Additional ways to change this perception could include doing more to educate the rest of the Air Force on the importance of the ICBM mission.

In addition, many personnel commented that there was no light at the end of the tunnel, meaning they had no idea when or if they would ever get to leave the ICBM world. Many believe this perception is occurring because ICBM jobs requiring PRP are difficult to fill and because some people (even those not on PRP) are being prevented from transferring out to other bases because of manning shortfalls. Regardless of whether this is accurate, the perception needs to change. Opportunities for transfers should be made available, particularly for those who have served admirably in their current positions. Moreover, when transfers are granted, leadership should make sure the moves are actually realized. It takes only one person having his reassignment plans canceled to lead others to believe it will happen to them, too. For that reason, care should be taken in ensuring that all promises of transfers are fulfilled. In addition, many believe that setting limits on the amount of time people are required to stay at an ICBM base would help provide the desired light at the end of the tunnel. A two-year term

is generally perceived as manageable, and if the promise of getting to leave after two years is consistently upheld, attitudes toward the job may improve.

Improve Base Services

Many of the participants expressed concerns over the lack of services available on base. Because all these bases are located in small towns, food, shopping, child care, and entertainment options off base are significantly limited. Adding more services on base would help remedy that concern. Additionally, because much of the ICBM work is shift work, many are away from the base at odd hours. As a result, they find it to be more challenging to run errands, seek medical care, and find child care solutions because these services are open only during normal working hours. Finally, many feel as though they are routinely deployed for days at a time, yet spouses do not receive the same services and support as if their Airmen were deployed overseas. This places a big burden on ICBM families. We suggest providing more services to address all these issues.

It could be argued that there are not enough users to support additional services at these bases; however, because the bases are small, and people's tastes, interests, and schedules are varied, there will never be a critical mass of users for any one service. That should not, however, prevent these services from being provided. Other large bases located in metropolitan areas need fewer services because so much is available in the surrounding area. If services are going to be cut, it makes sense to cut them from bases that are not in isolated locations.

Continue to Investigate These Issues

Address Other Concerns Raised

We took a 90-day look at the issues the ICBM community raised. Leadership expressed a wide variety of concerns, ranging from human factors workspace issues, sleep schedules, the need for new or different mission-critical equipment (such as helicopters and vehicles), high rates of problem behaviors, and the fact that longstanding concerns about

a variety of workplace issues continue to surface. In this project, we opted to focus on the last two concerns: reducing problem behavior and defining the top concerns the ICBM community faces.

However, examining the remaining explanations is also important, because it could lead to additional policy recommendations. For that reason, we recommend that the Air Force pursue additional research efforts focusing on the other explanations. First, we recommend that the Air Force *conduct an in-depth and sophisticated statistical analysis of the rates of problem behaviors*.⁵ This effort should include an examination of whether differences between 20 AF bases and the rest of the Air Force remain after controlling for key demographic differences and whether those who are specifically assigned to missile field duties experience higher rates of problems relative to those who are not. If certain demographic variables are identified as having a higher risk of problem behaviors, steps could be taken to reduce the number of personnel with these characteristics from serving in missile jobs. In addition, prevention efforts might be focused on specific demographics to help lower the incidence of problem behaviors.

Second, we recommend that the Air Force *study whether increased use of the Uniform Code of Military Justice and nonjudicial punishment authority in the ICBM community accounts for some of the differences*. This information is also relevant for understanding the rates of problems in 20 AF going forward. If rates of punishment are higher in the ICBM community, the Air Force should consider whether such differences in punishment are appropriate or warranted. Regardless, continuing to measure and document the magnitude of the enforcement differences will help 20 AF better interpret any raw statistics that it receives in the future.

Develop Larger Recurring Survey

The focus groups in this project were a first step in answering the question: What are the major stressors or sources of negative attitudes and

⁵ Statistical regression techniques, such as propensity scoring, should be applied to determine whether differences in problem behavior rates exist after controlling for demographic differences.

perceptions in the ICBM community? The focus groups identified several key stressors and sources of negative attitudes and perceptions, the majority of which were shared by anywhere from 30 to 100 percent of the focus group participants. However, several additional questions remain, and continued tracking of these issues over time is needed.⁶ We therefore recommend developing a larger, recurring survey of these issues to confirm these perceived problems and track changes in perceptions over time.

