AIR WAR COLLEGE

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NUCLEAR MUNITIONS AND MISSILE MAINTENANCE OFFICER ATTRACTION AND RETENTION

by

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Biography

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Introduction

A number of Department of Defense (DoD) and Air Force (AF) reports issued since the end of the Cold War, especially those related to two recent events—an unauthorized movement of nuclear weapons from Minot Air Force Base (AFB) to Barksdale AFB in 2007 and a subsequently discovered inadvertent shipment of nuclear-related material to Taiwan in 2006—have highlighted a deterioration of nuclear expertise in the United States (U.S.) military. Both of these recent events involved AF personnel, helping to make the new AF Chief of Staff's number one priority the reinvigoration of the nuclear enterprise. Part of that reinvigoration should include reversing the deterioration of and regaining lost nuclear expertise by restoring the value once accorded this expertise. Otherwise, "there will be little incentive for the best and brightest to enter this key field."[1]

Indeed, personnel issues, such as inadequate training, lack of discipline, and inattention to detail, were at the heart of these incidents. Nuclear personnel no longer had the knowledge required to accomplish the mission in an error-free manner or to understand why the mission had to be accomplished in a standardized way, time after time. The AF instructions that replaced the much more detailed and unequivocally directive AF regulations of the past, as well as a continuous pursuit of efficiency in recent years, contributed to shortcuts that eliminated necessary steps from nuclear procedures. But even before personnel can be properly trained and inculcated with the required discipline for the zero-defects nuclear environment, qualified and motivated personnel must be available. Thus, nuclear career fields must attract and retain

[1] Defense Science Board, *Report of the Defense Science Board Task Force on Nuclear Deterrence* (Washington, DC: Office of the Under Secretary of Defense for Acquisition & Technology, October 1998), 8.

sufficient numbers of personnel who have the ability to achieve a standard of perfection. However, as this paper will show, at least one officer career field critical to the nuclear enterprise, munitions and missile maintenance, does not currently attract and retain adequate numbers of the best and brightest personnel to accomplish the AF nuclear maintenance mission to the standard required. Therefore, AF leaders must make changes in the munitions and missile maintenance officer career field in their effort to reinvigorate the nuclear enterprise.

Commissioned in the aftermath of the unauthorized movement of nuclear weapons from Minot AFB to Barksdale AFB, a report generated by the Defense Science Board (DSB) Permanent Task Force on Nuclear Weapons Surety (hereafter referred to as the Welch Report) pointed to the need for "an **environment that attracts**, nurtures, and guides **the right numbers of the best and brightest** [emphasis added] as stewards of this uniquely powerful national security force."[2] The DSB Report on Nuclear Deterrence Skills found that, "In the absence of a strong national commitment to sustaining the nuclear security enterprise and visible leadership starting at the senior levels, it is difficult to keep the rigor and focus needed at all levels to meet the demanding proficiency standards that are indispensable for nuclear deterrence activities. **It also is difficult**, absent such a strong national commitment, **to retain the best of the younger workforce** [emphasis added]. Words are not enough. There must be evidence of commitment that manifests itself in both strong leadership *and* real, meaningful work."[3] Another report from

[2] Defense Science Board Permanent Task Force on Nuclear Weapons Surety, *Report on the Unauthorized Movement of Nuclear Weapons* (Washington DC: Office of the Under Secretary of Defense for Acquisition, Technology, and Logistics, Revised April 2008), 1.
[3] Defense Science Board, *Report of the Defense Science Board Task Force on Nuclear Deterrence Skills* (Washington, DC: Office of the Under Secretary of Defense for Acquisition, Technology, and Logistics, September 2008), vii.

a Blue Ribbon Review (BRR) stated that the nature of nuclear weapons demands superior personnel.[4]

Examining the status accorded nuclear weapons after the end of the Cold War, many anticipated the current difficulties, as shown by a RAND report published in 2003 (12 years after the end of the Cold War).

> At least as important as the technical skills are those of the military operators. Given current service priorities, nuclear weapons skills and experience are likely to lose the luster that they once had. Traditionally, both in the Air Force and the Navy, nuclear service has been considered an elite assignment and was sought after accordingly. With the current general lack of interest in nuclear issues, it will be **difficult to persuade talented officers and enlisted personnel to enter nuclear career fields**. [emphasis added] Even including nuclear skills in the "tool kits" of officers on planning staffs will be difficult, as current experience suggests. In some cases—bomber operations, for example—there should be less of a problem, because nuclear operations are not that different from conventional operations. On the other hand, the most **specialized skills associated with handling nuclear weapons are going to be harder to maintain**. [emphasis added]
>
> "Withering away" of U.S. nuclear operational expertise, support infrastructure, and weapons-design capability may be unavoidable, given current career incentives, fiscal constraints, political realities, and service priorities. Thus, U.S. nuclear capability may diminish over time whether it likes it or not.[5]

A report issued in 1997 included, as a necessary condition for proper nuclear weapon system sustainment, "career paths…for both military and civilian personnel that attract and retain sufficient numbers of personnel with appropriate qualifications."[6] It is clear that this requirement exists still today as even the DSB report on imperatives for the next administration addressed the need for "reestablishing valued career tracks for those with nuclear expertise."[7] Although not the

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[4] *Air Force Blue Ribbon Review of Nuclear Weapons Policies and Procedures* (Washington DC: Headquarters U.S. Air Force, 8 February 2008), 6.
[5] Glenn C. Buchan et al., *Future Roles of U.S. Nuclear Forces: Implications for U.S. Strategy* (Santa Monica, CA: RAND, 2003), 110-1, 118-9.
[6] Office of the Secretary of Defense, *Report to Congress on Nuclear Weapon Systems Sustainment Programs*, May 1997, as cited in DSB, *Nuclear Deterrence*, 20.
[7] Defense Science Board, *Defense Imperatives for the New Administration* (Washington, DC: Department of Defense, August 2008), 17.

only area of concern in the nuclear enterprise, declining nuclear expertise and the resulting need for more emphasis on viable careers for officers in nuclear fields definitely requires attention.

Scope

According to the BRR, "the issue of declining nuclear expertise is a problem in specific areas in the Air Force—including operations, nuclear munitions officers, weapons technicians and security forces." The BRR noted, for example, that "in the support arena, a recently selected munitions squadron commander had dated experience (limited exposure as a second lieutenant)."[8] The *Report of the Secretary of Defense Task Force on DoD Nuclear Weapons Management* (hereafter referred to as the Schlesinger Report) also highlighted the need for the AF "to focus on developing and managing nuclear-experienced personnel, particularly in maintenance and security personnel" and provided several observations related to maintenance officer shortages at missile wings.

- There are three Year Groups with only one person in each with a missile maintenance background.
- The 1993 Year Group has no missile maintainers in its ranks.
- Some ICBM maintenance group commanders are on their second Group Command tour because there is no senior level expertise to fill in behind them.
- There are no majors available to fill the four Major (O-4) missile maintenance billets at one missile wing.[9]

Therefore, the munitions and missile maintenance officer career field (Air Force Specialty Code, or AFSC, 21M) warrants review for changes that may be required in pursuit of nuclear enterprise reinvigoration.

Today's renewed emphasis on the nuclear enterprise provides a good opportunity to review the munitions and missile maintenance officer career field. Specifically, this research

[8] *Blue Ribbon Review*, 8, 14.
[9] Secretary of Defense Task Force on DoD Nuclear Weapons Management, James R. Schlesinger, Chairman, *Report of the Secretary of Defense Task Force on DoD Nuclear Weapons Management, Phase I: The Air Force's Nuclear Mission* (Washington, DC: Department of Defense, September 2008) , 4, C-2.

will focus on how to attract (and retain) AF officers to nuclear munitions and missile maintenance by first assessing the current environment and then determining if this environment would have to change to make the nuclear portion of the career field more attractive. The force development and personnel management processes themselves will be addressed only to the extent that they affect the attractiveness of the career field and the ability to retain personnel in it. For example, although the existence of training may be important for attracting and retaining officers, this research will not address the specifics of that training.

Methodology

Besides the unclassified post-Cold War reports on nuclear deterrence and nuclear weapons (to keep this paper unclassified, classified reports were not used), the author reviewed RAND reports about force management and development in the AF, general officer biographies (for munitions and missile maintenance experience), and AF publications. For much of the data, the author relied on interviews, including 16 of the 25 AF colonels (O-6s) who are core munitions and missile maintenance officers, three career field managers (CFM) on the Air Staff—the one when the career field was created, the current one, and one in between—all the Air Force Personnel Center (AFPC) assignment officers since the career field was created, three of the Air Force Space Command (AFSPC) functional area managers (FAM) for missile maintenance officers—the one when the career field was created, the current one, and one in between—as well as the AF Nuclear Weapons Center (NWC) commander. The reader can refer to Air Force Instruction (AFI) 36-2640 for additional information on CFMs, FAMs, AFPC Assignment Teams, as well as the Development Teams (DT) to be discussed later in this paper, and their role in AF officer force development.