Several factors should be considered in developing the survey and analyzing the results to ensure that the data collection effort is successful. First, the study should take care to ensure that participants feel comfortable sharing their perspectives on the survey. Some of our participants expressed concerns about speaking honestly in front of their superiors and concerns about confidentiality when surveys were conducted by Air Force personnel or conducted online.

The survey should also use established items for measuring key topics we identified. Appendix A offers some examples of established items. The survey should also include items developed specifically to measure the ICBM issues and samples chosen to be representative of the ICBM populations of interest. For example, items specific to ICBM manning issues could include questions addressing how much inspection preparation increases workload above that of a normal workday, which aspects of inspection preparation are viewed as unnecessary, how maintenance inefficiencies can be improved, and how PRP processes can be improved.

ICBM sample information should allow the results to be separated not only by AFSs within an ICBM base but also by whether or not personnel are assigned to duties in the missile field. In addition, stakeholders, such as spouses, should also be surveyed regularly to understand and improve their perceptions of the ICBM lifestyle.

The survey should also include a series of non-ICBM comparison samples to determine whether the attitudes of the ICBM community

⁶ For example, tracking these perceptions over time is particularly important for determining whether any efforts to change perceptions, attitudes, and well-being are having the desired effect.

are unique to that community or are shared by others in similar situations across the Air Force. Examples of relevant comparison groups include personnel assigned to other jobs within the Air Force and their families; personnel at ICBM bases who are not assigned to duties in the missile fields and their families; personnel at other isolated, remote base locations in the United States; and personnel at bases in major U.S. cities. The use of comparison populations could illuminate important population-specific needs or identify factors at other locations that have successfully mitigated personnel's concerns that could shape policy changes. For example, comparisons of attitudes toward availability of base services could help determine whether additional base services are important.

Finally, care should be taken to ensure that the survey data actually reflect the sentiments of personnel in the ICBM community. This is of particular concern, given that some participants in our focus groups mentioned that they were not comfortable being honest on the Air Force surveys. Participants also commented that they often did not provide honest answers on the surveys because of the enduring perception that their survey responses would never actually lead to change. Given that our participants' attitudes toward the job differed in many ways from those reflected on larger Air Force survey efforts, such as the Air Force Culture Assessment Survey Tool and Air Force Climate surveys, care should be taken to ensure that future survey data capture the true state of affairs in the ICBM community. Differences we observed in our study may be due to differences in sample populations (ours consisted only of personnel working in the missile fields), fears about confidentiality, or even beliefs about the futility of honest responding. Alternatively, they could be due to differences among who chose to volunteer for each; for example, it is possible that only unhappy people chose to volunteer in the focus groups. To help tease this apart, periodic confidential focus groups should be conducted with survey respondents, and their responses in the focus groups should be linked to their survey answers to confirm and better understand their responses in both settings. Doing so would be critical to ensuring that the survey information and the focus group information both accurately reflect ICBM force sentiments. Conducting focus groups period-

ically can also be useful for ensuring that new topics of concern—not previously addressed on the survey—are identified.

Closing Comments

Ultimately, any problem behavior occurring among personnel who have regular contact with nuclear weapons warrants investigation and attempts to reduce or eliminate it. That was the goal of this report. We have provided an initial look into these issues and recommend further work and continued reexamination of them.

Weaknesses in the human elements of nuclear surety may be difficult to detect and prevent, and their causes and signs could easily be overlooked. Continued vigilance by Air Force leadership in looking for possible warning signs is critical, and repeated signs of a problem should certainly not be ignored. High levels of stress and increased rates of aberrant behavior in the ICBM workforce are example of those signs. If people are experiencing high levels of stress in ICBM jobs, and our data suggest some are, finding out their chief complaints and addressing them is a sensible first step to mitigating that stress.

Although many people freely discussed complaints they have about their jobs, they did so because we asked them to. On the whole, they also expressed a very strong work ethic and a strong willingness to do whatever needed to be done, under any conditions. The overwhelming majority of our participants seemed to genuinely care about the mission, their coworkers, and the Air Force. Participants shared their perspectives freely with the hope that it would someday improve the ICBM community and the mission.

Examples of Workplace Measures

In this appendix, we present (in Table A.1) some examples of workplace measures identified in our review of the literature in Chapter Four. We did not do a comprehensive search of measures that are used most frequently or best situated for use in this context. Instead, we offer this list as a starting point for considering measures. We fully recognize that shorter, more easily accessible, and even more commonly used measures may exist.

Table A.1
Overview and Source Information for Example Measures

Construct and Recommended Measurement	Authors	Scale Characteristics	Items Publicly Available
Personality and disposition			
NEO Personality Inventory—Revised	Costa and McCrae, 1994	240 items measuring 30 personality facets, with six subscales per each of the Big Five personality constructs	No
IPIP	Goldberg, 1999	100 items measuring the Big Five personality constructs Short version: 50 items	Yes, for research purposes only
Positive and Negative Affect Schedule	Watson, Clark, and Tellegen, 1988	10 items measuring positive affect; 10 items measuring negative affect	Yes
Family social support			
Family Support Inventory for Workers	King et al., 1995	44 items, 29 items measuring emotional sustenance and 15 items measuring instrumental assistance	Yes
Job characteristics			
Job Diagnostic Survey	Hackman and Oldham, 1975	21 items measuring characteristics of the job	Yes
Task Significance	Bliese et al., 1998	3 items measuring contribution to the mission	Yes
Military Self-Esteem Scale	Marlowe et al., 1985	7 items measuring sense of pride and accomplishment in the job	Yes
Job Engagement	Britt, Adler, and Bartone, 2001	4 items measuring how much job performance matters to the Airman	Yes
Challenge at Work	Brown and Leigh, 1996	2 items measuring how challenging the job is	Yes

Table A.1—Continued

Construct and Recommended Measurement	Authors	Scale Characteristics	Items Publicly Available
Social support in the workplace			
Work Social Support Scale	Etzion, 1984	10 items measuring social support, 7 items measuring support in the work environment, and 3 items indicating the quality of work relationships	Yes
Second version of the Copenhagen Psychosocial Questionnaire	Pejtersen et al., 2010	9 items measuring social support from 3 sources: 3 items from colleagues, 3 items from supervisors, and 3 items from the social community at work	Yes
Stress and burnout			
Perceived Stress Scale	Cohen, Kamarck, and Mermelstein, 1983	14 items measuring both stressors and strains	Yes
Stress in General Scale	Stanton et al., 2001	15 items measuring stress on two dimensions: pressure and threat; scored as Yes, No, or Unsure	No
Maslach Burnout Inventory—General Survey	Schaufeli et al., 1996	Scale items measuring emotional exhaustion, depersonalization, and personal accomplishment	No
Burnout Measure—Short Version	Malach-Pines, 2005	10 items measuring how one feels about his or her work overall	Yes
Depression			
The Patient Health Questionnaire, depression module	Kroenke, Spitzer, and Williams, 2001	9 item self-report measure of depression symptoms scored on the frequency experienced.	Yes
Center for Epidemiological Studies' Depression Scale	Radloff, 1977	20 items measuring experienced depression symptoms with frequency of days experienced Short version: 7 items	Yes

Table A.1—Continued

Construct and Recommended Measurement	Authors	Scale Characteristics	Items Publicly Available
Physical health			
Physical Symptoms Inventory	Spector and Jex, 1998	18-item checklist of common stress symptoms experienced over the past 30 days	Yes
Sleep or exhaustion			
Epworth Sleepiness Scale	Johns, 1991	8-item scale assessing chance of dozing off or falling asleep in daily situations	Yes, for research purposes only
Work or job satisfaction			
Overall Job Satisfaction Scale	Brayfield and Rothe, 1951	18 items measuring one's overall satisfaction with the job	Yes
Job in General	Ironson et al., 1989	18 items measuring one's overall satisfaction with the job, scaled as Yes, No, or Unsure	No
Michigan Organizational Assessment Questionnaire—Job Satisfaction Subscale	Cammann et al., 1979	3 items measuring one's overall satisfaction with the job	No
Job Descriptive Index		72 items assessing 5 facets of job satisfaction; scored as Yes, No, or Unsure	No
Minnesota Satisfaction Questionnaire		100 items measuring 20 facets of job satisfaction 20-item short version	No