Career Field Background

The munitions and missile maintenance officer AFSC, 21M, is explained in AFI 36-2101, *Classifying Military Personnel*. The first character ("2") designates Logistics, the second combined with the first ("21") designates Maintenance, and the third combined with the first two ("21M") specifies Munitions and Missile Maintenance (as opposed to "21A" which specifies Aircraft Maintenance).[10] The munitions and missile maintenance officer career field, hereafter referred to as 21M, was created in 1999 when the munitions portion of the aircraft maintenance career field and the missile maintenance career field were combined. Approximately 200 aircraft maintenance officers with munitions experience were designated as 21Ms when the career field was created. Historically, munitions maintenance had been a separate career field (not part of aircraft maintenance), but included explosive ordnance disposal (EOD) officers (EOD is now part of civil engineering) and weapons safety officers (no longer a major part of any career field).

Missile maintenance, on the other hand, had always been a separate career field. Initially, missile maintenance was not a direct accession AFSC. Instead, missile maintenance officers came from other AFSCs, including missile operations.[11] As late as 1991, some missile crew members transitioned to missile maintenance after their first operations tour by first completing Strategic Air Command's additional duty training program, ADSAC, to earn an entry level AFSC in missile maintenance.

Because of declining experience and expertise among officers in munitions and nuclear weapons, in early 1999 decision makers for the aircraft maintenance career field determined that something needed to be done to reverse the trend. Air Staff functional decision makers considered three options: a new special experience identifier (SEI), a new AFSC shredout, and a

[10] Air Force Instruction (AFI) 36-2101, *Classifying Military Personnel (Officer and Enlisted)*, 7 March 2006, 11.
[11] Lt Col (Ret) Dave Wright, AFSPC FAM in 1999, interviewed by the author, 20 November 2008.

separate AFSC. In April 1999, despite the appearance of "going back" to the period before munitions and aircraft maintenance were combined into one AFSC, the separate AFSC looked like the best option.[12]

At the same time, the declining intercontinental ballistic missile (ICBM) force structure and the subsequent reductions in the numbers of missile units and career field authorized positions led AFSPC to consider alternatives to a stand-alone career field.[13] Between 1994 and 1999, the number of missile maintenance officers had declined from almost 300 to close to 200, about a 30 percent reduction. Therefore, missile maintenance decision makers also faced an important choice: combine with missile operations, combine with aircraft maintenance, or combine with munitions maintenance. However, both missile operations and missile maintenance faced the same problem—a need for large numbers of company grade officers, but very limited opportunities at the higher grades (and no general officer requirements for missile maintenance officers). If both areas were combined into a single career field, the typical career field pyramid would look more like a witch's hat with a narrow, pointed top. The few positions at the top of the pyramid would likely go to the best and brightest personnel who came from missile operations, with even fewer opportunities remaining for the equally deserving personnel who came from missile maintenance.[14] By the end of 1999, both munitions maintenance and missile maintenance decision makers agreed to combine munitions maintenance and missile maintenance to create the 21M AFSC.

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[12] Briefing, Headquarters U.S. Air Force, Deputy Chief of Staff for Installations and Logistics, Subject: Officer Munitions Expertise, 19 April 1999, 2, 15, 16.

[13] According to the Force Management Division, Officer Force Management (AF/A1PFO), there is not a minimum number of authorizations for a career field (career field sizes range from 2 to 22,000 authorizations). However, it is difficult to analyze sustainability of a career field with less than 100 authorizations. Currently there are 109 total missile maintenance authorizations in AFSPC and for conduction formal training in Air Education and Training Command (AETC). By the end of FY 10, due to force reductions in PBD 720, that number will be reduced to 91 authorizations.

[14] Wright, interview.

The current 21M career field with its three distinct parts—conventional munitions, nuclear munitions, and missile maintenance— is summarized in AF Manual 36-2105:

> Manages maintenance and modification of conventional munitions, nuclear weapons, and associated equipment. Administers weapon programs and resources. Directs weapon maintenance production, staff activity, and related material programs. Manages missile maintenance activities at launch and missile alert facilities, including maintenance, repair, and inspection of missile flight systems, expendable launch vehicles (ELVs), nuclear certified support vehicles and equipment, and associated ground support equipment (SE). Serves as munitions and missile maintenance staff advisor to commanders.[15]

The AFMAN specifies a separate nuclear specialty shredout, 21MxC (where x designates the level of expertise and C designates nuclear), which includes missile maintenance. See Figure 1 below for the 21M career pyramid.

Figure 1. 21M Career Pyramid[16]

[15] Air Force Manual (AFMAN) 36-2105, *Officer Classification*, 31 October 2004.
[16] Picture from Airmen Development Plan application on Air Force Personnel Center Secure Web site, accessed 15 December 2008.

An Attractive Environment

Many officers stay in the career field into which they were first accessed. But many, especially those with the greatest perceived potential due to the influence of sponsors or mentors, have the opportunity to move into or out of a career field after their initial accession tour.[17] Therefore, if the 21M career field is not perceived as an attractive one, the best and brightest will stay away or leave after their first assignment in the career field. Before we can evaluate the attractiveness of the 21M career field, however, we need a baseline, in general, of what factors would make a career field attractive.

What is it about a nuclear career field that would attract the best and brightest and encourage them to stay? General Curtis LeMay, the second commander of the Air Force's nuclear command during the Cold War, Strategic Air Command (SAC), emphasized that officers who believed in the importance of the work, saw the improvements being made, and were recognized and appreciated, would stay with that line of work.[18] LeMay ensured everyone in SAC understood the importance of the nuclear deterrence mission and had visible reminders of the progress they were making, especially through no-notice inspections and competitions. LeMay also showed his appreciation for the hard work of SAC's personnel by improving on-base options for recreation, family housing and enlisted barracks and food. Finally, LeMay recognized outstanding performance through incentives such as spot promotions. Many of these initiatives had a direct impact on increased retention in SAC.[19] Even after LeMay's departure, SAC continued to have high retention rates and devised other recruiting incentives to attract

[17] William A. Cohen, *The New Art of the Leader* (Paramus, NJ: Prentice Hall Press, 2000), 4, 115.
[18] Thomas M. Coffey, *Iron Eagle: The Turbulent Life of General Curtis LeMay* (New York, NY: Crown Publishers, Inc., 1986), 293; Walton S. Moody, *Building a Strategic Air Force*, Air Force History and Museums Program, 1996, 255; and Barrett Tillman, *LeMay* (New York, NY: Palgrave Macmillan, 2007), 102.
[19] J.C. Hopkins, *The Strategic Air Command Spot Promotion Program: Its Rise and Demise*, Historical Study No. 167 (Offutt AFB, NE: Office of the Historian, Headquarters Strategic Air Command, 1 October 1978), 4; Moody, *Building a Strategic Air Force*, 259-60; and Tillman, *LeMay*, 138.

personnel to nuclear duty, such as the Minuteman Missile Education Program, where universities brought graduate degree programs to the missile bases for Minuteman ICBM crew members.[20]

More generally for military service in today's environment, the best and brightest officers might judge the following factors as attractive: challenging work; good opportunities for training, education and mentoring; reasonable deployment opportunities; advancement and promotion opportunities; adequate manning to accomplish the mission without undue, continuous stress; being able to work directly with enlisted personnel, not just primarily with officers; wide scope of responsibility; being able to develop expertise and, then, utilizing that expertise well; command opportunities; and reasonable expectations that are well communicated by leadership. AF doctrine outlines the following principles to "attract, retain, and develop talent":

- Assess capability and talent needed to propel organizational and individual performance
- Build leadership bench-strength by ensuring that systems are in place to attract a high caliber, diverse work force
- Retain top talent over time by creating an environment that encourages personal achievement, continuous learning, creativity, and promotional opportunities
- Address career and work-environment issues that affect retention, including physical and mental health[21]

But even if these factors are valid, which ones are most important?

In his revised book on the art of leadership, retired AF Reserve Major General William A. Cohen, Ph.D., provides a list of 13 motivators in order of importance to the employee:

Work with people who treat me with respect
Interesting work
Recognition for good work

[20] Chris Adams, *Inside the Cold War: A Cold Warrior's Reflections* (Maxwell AFB, AL: Air University Press, September 1999), 78, 84.
[21] Air Force Doctrine Document (AFDD) 1-1, *Leadership and Force Development*, 18 February 2006, 44.