Table A.1—Continued

Construct and Recommended Measurement	Authors	Scale Characteristics	Items Publicly Available
Family and life satisfaction			
The Satisfaction with Life Scale	Diener et al., 1985	5 items measuring one's overall satisfaction with all aspects of life	Yes
Work-Family Conflict Scale	Carlson, Kacmar, and Williams, 2000	18 items measuring six facets of work interfering with family, and family interfering with work	Yes
Organizational justice			
Justice Scale	Colquitt, 2001	20 total items measuring procedural, distributive, interpersonal, and informational justice in the workplace	Yes
Breach of psychological contract			
Breach of Contract Measure	Robinson and Rousseau, 1994	2 items measuring one's perceived promise fulfillment between employee and employer	Yes
Substance abuse			
Alcohol Use Disorders Identification Test (AUDIT)	Saunders et al., 1993	10 items measuring frequency and severity of alcohol use	Yes
Counterproductive work behaviors			
CWB Checklist	Spector and Fox, 2002	45 items measuring deviant workplace behaviors, both against the organization (21 items) and against other people (24 items)	Yes

Questionnaire Items

In this appendix, we provide detail on the questionnaire items we used in second half of the focus group effort reported on in Chapter Five.

Job Burnout Scale (Malach-Pines, 2005)

The job burnout measure we used is a previously validated short measure of job burnout developed and validated by Malach-Pines, 2005. The ten-item scale is as follows:

When you think about your work overall, how often do you feel the following (please circle one)?

	1	2	3	4	5	6	7			
	Never	Almost Never	Rarely	Sometimes	Often	Very Often	Always			
Tired				1	2	3	4	5	6	7
Disappointed with people				1	2	3	4	5	6	7
Hopeless				1	2	3	4	5	6	7
Trapped				1	2	3	4	5	6	7
Helpless				1	2	3	4	5	6	7
Depressed				1	2	3	4	5	6	7
Physically weak/Sickly				1	2	3	4	5	6	7
Worthless/Like a failure				1	2	3	4	5	6	7
Difficulties sleeping				1	2	3	4	5	6	7
“I’ve had it”				1	2	3	4	5	6	7

Responses for the ten items are averaged to create a scale score ranging from 1 to 7. Average scale scores of a 4 or higher are considered indications of job burnout.

Potential Concerns

For items in this section, respondents were asked to rate either how often each statement applies to them or how strongly they agree with the items and how much it affects them.

Please indicate how often each statement applies to you:

1	2	3	4	5
Never	Rarely	Sometimes	Most of the time	Always

For the statements that apply to you, please also indicate how much they affect you using the following scale:

1	2	3	4	5
Doesn't bother me at all		Bothers me a little		Bothers me a lot

	Never/ Always	Does Not Bother Me/ Bothers Me a Lot
My job requires:		
working outdoors in the cold climate		
long commutes from the base to the missile sites		
working in cramped, tight spaces		
driving in dangerous weather conditions		
not having clean air or good air circulation		
Working with:		
dangerous equipment		
old equipment		
run-down/broken equipment		
Working shifts that:		
aren't the same from week to week		
last for more than 8 hours		
last for more than 1 day		

	Never/ Always	Does Not Bother Me/ Bothers Me a Lot
last for more than 2 days		
Knowing that I might get seriously injured while on the job		
Putting in extra hours that aren't counted as part of my official workday		
Finding out that a coworker has been held back from duty for PRP reasons		
Having to live here in Great Falls, MT		
Not being able to talk about my job with friends and family on the weekends because it's classified		

Please indicate how much you agree or disagree with each statement using the following scale:

1	2	3	4	5
Strongly disagree		Neither agree nor disagree		Strongly agree

Next, please rate each statement (when applicable) using the following scale:

1	2	3	4	5
Doesn't bother me at all		Bothers me a little		Bothers me a lot

	Never/ Always	Does Not Bother Me/ Bothers Me a Lot
I work more hours than most Airmen		
People in my job have much lower chances of being promoted than people in other Air Force jobs		
I don't get enough sleep at the missile alert facility		
The vehicles we are given are inappropriate		
I don't have:		
the right tools available to me on the job		
enough fun things to do on my time off		
enough relaxing things to do on my time off		
access to the same education and training opportunities as Airmen in other AFSs		

	Never/ Always	Does Not Bother Me/ Bothers Me a Lot
the same job opportunities as Airmen in other AFSs after separation		
The living quarters at the MAF are run down		
Other people in the Air Force don't understand how important our work is		
People outside the Air Force don't understand how important our work is		
The Air Force doesn't provide enough support for my spouse		
I am often		
really bored while on the job		
overwhelmed on the job		
I have a lot of responsibility on the job		
I feel like I have to be perfect on the job		
It would be bad if I said something to my supervisor about the parts of the job that bother me		
We are understaffed		
Sleeping is difficult on my off days		
I enjoy my job		
I wish I had a different job in the Air Force		
My job is important		
My job is rewarding		

Attitudes Toward Actions the Air Force Could Take

How much better would it be if improvements were made to the following things?