Chance to develop skills
Working for people who listen if I have ideas about how to do things better
A chance to think for myself rather than just carry out instructions
Seeing the end results of my work
Working for efficient managers
A job that is not too easy
Feeling well informed about what is going on
Job security
High pay
Good benefits[22]

Cohen would agree with LeMay that people need to believe they are making a difference and to feel important.[23] Furthermore, how the leader treats his or her people is critical.[24]

Cohen also explains why job security, high pay, and good benefits are at the bottom of the list of motivators by referring to Maslow and Herzberg.[25] Abraham Maslow developed a five-level hierarchy of needs, where once a lower level of needs is met, they no longer provide motivation. Job security, high pay, and good benefits fit in Maslow's second lowest level, security or safety needs. Frederick Herzberg built on Maslow's work by differentiating two categories of needs: 1) hygiene factors, or those that can prevent dissatisfaction, and 2) motivating factors, those that can produce satisfaction. "Hygiene factors include money, status, treatment, and security."[26] Cohen, like Herzberg, concludes that "if we want those we lead to be more satisfied with their jobs, we must use the motivators. That is, we must look for ways that we can increase" the sense of achievement, the frequency of recognition and reward, the challenge and interest in the work, the level of responsibility, and the opportunity for growth and development.[27]

[22] Cohen, *New Art of Leadership*, 202-3.
[23] Ibid., 11, 51-2.
[24] Ibid., 53, 60-2.
[25] Ibid., 215-9.
[26] Ibid., 218.
[27] Ibid., 219.

In general, those officers interviewed about the 21M career field agreed with these characteristics of an attractive environment. In fact, one 21M O-6 referred directly to Cohen's list of motivators when answering the question on what can be done to improve the attractiveness of the 21M career field.[28] When answering questions relative to an attractive environment, other interviewees mentioned opportunities for advancement; belief in the mission; nature of coworkers; leadership and command opportunities; job security; interesting, responsible, and challenging work; being treated well; educational opportunities; variety of assignments; ability to achieve potential; sense of accomplishment; autonomy; clear expectations; and recognition. These officers, then, essentially agree with both LeMay's and Cohen's assessments of what constitutes an attractive career environment.

The Current Environment

Currently, 21M positions exist around the world. Operational missile maintenance units are located at Malmstrom AFB, Montana; F.E. Warren AFB, Wyoming; and Minot AFB, North Dakota. Although these are all northern tier bases, there are also base-level missile maintenance positions at Vandenberg AFB, California, and Hill AFB, Utah, and staff-level positions at 20 AF (F.E. Warren AFB) and AFSPC (Peterson AFB, Colorado). There are also a handful of 21M space maintenance positions in AFSPC. Nuclear munitions positions are at the nuclear-capable bomber bases (Minot AFB, North Dakota, Barksdale AFB, Louisiana, and Whiteman AFB, Missouri) in Air Combat Command (ACC) and at the dual-capable fighter and North Atlantic Treaty Organization (NATO) bases in U.S. Air Forces Europe (USAFE). There are also nuclear maintenance slots in Air Force Materiel Command (AFMC), including at the Nuclear Weapons Center (NWC) at Kirtland AFB, New Mexico, and on the 8 AF (Barksdale AFB, Louisiana) and

[28] Col Walter Lindsley, then 309 AMXG/CC, interviewed by the author, 6 November 2008.

ACC (Langley AFB, Virginia) staffs. Conventional munitions maintenance assignments exist at various locations in ACC, USAFE, and Pacific Air Forces (PACAF). Of course, as with any career field, 21M positions also exist on the Air Staff, in AETC, at the AF Safety Center and the AF Inspection Agency (both at Kirtland AFB, New Mexico), in the AF Operational Test and Evaluation Center (AFOTEC), at the AF Personnel Center (Randolph AFB, Texas), and at various joint locations. Obviously, the 21M career field offers a wide variety of assignment opportunities overall.

The current 21M environment, however, could constrain future efforts to improve the attractiveness of the career field. The BRR provided a good summary of the current status of the nuclear portion of the 21M career field.

> Overall, solid nuclear expertise exists with the 21M (munitions and missile maintenance) officers who are in missile maintenance positions. But 21M munitions officers serving in aircraft units do not, as a whole, have the same degree of nuclear expertise as those in missile maintenance units. In the 1990s, the USAF restructured maintenance career fields to sustain maintenance/ munitions career field specialties, resulting in the current 21M career field for missile maintenance and munitions officers. Today, about 50 percent of 21M officers are in the conventional munitions specialty with the remaining 21M officers spread about evenly across nuclear munitions and missile maintenance specialties….some cross-flow between missile operations and missile maintenance helps to sustain the 21M career field for missiles and keep the nuclear expertise.
>
> There are only a small number of nuclear-capable units in the USAF, thus offering limited opportunities to attain significant experience….Munitions squadrons in the United States Air Forces in Europe (USAFE) have a solid nuclear-capable experience base. Approximately 130 personnel are assigned to each squadron and encompass about 20 different Air Force Specialty Codes. However, many positions are one deep so rotations, deployments, and illnesses can cause shortfalls.[29]

Implications of the BRR findings above include 1) a potential conflict between gaining and maintaining nuclear expertise and offering assignment variety to all 21Ms; 2) with a 50/50 split

[29] *Blue Ribbon Review*, 18-9.

of less than 400 total 21Ms, the small numbers that would result if nuclear 21Ms were separated from conventional 21Ms; and 3) because of the deleterious effect of any absences, the need to carefully consider the impact of "present for duty" changes on the one deep positions in USAFE and elsewhere.

Officers in the 21M career field have some natural crossflow opportunities with other AFSCs. Missile maintenance officers will occasionally move into missile operations (13S AFSC) to gain additional ICBM experience. When there is a shortage of 21Ms with missile maintenance experience, AFSPC will often fill 21M positions with 13Ss rather than with 21Ms without ICBM experience. In fact, both maintenance squadron commander positions at one of the missile wings are currently filled by 13Ss. Outside of AFSPC, 21Ms will naturally crossflow into aircraft maintenance (21A AFSC) positions on the flight line. Maintenance group commanders will also crossflow officers in the other direction, with 21As filling 21M positions at flying wings. Group and/or wing commanders make these crossflow moves on an ad hoc basis, rather than following a documented crossflow process or formal career path management strategy. According to AFPC, these crossflows do not typically lead to permanent AFSC changes.[30]

Anecdotal evidence suggests there are not enough 21M O-6s to fill all the billets available to them. For the most recent command board, only 41 O-6 maintenance officers (including those with the 21A AFSC) were available to fill 43 maintenance group billets (although this shortfall could have resulted from maintenance O-6s declining to compete for group command). Only one of the three maintenance group commanders at missile wings is currently a 21M (the other two are 13Ss). Many 21Ms may retire after group command and,

[30] Capt Jeffrey P. Anderson, 21M Assignment Officer, Logistics Officer Assignments Branch, Air Force Personnel Center, to the author, e-mal, 17 December 2008.

thus, not be available to fill other 21M O-6 billets. For example, at least one 21M O-6 retired after group command because only staff assignments would be available to him (he would never be a wing commander). One interviewee has the impression that the 21M community lost many O-6s to retirement because these officers "were not being taken care of" when it came time for post-group command assignments.[31] This phenomenon may explain why key staff jobs are not filled by 21Ms. For example, the 21M O-6 billet on the 20 AF staff, the A4, is currently filled by a communications officer (33S) and the current 21M CFM on the Air Staff is not a core 21M.

Shortages also exist at the lower grades. Although the perception is that good 21Ms will transfer to aircraft maintenance (21A) where the opportunities for assignment variety, leadership visibility, and subsequent advancement are greater, AFPC says very few 21Ms are allowed to change their AFSC to 21A or any other AFSC. Both the 21A and 21M career fields are included on AF/A1's list of eight critically short AFSCs and, therefore, as target AFSCs for officers in the 2002 to 2005 year groups retraining into the career fields. Officers selected for retraining will begin filling some training seats in fiscal year 2010 (FY 10).

Many interviewees mentioned that junior 21Ms were especially hard hit during the latest force shaping reduction in force (RIF) boards. Not only were the numbers of 21Ms selected for retention low, some of those not selected were top quality young officers. One O-6 reported that the base's CGO of the Year, a 21M, was not selected for retention.[32] At Barksdale, a nuclear bomber base, the wing commander restratified the RIF candidate list the maintenance group commander submitted, moving 21As ahead of 21Ms for retention. The only exception was a 21M the group commander fought to keep high on the list for retention. At the time, this RIF-

[31] Col Paul Irwin, AFSPC/A4S, interviewed by the author, 13 November 2008.
[32] Col Deborah Kirkhuff, 341 MXG/CC, interviewed by the author, 14 November 2008.

eligible officer was filling a 21A position, however, allowing plenty of visibility with the wing commander, which may have influenced the final decision.[33]

In addition, the career field is still experiencing the consequences of an earlier RIF. Due to the impact of the 1993 RIF on both aircraft/munitions maintenance and missile maintenance personnel, the AF was unable to fill many maintenance field grade billets in the late 1990s. Therefore, soon after the current 21M career field was created, there was an influx of lieutenants into the field as the AF tried to address the potential for these types of shortages in later years. However, as units experienced an overabundance of lieutenants, officers were double and triple billeted at the lower grades, with some lieutenants serving as assistants to assistants. A missile maintenance O-6 said many lieutenants leave the career field because they are not challenged by their jobs—they just tag along with the senior NCOs.[34]

The career field was also hit hard during the PBD 720 cuts of AF personnel billets. The Schlesinger Report explains PBD 720 and its impact on nuclear resources:

> In 2005, the Office of the Secretary of Defense Comptroller approved an Air Force proposal to realign resources so that it could transform to a more lethal, agile, streamlined force with an increased emphasis on the warfighter. The resulting Program Budget Decision (PBD 720) led the Air Force to take manpower reductions (approximately 40,000 in end-strength over the Fiscal Year Defense Plan) and reap organizational and process efficiencies that would produce resources to fund recapitalization. The Air Force leadership chose to implement these reductions in a manner that produced severe cuts in manning nuclear forces and funding for the nuclear mission infrastructure. Today consequently, bomber and ICBM forces suffer from manpower shortages in numerous areas, there is inadequate equipment for training, and support and handling infrastructure require new funding for modernization and sustainability. In light of the complex demands of the nuclear mission, the reduction in budgetary resources has clearly been disproportionate.[35]

[33] Col Carey Tucker, 52 MMG/CC, interviewed by the author, 14 November 2008. Clarified by Col Bret Klassen via e-mail, 23 February 2009.
[34] Kirkhuff, interview.
[35] Schlesinger Report, 25-6.

Of the 320 total 21M billets reported to the author by AFPC, 44 (13.75 %) will be deleted by the end of next fiscal year, for a projected total of 276 authorizations after the PBD 720 cuts are fully implemented. Of these 276 authorizations, 121 (43.84 %) are CGO billets and 155 (56.16 %) are FGO billets. According to AF/A1PFO, "a generic standard for the sustainability of a career field is 60% CGO authorizations to 40% FGO authorizations." One implication of the preponderance of field grade billets in the 21M career field is an inability to fill the billets at the authorized grade.[36]

Many of the recent reports on the nuclear enterprise, including the Schlesinger Report, highlight the lack of emphasis on the nuclear deterrence mission in today's post-Cold War environment.[37] For example, one report introduces a chapter on Military Competencies for U.S. Nuclear Weapons Operations by saying, "Recognition of the importance of the mission appears under-appreciated. There was a strong perception in the operational community that senior personnel (particularly Navy flag officers and Air Force general officers outside the immediate operational chain of command) do not frequently reinforce the importance of the nuclear mission. Officers in both the Navy and Air Force stated they get questions concerning mission importance from their subordinates."[38] If this perception does not change, nuclear career fields, including munitions and missile maintenance, will not be as attractive to military officers as those in mission areas deemed to be of greater importance to senior AF and DoD leaders.

The Schlesinger Report also addressed "a widely held perception among nuclear-experienced officers that they are disadvantaged in comparison to their nonnuclear peers in selection for promotion. This perception is evidently long-standing and was documented as early

[36] 1Lt Heidi M. Tucholski, Officer Personnel Policy Analyst, Force Management Division, Headquarters Air Force, to the author, e-mail, 28 January 2009.
[37] Schlesinger Report, 21-3, 29, 32.
[38] DSB, *Nuclear Deterrence Skills*, 36.

as 1998….This clearly sends a signal to the officer corps that maintaining nuclear-trained officers has not been an Air Force priority."[39] As one of the nuclear career fields, this perception exists for 21Ms, including that 21Ms without aircraft maintenance experience do not get promoted to general officer (GO). According to AFPC, reality differs from the perception for lower grades, with promotion rates for 21Ms comparing favorably to those for other mission support AFSCs. However, although officers with munitions experience have been promoted to the GO level, those promoted have also had aircraft maintenance experience.

Although the unwritten criteria for a maintenance officer to be promoted to GO includes (1) at least one below-the-zone promotion, (2) depot (Air Logistics Center) experience, and (3) joint experience, a review of general officer (GO) biographies revealed that a significant number of maintenance (both aircraft and munitions/missile, based on initial, or preponderance of, assignments) colonels without joint experience (10 of the 22 reviewed, or 45 %) were promoted to brigadier general. In fact none of the three most recent maintenance officers serving as the senior logistician on the Air Staff had joint experience. Although maintenance officers with initial assignments in munitions (rather than aircraft) have been promoted to GO rank, all five GOs included in the biography review had significant (at least four years) aircraft maintenance experience as well and only one had a munitions assignment as a field grader (he was in a munitions assignment when he pinned on major). Although 13S officers with missile maintenance experience have been promoted to the GO level, the biography review revealed only one GO with an initial assignment in missile maintenance.

The dearth of missile maintenance GOs is consistent with anecdotal evidence of prospects for the future as well. Eleven of the author's past missile maintenance peers or supervisors are O-6s still on active duty. Only three of these O-6s are 21Ms, however.

[39] Schlesinger Report, 27.

Regardless of whether the other eight changed their AFSC back to 13S or their AFSC was never changed to 21M in the first place even though they served in missile maintenance positions, these eight active duty O-6s are not appropriate as career role models for junior 21Ms who have both the potential and the aspiration to stay in the career field while still getting promoted to O-6; instead, our best and brightest junior 21Ms need senior role models within the 21M career field. Even more problematic, one of the author's peers was recently passed over for promotion to O-6 even though this officer with extensive 21M experience was attending a nuclear fellowship at Los Alamos National Laboratory for in-residence senior developmental education at the time. This officer also served as a Munitions Support Squadron Commander (MUNSS/CC) in USAFE with the same duty AFSC (30C0) as that held by mission support group commanders. Only lieutenant colonels (or selects) are considered for MUNSS/CC positions based on (1) total nuclear experience, (2) previous success as the leader of a large, diverse unit, (3) USAFE nuclear experience, (4) primary job experience (21M, 21A, and 13S are three of the four AFSCs that have priority), and (5) self-motivation, decisiveness and leadership qualities.[40] In summary, based on the results of the GO biography review, although officers with munitions experience are represented at the GO level, the AF is obviously not "growing" missile maintenance GOs.

A related problem regarding maintenance GOs is the fact that many of the most senior AF logistics positions are filled regularly by rated or non-rated operations officers rather than by maintenance officers or logistics readiness officers. For example, GO positions currently filled by operations officers include the NWC Commander (NWC/CC), the Deputy Chief of Staff for Logistics, Installations and Mission Support (AF/A4/7), and the AFMC Commander

[40] Air Force Personnel Center, "Calendar Year 2009 (CY 09) Squadron Commander (SQ/CC) Information: Munitons Support Squadron (MUNSS) Eligibility Message," Logistics Officer Assignments (21A/M/R), 21A/M Aircraft Maintenance/Munitions Officer Information (21A/M Assignments Page), http://ask.afpc.randolph.af.mil/main_content.asp?prods1=1&prods2=14&prods3=190&prdos4=236&p_faqid=6052 (accessed 11 February 2009).

(AFMC/CC). Ideally, these types of positions would be the ones the best and brightest 21Ms could aspire to, especially to the nuclear-specific NWC/CC position.

Another perception is that 21Ms do not get selected for intermediate- and senior-level professional military education at the same rate as other AFSCs. Unfortunately, since FY 06 at least, this perception has been based on reality. A review of student (92S AFSC) to total active duty AF officer personnel ratios for O-4 (major) and above, for each FY since 1999, shows that 21M student ratios were lower than the AF average the first two FYs and in FYs 06-09. However, 21A student ratios compared to the average far more favorably than 21M ratios in those same years, but far more unfavorably than 21M ratios in the other years. The 13S student ratios were consistently higher than the average until FY 07 and now they are consistently lower. Because the 21M career field is smaller than these other two career fields and because the difference from the average was less than half a percentage point since FY 07, however, 21Ms do not currently appear to have a significant school selection disadvantage. Since FY 07, 13Ss have had a greater disadvantage than 21Ms. On the other hand, 21As have had a significant school selection advantage since FY 06. See Figure 2 for a graphic depiction of this information.