	1	2	3	4	5
	Not really any better		Things would be somewhat better		Things would be a lot better
More for me and my family to do on base	1	2	3	4	5
More for me and my family to do off base	1	2	3	4	5
More work opportunities for my spouse	1	2	3	4	5

More services to help support my spouse/family while I'm at work	1	2	3	4	5
Better equipment	1	2	3	4	5
More recognition by leadership	1	2	3	4	5
More recognition by the rest of the Air Force	1	2	3	4	5
More opportunities for advancement	1	2	3	4	5
Better upkeep of base facilities	1	2	3	4	5
Better upkeep of missile facilities	1	2	3	4	5

What else could be done to help improve things?

Supplemental Questionnaire Item Results

In Chapter Five, we presented results from the administration of the questionnaire in presenting our findings. This appendix provides supplemental item results not covered in Chapter Five in a series of tables (Tables C.1–C.6). Each table uses the focus group abbreviations listed in Table 5.1, which provides complete definitions for these and the other column header abbreviations.

Table C.1
Average Ratings on Items Related to Stress and Satisfaction

	Security Forces				SF/Mnx	Maintainers		FMs	Chefs	Spouses
	Ops	Jr	Mid	1LTs	Sr	Jr	TCs			
I wish I had (my spouse had) a different job in the Air Force	4.0	3.9	4.4	2.3	2.4	3.2	2.9	3.0	4.2	3.1
My job (my spouse's job) is important	3.3	3.8	3.7	4.5	4.7	3.9	4.8	3.7	2.0	4.1
My job (my spouse's job) is rewarding	2.2	2.0	1.9	3.5	3.3	2.8	3.4	2.4	1.3	2.6
Sleeping is difficult on my off days (It is difficult for my spouse to sleep on his or her off days)	3.7	3.6	3.3	2.2	2.9	2.2	1.9	2.1	3.2	3.4
I don't (My spouse doesn't) get enough sleep at the missile alert facility	4.2	2.7	3.6	2.4	2.8	2.6	2.1	2.9	4.0	3.0
Strongly Disagree		Disagree		Neutral		Agree		Strongly Agree		

Table C.2
Average Ratings on Items Related to Manning

[illegible]

Table C.3
Average Ratings on Items Related to Leadership or Organizational Culture

		Security Forces				SF/Mnx	Maintainers			
		Ops	Jr	Mid	1LTs	Sr	Jr	TCs	FMs	Chefs
I feel like I have to be perfect on the job		4.5	4.4	3.9	4.5	4.3	3.4	4.6	4.1	4.2
It would be bad if I said something to my supervisor about the parts of the job that bother me		4.4	3.4	2.7	2.5	2.8	3.1	2.6	3.0	3.0
		Strongly Disagree	Disagree	Neutral		Agree	Strongly Agree			

Table C.4
Average Ratings on Items Related to Career Advancement

		Security Forces			SF/ Mnx	Maintainers			
	Ops	Jr	Mid	1LTs	Sr	Jr	TCs	FMs	Chefs
I don't have access to the same education and training opportunities as Airmen in other AFSs	3.8	3.5	2.8	2.9	3.0	2.6	3.3	2.7	2.5
I don't have the same job opportunities as Airmen in other AFSs after separation	4.1	3.4	3.5	2.3	3.3	3.2	2.9	3.0	2.7
	Strongly Disagree	Disagree	Neutral		Agree	Strongly Agree			

Table C.5
Average Ratings on Items Related to Working Conditions

How much does the following bother you?	Ops	Security Forces			SF/Mnx	Maintainers		FMs	Chefs
		Jr	Mid	1LTs	Sr	Jr	TCs		
Equipment									
I don't have the right tools available to me on the job	3.1	3.0	3.1	3.3	2.9	2.9	2.1	2.2	3.0
My job requires working with dangerous equipment	2.6	2.5	2.6	1.7	1.9	2.7	2.1	2.3	2.2
My job requires working with old equipment	4.0	3.5	3.9	3.5	3.3	3.8	2.8	3.6	4.0
My job requires working with rundown/ broken equipment	4.5	3.7	3.7	3.4	3.4	4.0	3.1	3.6	4.2
The vehicles we are given are inappropriate	4.1	3.6	3.9	4.0	3.2	3.9	3.3	4.1	3.2
Work Environment									
My job requires not having clean air/ good air circulation	4.2	2.6	2.8	1.5	1.6	2.0	2.1	2.5	2.0
My job requires working in cramped, tight spaces	3.1	2.7	3.3	1.6	1.7	2.3	2.4	1.9	1.8
My job requires working outdoors in the cold climate	2.5	3.3	3.7	2.8	2.3	3.2	2.6	1.7	2.4
The living quarters at the MAF are rundown	3.6	4.1	3.5	2.1	2.5	2.1	1.9	4.1	3.8