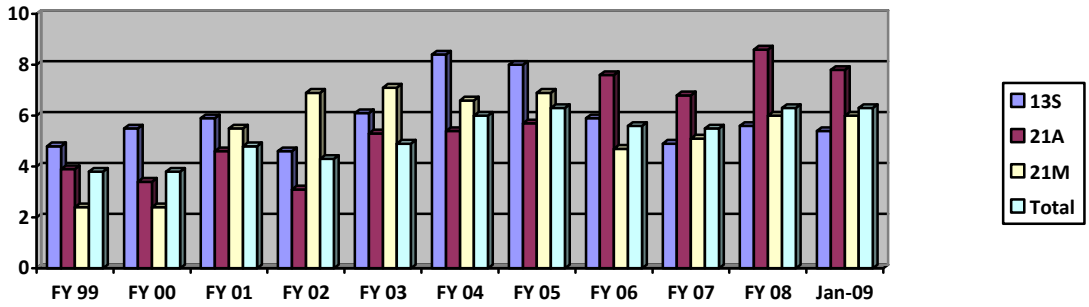

Figure 2. Percentage of FGO Personnel with Student AFSC

At least four additional career issues exist for 21Ms in AFSPC. First, many AFSPC O-6s with 21M experience either gained that experience as 13S crossflows, or changed their core

AFSCs from 21M back to 13S as they continued to progress in the Air Force. The perception among more junior missile maintenance officers, therefore, is that all the good jobs are filled by 13Ss and that you cannot get ahead as a 21M in AFSPC. Second, AFSPC is reluctant to let good missile maintenance officers go to a munitions assignment because the perception on the part of the AFSPC 21M O-6s is that those officers, once exposed to flight line maintenance (21A experience at discretion of group commander), will never come back to missile maintenance and AFSPC will lose that ICBM experience. Therefore, assignment options within the 21M career field are artificially limited for the best and brightest missile maintenance officers. Third, the perception is that the maintenance pecking order is 21A first, then munitions maintenance, and missile maintenance last. One source of that perception could be the frequency with which AFSPC officers are competitively selected for the Advanced Maintenance and Munitions Officer School (AMMOS), the maintenance "weapons school" at Nellis AFB, Nevada, compared to their maintenance peers from other major commands (MAJCOM). AMMOS selection used to be contingent on deployment or expeditionary experience, both actual and that gained through exercises. Because missile maintenance officers do not typically deploy, they would be at a disadvantage. Finally, all the 21M squadron commander billets in AFSPC are O-5 billets compared to both O-4 and O-5 billets in other MAJCOMs and other AFSCs. Therefore, an AFSPC 21M O-4 without squadron command experience may be at a competitive disadvantage for promotion and other opportunities when compared with O-4s from other MAJCOMs and other AFSCs.

In summary, manning shortages due to force shaping initiatives, as well as negative perceptions about the importance of the mission and about promotion and school selection opportunities, lead many 21Ms to conclude that there is not a productive career path available to

them in their current career field. However, the reality is that the nuclear deterrence mission is very important and, although the missile maintenance career path is not potentially as long as the munitions maintenance career path (no missile maintenance GO billets), promotion and school selection opportunities for most 21Ms seem to be equitable.

Changes Being Considered or Implemented

In response to the two recent nuclear incidents and the recommendations made in the subsequent reports, some changes that will or could positively affect the 21M career field have already been made, are currently being implemented, or are being considered for future implementation. The most significant proposed change to the 21M career field is the transition to a three track system (see Figure 3 below for the draft 21M career field progression). Under this three track construct, one track would be for conventional munitions maintenance (21MxA shredout), one track for nuclear weapons maintenance (21MxN shredout), and one track for missile (ICBM) maintenance (21MxI shredout). Although 21Ms would have more limited career broadening opportunities between tracks than are currently available (they can currently move to any 21M billet), each 21M would be expected to have experience in two different tracks before promotion to major. As Figure 3 indicates, only 21MxNs could broaden to either 21MxA or 21MxI. The other two tracks would be limited: 21MxAs could only broaden to 21MxN and 21MxIs could only broaden to 21MxN.

The change to a three track system is an effort to more deliberately develop the required 21M experience levels in the three distinct parts of the 21M career field. Special experience identifiers (SEIs) will also be added to the records of 21Ms to further document nuclear expertise. The SEIs would indicate how much nuclear weapons maintenance management or

ICBM maintenance management experience an officer has and would be considered when making assignment decisions to select the best officer for a specific job in the nuclear enterprise. The SEIs will be "WA" for 12 consecutive months of nuclear weapons maintenance management experience, "WB" for a total of 48 months of nuclear weapons maintenance management experience, "WC" for a total of 96 months of nuclear weapons maintenance management experience, and similar SEIs (QT, QU, and QV) for ICBM maintenance management experience.[41]

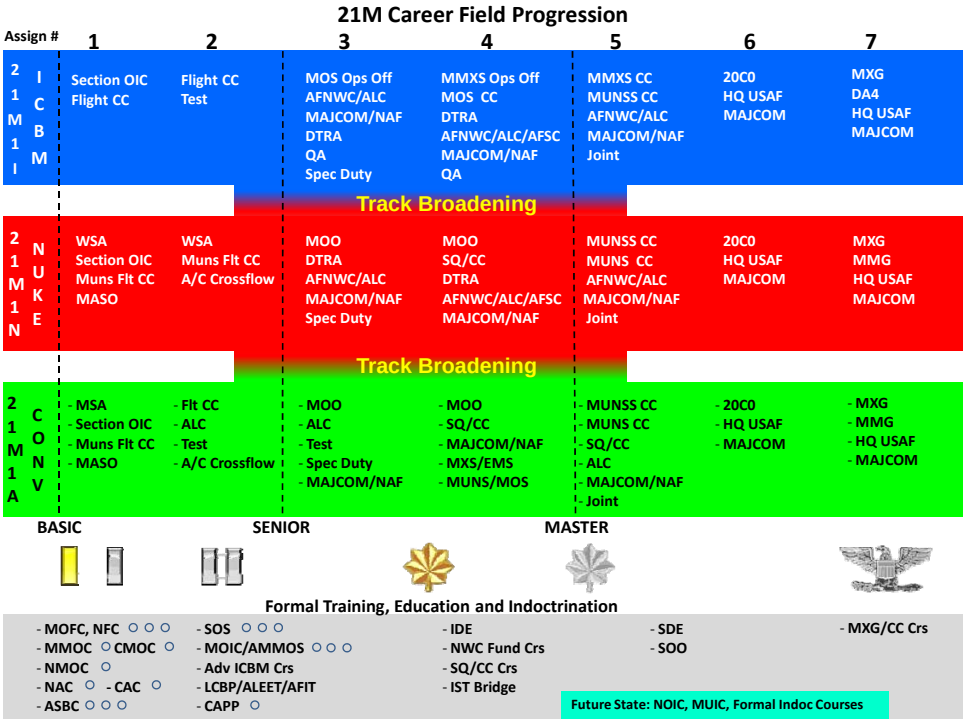

Figure 3. 21M Career Field Progression

In a related effort to develop ICBM officers with greater breadth of experience, the 13S and 21M CFMs formalized the 13S and 21M crossflow process. The new process, called the Missile Operations and Missile Maintenance Exchange Program (MOMMEX), establishes a

[41] Col Steven LaVoye, 21M CFM, interviewed by the author, 21 November 2008.

competitive selection process for officers who wish to cross into the other AFSC for a three-year exchange tour. The number of officers who can crossflow each year is limited to two 13Ss and one 21M, evenly distributed among the three missile wings.[42]

In addition to the career field changes discussed above, some organizational changes are also pending. The organizational change that most directly affects the 21M career field is the realignment of ACC's and AFSPC's nuclear weapons storage areas (WSA) and personnel to AFMC's Nuclear Weapons Center (NWC). However, contrary to a recommendation in the Schlesinger Report, the AF decided to keep the nuclear weapons in Europe under USAFE.[43] The NWC, created in March 2006, is responsible for nuclear weapon sustainment. Although the current commander is a brigadier general, the NWC is slated to be commanded by a major general with a brigadier as the deputy commander. The Schlesinger Report also decried the absence of one organization or GO with full-time responsibility for the AF nuclear enterprise since the demise of SAC.[44] Therefore, the AF decided to create a nuclear MAJCOM, Global Strike Command (AFGSC). AFGSC has been designated as a three-star command. In addition, a two-star serves as assistant chief of staff (ACS) for the new nuclear directorate on the Air Staff, A10.

The AF is also implementing or considering other personnel-related changes in response to the unauthorized movement of nuclear weapons. These further changes include (1) requiring additional training and experience ("WA" SEI) for munitions accountable systems officers (MASO) to improve nuclear weapons accountability and reporting practices; (2) developing a new Nuclear Fundamentals Course to instill every 21M with basic nuclear knowledge; (3)

[42] Col Christopher D. Cook and Col Steven G. LaVoye, memorandum of understanding, Missile Operations and Missile Maintenance Exchange Program, 10 November 2008.
[43] Schlesinger Report, 10.
[44] Ibid., 3, 27, 49.

providing deployed-in-place credit for full-time nuclear personnel, especially those in one deep positions; 4) requiring commander approval for volunteer deployments; and 5) changing the maintenance operations squadron commander billets in AFSPC from O-5 to O-4 billets.

Overall, these changes would be positive for the 21M career field and its management. Effective career field management will produce better nuclear maintenance experts, both in missile maintenance and in nuclear munitions maintenance. This nuclear maintenance experience would be more focused within tracks and would be documented with a SEI. In addition, this experience could be utilized in the new organizations focused on the nuclear enterprise.

Changes Considered But Rejected

The 21M CFM (or more senior leaders with career field responsibility) also considered, but abandoned, at least two other changes. First, according to the CFM, the idea of moving explosive ordnance disposal (EOD) officers from civil engineering (CE) back into the 21M career field was a "non-starter from the onset." EOD has been a good match with the other emergency responders in CE. The CE community would not support moving EOD back into munitions. Second, the CFM considered the idea of a possible ICBM nuclear career field (perhaps 13N AFSC) by combining the nuclear portion of the 13S career field with the missile maintenance portion of the 21M career field. However, after conversations with the 13S CFM, the 21M CFM chose not to pursue this idea due to the resulting deleterious impact to the remaining portion of the 21M career field.[45] But this negative assumption may not be accurate. True, if conventional munitions remained as a stand-alone 21M career field, the number of authorizations would be reduced to close to or below the 100 or so needed to assess the health of

[45] LaVoye, interview.

a career field.[46] Alternatively, if conventional munitions was combined back with aircraft maintenance, munitions experience would again be degraded as it was prior to 1999. However, if both nuclear and conventional munitions remained in the 21M career field, with the 13N AFSC incorporating the missile maintenance portion only, the 21M career field would not be gravely wounded.

Environment Disparities

A review of "an attractive environment" compared to "the current environment" for the 21M career field yields some definite disparities. For one thing, the nuclear portion of the 21M career field presents challenges related to Cohen's top six motivators as enumerated below:

1. Work with people who treat me with respect – the reinvigoration of the nuclear enterprise is now the AF's top priority; however, in the past, the nuclear mission has not been seen as important; therefore, the personnel working in the nuclear enterprise would not be as valued, or treated as well, as other personnel; this lack of value is reflected in such things as PBD 720 cuts, force shaping separations, and inability to get promoted based purely on 21M experience (need either 21A or 13S as well)
2. Interesting work – although nuclear deterrence theory is interesting, the actual work, by necessity, is repetitive with no margin for error
3. Recognition for good work – while the normal awards programs exist in the nuclear enterprise, the risk of punishment for making a mistake is higher than the likelihood for reward or recognition if the job is performed to perfection (the standard) year after year; for example, as the nuclear enterprise is reinvigorated and the inspection standards become stricter, it becomes more likely to fail a nuclear surety inspection

[46] Tucholski, e-mail.

4. Chance to develop skills – since 1999, training has improved for all 21Ms, and will continue to improve as MASO training and nuclear specific training is emphasized; however, nuclear education in professional development venues is limited
5. Working for people who listen if I have ideas about how to do things better – although processes can be improved on the margins, the no-defects nuclear environment precludes wholesale change to the way the job is done; risk averse leaders will be less likely to embrace ideas for change
6. A chance to think for myself rather than just carry out instructions – nuclear work (standard of perfection in a zero-defects environment) definitely does not allow for free-thinking; rather, the old SAC moniker was "read a step, do a step, get a banana;" officers must, therefore, carry out instructions when performing the mission; however, this necessity would not preclude providing a opportunity for officers to think for themselves about other subjects, such as nuclear deterrence theory

However, a some of Cohen's other seven motivators also yield insights relative to the 21M career field:

1. Seeing the end results of my work – unlike the operations side of the nuclear enterprise, the maintenance side provides the opportunity to see results every day, whether it be in missiles on alert or weapons ready to be loaded
2. Working for efficient managers – no significant difference from other career fields
3. A job that is not too easy – the pressure is always on to do the job right every day; this high-pressure environment is challenging, but stressful

4. Feeling well informed about what is going on – although during the Cold War, personnel in the nuclear enterprise understood the threat and their purpose, this clarity has been lost since the end of the Cold War
5. Job security – with the current changes underway in the nuclear enterprise, officers designated as part of the nuclear cadre (21MxIs and 21MxNs) will have the opportunity to work in the nuclear enterprise for their entire career
6. High pay – whereas Navy personnel receive nuclear incentive pay, this pay does not exist for AF nuclear personnel
7. Good benefits – no significant difference from other career fields

In conclusion, the nuclear maintenance portion of the 21M career field does not fit the description of an attractive environment when based on Cohen's list of motivators.

As seen above, when assessed relative to the nuclear maintenance career field, Cohen's motivators do yield some useful information. However, one could wonder why, if Herzberg's hygiene factors include both pay and treatment, treatment is at the top of Cohen's list while pay is close to the bottom. An obvious answer is that it makes sense for pay to be at the bottom of the list, but treatment is at the top of the list instead because it is so easy to get wrong and, thereby, cause dissatisfaction. If positions are overmanned at the lowest levels, which munitions and missile maintenance have been at times, lieutenants could easily get the impression they are not important because they are not given responsibilities commensurate with their rank and their primary jobs are only to learn from their NCOs. Instead, all 21Ms need to be treated well by making it clear that they run maintenance, while at the same time emphasizing the need to respect their senior NCOs and the work done by the enlisted force.

Because the 21M career field is so small (276 authorizations after PBD 720 impact), assignment variety for all 21Ms is problematic. If nuclear and conventional munitions maintenance are separated in order to increase nuclear expertise, either through the proposed 21M three-track system or through separate career fields, the resulting small numbers may not be viable (difficult to assess health if less than 100 authorizations) and attractiveness will diminish due to assignment limitations. When the proposed three-track system is implemented, assignments will be even more limited for two of the three tracks. This further limitation could be interpreted as a good thing by missile maintenance leadership, however, because officers in the ICBM track will no longer be exposed to flight line maintenance and the related risk of permanently losing these experienced missile maintenance officers to the flight line. But, in general, assignment limitations make a career field less attractive. If, instead of the three-track system, the current 21M career field is broken into separate career fields in some way (e.g., separate nuclear and conventional), the small numbers would potentially lead to the same limitations and decreased attractiveness.

Another impact of small numbers, including one deep positions and low manning, is difficulty accomplishing the mission with the resources available. If personnel in key nuclear billets deploy, mission accomplishment at the home unit becomes even more difficult. In addition, nuclear personnel are under the Personnel Reliability Program (PRP). PRP rules are very explicit and often lead to personnel not being available for nuclear duty. Therefore, nuclear commanders have a disincentive to follow PRP rules to the letter, further jeopardizing the nuclear mission. If sufficient medical support, for example, is not available to evaluate and return those temporarily "down on PRP" to duty in a timely fashion, those "up on PRP" must pick up the slack. The same phenomenon occurs when someone goes "down on PRP"

permanently and immediate backfill is not available. Given the stated priority of the nuclear enterprise, absences from full-time nuclear jobs, including deployments, need to be limited. However, if deployments help with promotion and competitive selection for AMMOS, for example, the career field will be less attractive if deployments are denied.

Recommendations

The current renewed emphasis on the nuclear enterprise provides the opportunity to make long-needed changes to the missile and munitions maintenance career field. The 21M CFM has proposed the previously discussed changes that have great potential for fixing some of the problems identified since the 21M career field was created in 1999. For example, AFSPC leaders have always been concerned about 21M officers taking a munitions assignment after proving themselves in missile maintenance and then never coming back to missiles, but rather electing to stay in flying units to fill maintenance jobs in the weapons storage area or on the flight line due to the perceived unattractiveness of the missile maintenance portion of the career field.

The Blue Ribbon Review made recommendations related to career development and experience tracking.[47] The new three track change and related SEIs address these recommendations. The three track change would not have worked, however, if nuclear maintenance positions were not aligned under a separate organization like the Nuclear Weapons Center (NWC). Without this separate alignment, the maintenance group commanders could still take an officer from a nuclear munitions broadening assignment and move that officer to the flight line if all the maintenance positions at that base were aligned under the maintenance group.

[47] *Blue Ribbon Review*, 20.