Doesn't bother me at all = 1

Bothers me a little = 3

Bothers me a lot = 5

Table C.6
Average Ratings on Items Related to Sleep

Questionnaire Items (Average Ratings)	Security Forces				SF/Mnx	Maintainers		FM's	Chefs
	Ops	Jr	Mid	1LTs	Sr	Jr	TCs		
	n=13	n=20	n=17	n=11	n=19	n=9	n=8	n=9	n=6
People outside the Air Force don't understand how important our (my spouse's) work is	4.6	3.8	4.1	4.2	4.3	3.3	3.6	3.4	2.5
Other people in the Air Force don't understand how important our (my spouse's) work is	4.8	4.3	4.3	4.1	4.3	3.3	3.4	3.6	3.2
Sleeping is difficult on my off days (It is difficult for my spouse to sleep on his or her off days)	3.7	3.6	3.3	2.2	2.9	2.2	1.9	2.1	3.2
I don't (My spouse doesn't) get enough sleep at the missile alert facility	4.2	2.7	3.6	2.4	2.8	2.6	2.1	2.9	4.0
<div> <div>Strongly Disagree</div> <div>Disagree</div> <div>Neutral</div> <div>Agree</div> <div>Strongly Agree</div> </div>									

Example Comments Contributing to the Remaining Discussion Themes

In Chapter Five, we presented some tables illustrating comments from the focus group participants related to the themes being discussed in that chapter. This appendix provides additional comments on the remaining themes in Table D.1.

Table D.1
Other Concerns Raised by Participants

Topic	Description	Example Comments ^a
Commute and finances	Driving times are prohibitively long, the road is dangerous (including dangers from weather).	They don't appreciate the danger of driving.
	Worries about personal finances; pay is insufficient (including BAH); costs of leaving base to travel are high.	"Another thing is the price of tickets to leave the Great Falls Airport."
Coworkers	Expressing worry about other coworkers doing their jobs, problems with coworkers who are untrained or incompetent. Can't relate to coworkers; don't like them.	"[I worry about] troops not knowing job knowledge."
	There is a high level of camaraderie, cohesiveness. It is a positive aspect of the work.	I like the camaraderie. You spend more time with your flight than with your family ... we get to know each other better than anyone else.

Table D.1—Continued

Topic	Description	Example Comments ^a
Family problems	Divorce rates are higher in this career field or base than others, anecdotal stories of divorce.	There's a lot of divorce because of the job. It's the hours.
	Spouse is isolated, unhappy.	From a spouse: I've seen a lot of spouses that are freaked out, that don't know what to do, don't know what to expect.
	Finding work for a spouse is challenging.	It took a while for [my wife] to find a job in her profession. She had to work at a retail store for a while instead.
	Worries about family while away (or while spouse is away). Examples include not being able to get back in case of emergency, fights while at base, etc.	"There is always the thought in the back of my mind: 'what if something happens while I'm away.'"
PRP	PRP is burdensome; they should get rid of PRP (does not include manning issues due to PRP).	[PRP is] very restrictive. What we can do, what we can put in our bodies, where we can go. There are hoops you have to go through: getting the orange sheet, going to the clinic, commander has to bring you back up.
	PRP is often taken advantage of to shirk duties. Issues are faked or exaggerated.	People will drop a couch on their foot on purpose. There are people who milk it [PRP].
	Medical or mental health care is put off or avoided to stay up on PRP or avoid causing more work for coworkers.	Some people avoid going down on PRP at all costs out of pride and to not hurt manning.
	Airmen are punished for going down on PRP, encouraged not to do it by leadership or peers.	If you go to mental health, you're done. If you were thinking of suicide, you're definitely doing it now.

NOTE: Quotation marks indicate a written response. Items without quotation marks are paraphrased from the focus group notes. Except where noted, example comments are from the military respondents.

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