This section will address additional recommendations for change as well as alternatives to consider in case the previously proposed changes do not lead to the intended results.

In September 2003, a RAND team completed research for their study on *Understrength Air Force Officer Career Fields.*[48] Although the 21M career field was not one of the career fields analyzed, some recommendations below are based on the results of this RAND study. The team divided force management into tactical-level (i.e., AFPC), operational-level (i.e., CFMs), and strategic-level (i.e., AF/A1); they found that the operational-level, the realm of the CFM, was "the key to force management as a whole."[49] However, they did find shortfalls at this level:

> Operational-level force management, the management of career fields or career-field families, requires two distinct skill sets: substantive knowledge of the career field and knowledge of how to manage a dynamic, closed, hierarchical personnel system. The latter management skill, generic across career fields, is generally missing in operational-level management. We recommend
>
> - making the career field manager (CFM) a full-time position (currently it is usually part-time), and putting a senior functional officer in the position.
> - providing the CFMs with dedicated and standardized analytic support.[50]

Career field management is important to the assessment of career field attractiveness because "maintaining a workforce that is balanced by skill and experience, that provides attractive career paths, and that meets Department of Defense (DoD) and economic constraints requires close and attentive management."[51]

The RAND study also evaluated incentives to assist in retention, specifically the Critical Skills Retention Bonus, but "could find no rigorous cost-benefit analysis or econometric impact analysis that was used to determine an optimal bonus amount or target population prior to bonus

[48] Lionel A. Galway et al., *Understrength Air Force Officer Career Fields: A Force Management Approach* (Santa Monica: CA: RAND Corporation, 2005), iii.
[49] Ibid., xv.
[50] Ibid., xvi.
[51] Ibid., 11.

implementation."[52] In addition, they concluded that accessing an overabundance of lieutenants will not fix shortages at the higher grades because "lieutenants may become disenchanted with poor assignment and development opportunities, thereby becoming less likely to remain in the Air Force as captains when their initial service obligation ends."[53] As noted earlier, this abundance of lieutenants leads to some of them serving as assistants to assistants. Therefore, the AF should use tools such as the new officer retraining program to fill 21M manning gaps rather than increase lieutenant accessions as has been done in the past. See "Career Field Management" and "Incentives" below for additional recommendations related to the RAND findings.

Career Field Management

The 21M CFM should be an officer with the 21M AFSC. Due to the changes being implemented in the career field and the need to monitor these changes for effectiveness and for unintended results, the CFM should be a full-time position. The CFM should personally visit every location with officers affected by the changes to explain why the changes were made, what the changes are expected to accomplish, and the way ahead if those expectations are not met. These visits could be accomplished in conjunction with personnel from AFPC or from NWC.

Incentives

Although the AF could consider incentive pay for nuclear career fields, including 21MxIs and 21MxNs, the current fiscal environment and possible defense budget cuts would not support a monetary incentive. Instead, perhaps the AF should consider eliminating all incentive pay, such as Aviator Continuation Pay bonuses and the Critical Skill Retention Bonus, especially in

[52] Ibid., 36.
[53] Ibid., 50, 53.

light of the inability to prove the effectiveness of these monetary incentives.[54] The elimination of bonuses would also remove the perception that those career fields not receiving bonuses are not important.

Non-monetary incentives, however, should be considered. For example, the current "weapons school" for 21Ms, AMMOS, may not be the right "weapons school" for 21MxIs and 21MxNs if the school continues to focus on expeditionary operations and experience. Instead, these officers could be included with 13Ss as those eligible for a new nuclear "weapons school" as recommended in the Schlesinger Report.[55] One caution on any incentives, however—these incentives need to be available to all applicable personnel, unlike LeMay's spot promotions which were not available to tanker crews, for example.[56]

Mentoring from Senior Nuclear Leaders

Another incentive involves professional development opportunities. Senior leaders in the nuclear business should visit operational units to discuss nuclear deterrence theory and practice as well as current nuclear issues. Just the visibility of senior leaders in the career field would prove there is a future for the best and brightest. For example, when the first 21M GO is selected as NWC/CC, that GO can be an inspiration to the young officers in the career field. However, the senior leaders should not let the young 21Ms lose sight of the overriding importance of the job they are in now by sharing perspectives on what is needed to be successful in the positions they currently hold.

Senior leaders should also present the facts, especially where perception differs from reality. Much of the disparity between an attractive environment and the current environment for

[54] Ibid., 36.
[55] Schlesinger Report, 46.
[56] Major Vernon B. Byrd, Passing Gas: The History of Inflight Refueling (Chico, CA: Byrd Publishing Company, 1994), 116.

the 21M career field lies in misperceptions about the career field itself, such as promotion and school selection disadvantages. We owe it to our young officers to give them the bad news when it exists; but we are hurting the career field when we do not address perceptions that lack a basis in reality. Senior leaders must spread the word about the importance of the 21M career field as well as realistic prospects for a career as a 21M. Recent changes could lead to even better prospects for our best and brightest 21Ms.

Finally, senior nuclear leaders need to emphasize the importance of the nuclear mission. This emphasis can also be made at local, regional, and national Logistics Officer Association meetings—senior leaders must attend these functions. Senior leaders must take positive action in fighting to overcome the findings documented in the Schlesinger Report: "In our visits to the field, we found widespread and consistent skepticism that Air Force priorities will match current rhetoric concerning the importance of the nuclear mission."[57] Several officers interviewed by the author expressed skepticism as well; many cited the command level of the new nuclear MAJCOM as partial justification for their doubts.

Nuclear Enterprise Leadership

All AF MAJCOMs except Special Operations Command are headed by four-star commanders. To maintain credibility in their effort to reinvigorate the nuclear enterprise, senior AF leaders must decide AFGSC is important enough to warrant a four-star commander. If a four-star billet is not available, perhaps it should be taken from AETC; an operational mission should trump a non-operational mission.

Similarly, senior leaders below the MAJCOM commander level should be selected based on relevant experience. For example, the Schlesinger Report said "ICBM expertise should be

[57] Schlesinger Report, 33.

required when filling the senior leadership positions within the 526th ICBM Group."[58] Positions at the NWC, the nuclear sustainment command, should be filled by officers with extensive missile and nuclear weapons maintenance backgrounds. Although the NWC/CC position is currently filled by a one-star from missile operations, the NWC/CD is a 21M O-6. The AF should strive to grow officers to fill both of these positions within the 21M community. If senior positions that should require missile or nuclear weapons maintenance expertise, such as those in NWC, are filled by pilots, navigators, or 13Ss, for example, more junior 21M officers will become disillusioned; these young officers must see the benefit of nuclear expertise in the careers of the 21M officers more senior to them.

Promotion Opportunities

The Schlesinger Report recommended personnel in "key operational unit nuclear billets" receive "deployed in place" credit. This recommendation addresses the current practice of making deployment history visible to promotion boards. "Deployed in place" credit would prevent personnel with nuclear expertise from being at a disadvantage for promotion selection relative to those personnel who have more opportunities to deploy. The Schlesinger Report also recommended that the "SECAF should include guidance to successive promotion and special selection boards emphasizing the need to promote and develop sufficient numbers of highly experienced nuclear personnel to fill critical nuclear positions."[59]

Nuclear experience should be included on the Officer Pre-Selection Brief (OPB) for review by promotion boards similar to what is done today for deployment history. Direction should be given to the promotion boards about required rates of promotion for nuclear officers similar to what is currently done for joint officers. These actions will help overcome the

[58] Schlesinger Report, 11.
[59] Schlesinger Report, 9, 43, 44.

misperception that nuclear officers are at a disadvantage for promotions. If 21M promotion rates actually increase as a result of these actions, these higher promotion rates will attract even better officers to the 21M career field and, thus, lead to even higher promotion rates in a cyclical manner.

Selectively-Manned Positions

Although the 13S and 21M CFMs agreed to formalize cross-flow opportunities between the two AFSCs, O-6 commanders at ICBM units may still tempted to place additional missile operators in career broadening missile maintenance assignments, including at the field grade level, in violation of the MOMMEX program. To be successful, leaders at the highest levels must concur and comply with MOMMEX. Gen C. Robert Kehler, the current AFSPC/CC, included MOMMEX in his memo documenting changes for the nuclear portion of the 13S career field, indicating his support for the program. At healthy manning levels, all 21M billets at missile wings need to be filled by 21Ms to show those in the career field that there is a productive career path and a career progression available to them as a 21MxI.

The success of MOMMEX also depends on an adequate number of 13S and 21M volunteers to compete for selection. Given the two main 21MxI broadening opportunities of 21MxN and 13S, most 21MxIs would probably choose 21MxN because they would then have the opportunity to (1) become maintenance experts on the ICBM weapon system (e.g., at the WSA on a missile base), (2) be assigned somewhere besides the northern tier (e.g., overseas at a USAFE unit), or (3) be exposed to an aircraft base (e.g., Barksdale AFB, Whiteman AFB). What can be done to ensure an adequate number of volunteers for 13S crossflow assignments? One way would be to guarantee desirable post-13S follow-on assignments. For example, the officer could gain insight to even more of the ICBM weapon system lifecycle through operational

missile test launch assignments at the 576th Flight Test Squadron, Vandenberg AFB, or ICBM-related depot or system program office (SPO) assignments in AFMC.

These types of assignment incentives could also apply to other 21Ms. In general, officers who volunteer to teach the 21M career field courses in AETC at Shepherd AFB or Vandenberg AFB could be offered choice follow-on assignments. The other two 21M tracks may also need to incentivize a portion of their track broadening opportunities. Thus, if because of the perceived advantages of aircraft maintenance and flight line experience, 21A crossflow is more attractive than 21MxN track broadening to 21MxAs or 21MxA track broadening is more attractive than 21MxI track broadening to 21MxNs , then the less desirable option could be made more attractive by offering choice post-broadening follow-on assignments. Also, senior leaders could explain the benefits of the less desirable option; for example, track broadening into 21MxN could give a 21MxA officer a break from deployments.

USAFE Nuclear Positions

Because the AF has decided to treat USAFE units differently than the AFSPC and ACC WSAs and not align the USAFE nuclear weapons maintenance units under the NWC, the USAFE positions must be more carefully managed. Track broadening for 21MxIs from AFGSC to USAFE should be limited to 21MxN billets in units without any 21A positions to prevent 21MxIs from being pulled to the flight line rather than staying in the 21MxN billets and, thus, gaining additional nuclear experience.

In addition, the prestige of the Munitions Support Squadron (MUNSS) command positions should be enhanced. These lieutenant colonels serve as the senior U.S. representative on NATO bases and as tenant commanders for approximately 130 personnel from about 20

different AFSCs.[60] "In many ways, a MUNSS presents challenges similar to those encountered by a mission support group commander. For this reason, command positions are AFSC 30C0."[61] Despite the challenge of responsibility normally shouldered by more senior officers, it is difficult to get officers to apply for these positions. In one year there were three openings, but only six candidates to choose from, and three of these volunteers were security forces officers. One interviewee interpreted this lack of interest in these command positions as a strategic communication failure, but also as a failure to take care of the officers coming out of the MUNSS/CC positions.[62] Instead, officers successfully completing a MUNSS/CC tour should receive "choice" follow-on assignments. Once these positions carry more prestige, the 21M senior leadership should communicate the desirability of a MUNSS/CC assignment to eligible officers in the career field.

Development Team Alignment Change

Development teams (DT) provide career development vectors for individual officers in a career field.[63] The maintenance DT (historically, 21A and 21M career fields share a DT) has a very important role to play in ensuring the 21M career field changes being made accomplish what they were designed for. The DT could be more effective, however, if it were realigned. At the very least, the 21M DT should be separate from the 21A DT. Separate DTs would indicate the importance of having senior leaders devoted to munitions and missile maintenance, not as a secondary issue for aircraft maintainers.

But perhaps there is a need to go even further in DT realignment. The Blue Ribbon Review admonished, "The force development strategy to produce Airmen with the right skill sets

[60] *Blue Ribbon Review*, 19.
[61] AFPC, "CY 09 SQ/CC Information, MUNSS Eligibility Message," 21A/M Assignments Page.
[62] Col Thomas Fitch, 28 MXG/CC, interviewed by the author, 19 November 2008.
[63] AFI 36-2640, *Executing Total Force Development*, 16 December 2008, 5, 6.

needs to be enterprise-wide, long-range, and aligned with established priorities."[64] However, although the recently updated AFI on force development reflects the need for cross-functional, such as nuclear, representatives to coordinate with applicable CFMs and DTs, it prohibits cross-functional communities from establishing separate DTs.[65] Even so, an AFI change may be in order to make DTs even more effective. A separate "nuclear" DT, including the missile operations portion of the 13S career field and the ICBM and nuclear portions of the 21M career field (21MxIs and 21MxNs), would provide maximum visibility on the AF personnel whose full-time, permanent mission includes nuclear stewardship and would allow a better working relationship among all the career fields with a 24/7 nuclear mission. The "nuclear" DT would be able to focus on building the required nuclear expertise within the officer corps. This change would also enhance the coordination between missile operations and missile maintenance within AFGSC. With this change, the maintenance DT would include only the 21A career field and the conventional portion of the 21M career field (21MxAs). This "conventional maintenance" DT would be able to focus on building the required expeditionary skills for the conventional fight.

Nuclear Officer Career Field Contingency Plan

Of course, the possibility remains that even if all the considered and recommended changes are implemented, the 21M career field will still not be able to attract and retain the nuclear maintenance experts the AF requires. For example, young officers could view the new three-track system as further stove-piping of an already small career field, making it even less attractive to them. Also, senior officers (e.g., group/wing commanders and GOs) could make

[64] *Blue Ribbon Review*, 41.
[65] AFI 36-2640, 7, 13, 14.

manning decisions that run counter to the officer development vision the 21M CFM has in mind by not utilizing 21M personnel as previously designated and developed by the DT. An example would be cross-flowing even more 13Ss to 21M assignments than the two per year specified in the MOMMEX. Another example would be filling the NWC/CC position with a rated or non-rated operations officer rather than with a 21M. Finally, the AF could fail to promote 21M officers who have been groomed (developed) for particular assignments requiring nuclear maintenance experience at the senior grades. Because there are no pure 21M GOs now, except Maj Gen Deppe, (other GOs with missile and munitions maintenance experience also had either 13S or 21A background), it is yet to be seen if the changes will be successful in attracting and keeping the best and brightest officers in the 21M career field and growing them in adequate numbers to fill the most senior AF and joint positions requiring nuclear maintenance expertise.

Therefore, career field leaders need to be prepared with a contingency plan for some kind of separate nuclear officer career field. Notionally, this could be a 13N career field, combining the missile and nuclear weapons maintenance portion of the 21M career field (21MxI and 21MxN) with the missile operations portion of the 13S career field. Because AF/A1 can still track career field health when there are at least 100 billets in a career field, the remaining 21M career field might still be viable, depending on how many conventional munitions billets exist at that time. Or the 21MxAs could be combined with 21A to create a conventional maintenance career field, as long as the 21A CFM created a construct, such as an SEI, to develop and track officers with convention munitions experience for expeditionary bomb dump purposes.

Alternatively, this new career field, perhaps 13I AFSC, could be for ICBM-related personnel only, combining missile operations with missile maintenance. Then the munitions maintenance officers, both nuclear and conventional, would remain in the 21M career field. As

with the 13N AFSC, the best and brightest 13Is would be groomed for senior positions requiring nuclear maintenance expertise by providing them ample opportunities at the lower grades to learn missile maintenance. In either case (nuclear munitions maintenance as part of 13N or remaining in 21M), the NWC (NWC does have a 21A/M DT member currently) FAM would have to work closely with the AFGSC FAM and the appropriate CFM(s) to develop the nuclear weapons sustainment expertise required.

These 13N and 13I alternatives should only be a contingency plan, however. The best option for the AF is to be able to develop nuclear maintenance experts within the 21M career field. If any portion of the 21M career field is combined with missile 13Ss, that portion of the 21M career field will be diminished. There will no longer be officers who spend their entire (or most of their) careers doing primarily maintenance assignments. The missile operators will gain the opportunity to learn more about maintenance, but this new career field, whether it is 13N or 13I, will not necessarily lead to a career field construct that is more effective in growing nuclear maintenance experts.

Conclusion

Making nuclear munitions and missile maintenance an attractive career field will require a sustained effort on the part of senior AF leadership to ensure the changes being made to the 21M career field actually lead to the results desired. The 21M changes must be assessed continually to ensure the desired results are actually experienced and, if they are not, adjustments are made to provide the environment to attract the best and brightest officers to nuclear maintenance. If the changes appear to fail, however, the 21M decision makers at that time must have the moral courage to cut their losses and move to a nuclear career field construct.

Without an attractive career field, the best and brightest officers will not be encouraged to move to or stay in that career field. The nuclear enterprise requires superior personnel who can be adequately trained and inculcated with the discipline required to excel in the zero-defects nuclear environment. To succeed at reinvigorating the nuclear enterprise, the AF must first attract the right numbers of the best and brightest who can then be nurtured and guided to fulfill their nuclear stewardship responsibilities to perfection.[66] Only then will the AF avoid additional problems like the two recent events related to the nuclear enterprise.

[66] Welch Report, 1.

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