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Nuclear Munitions and Missile Maintenance: Officer Attraction and Retention

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Introduction

A number of Department of Defense (DoD) and Air Force reports issued since the end of the Cold War have highlighted a deterioration of nuclear expertise in the United States military. Two recent events serve as examples—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. Both of these events involved Air Force personnel, and are helping to make the new Air Force Chief of Staff's number one priority the reinvigoration of the nuclear enterprise. Part of this effort 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 Air Force instructions that replaced the much more detailed Air Force 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 sufficient numbers of personnel who have the ability to achieve a standard of perfection. However, as this article 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 Air Force nuclear maintenance mission to the standard required. Therefore, Air Force 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 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 US nuclear operational expertise, support infrastructure, and weapons-design capability may be unavoidable, given current career incentives, fiscal constraints, political realities, and service priorities. Thus, US 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

Article Acronyms

21M – Munitions and Missile Maintenance (career field)
ACC – Air Combat Command
ACS – Assistant Chief of Staff
ADSAC – Strategic Air Command's additional duty training program
AFB – Air Force Base
AFGSC – Air Force Global Strike Command
AFI – Air Force Instruction
AFMAN – Air Force Manual
AFMC – Air Force Materiel Command
AFOTEC – Air Force Operational Test and Evaluation Center
AFPC – Air Force Personnel Center
AFSC – Air Force Specialty Code
AFSPC – Air Force Space Command
AMMOS – Advanced Maintenance and Munitions Officer School
BRR – Blue Ribbon Review
CE – Civil Engineering
CFM – Career Field Management
CGO – Company Grade Officer
DoD – Department of Defense
DSB – Defense Science Board
DT – Development Teams
ELV – Expendable Launch Vehicles
EOD – Explosive Ordnance Disposal
FAM – Functional Area Manager
FGO – Field Grade Officer
FY – Fiscal Year
GO – General Officer
ICBM – Intercontinental Ballistic Missile
MAJCOM – Major Command
MASO – Munitions Accountable Systems Officer
MOMMEX – Missile Operations and Missile Maintenance Exchange Program
MUNSS – Munitions Support Squadron Commander
NATO – North Atlantic Treaty Organization
NWC – Nuclear Weapons Center
OPB – Officer Preselection Brief
PACAF – Pacific Air Forces
PBD – Program Budget Decision
PRP – Personnel Reliability Program
RIF – Reduction in Force
SAC – Strategic Air Command
SE – Support Equipment
SECAF – Secretary of the Air Force
SEI – Special Experience Identifier
SPO – System Program Office
US – United States
USAFE – United States Air Forces Europe
WSA – Weapons Storage Area

addressed the need for "reestablishing valued career tracks for those with nuclear expertise."[7] Although not the 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 Air Force "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 (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 will focus on how to attract and retain Air Force 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, the author reviewed RAND reports about force management and development in the Air Force, general officer biographies (for munitions and missile maintenance experience), and Air Force publications (to keep this paper unclassified, classified reports were not used). For much of the data, the author relied on interviews, including 16 of the 25 Air Force colonels (O-6s) who are core munitions and missile maintenance officers, three career field managers (CFM) on the Air Staff, all the Air Force Personnel Center (AFPC) officers since the career field was created, three of the Air Force Space Command (AFSPC) functional area managers (FAM) for missile maintenance officers, as well as the Air Force Nuclear Weapons Center (NWC) commander. The reader can refer to Air Force Instruction (AFI) 36-2640, *Executing Total Force Development*, for additional information on CFMs, FAMs, AFPC assignment teams, as well as the development teams (DT) to be discussed

later in this article, and their role in Air Force 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 decisionmakers for the aircraft maintenance career field determined that something needed to be done to reverse the trend. Air Staff functional decisionmakers considered the following three options:

- A new special experience identifier (SEI)
- A new AFSC shredout
- A 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 approximately 200, about a 30 percent reduction. Therefore, missile maintenance decisionmakers 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 decisionmakers agreed to combine munitions maintenance and missile maintenance to create the 21M AFSC.

The current 21M career field with its three distinct parts—conventional munitions, nuclear munitions, and missile maintenance— is summarized in Air Force Manual (AFMAN) 36-2105, *Officer Classification*:

> 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, 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 for the 21M career pyramid.

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 because of the influence of sponsors or mentors, have the opportunity to move into or out of a career field after their initial accession tour.[17] 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

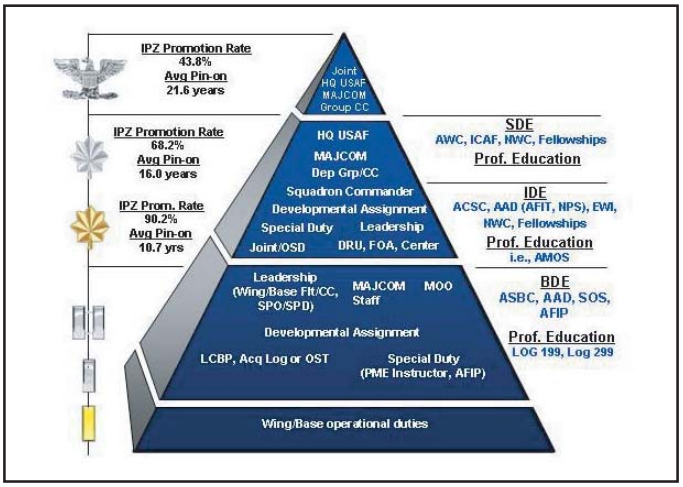

Figure 1. 21M Career Pyramid[16]

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, 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 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. Air Force 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 Air Force Reserve Major General William A. Cohen, PhD, 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
- 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, it no longer provides 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]

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 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; FE 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 20th Air Force (FE Warren AFB, Wyoming) 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 in Air Combat Command (Minot AFB, North Dakota; Barksdale AFB, Louisiana; and Whiteman AFB, Missouri) and at the dual-capable fighter and North Atlantic Treaty Organization (NATO) bases in US Air Forces Europe (USAFE). There are also nuclear maintenance slots in Air Force Materiel Command (AFMC) including the Nuclear Weapons Center (NWC) at Kirtland AFB, New Mexico, and the 8th Air Force (Barksdale AFB, Louisiana) and ACC (Langley AFB, Virginia) staffs. Conventional munitions maintenance assignments exist at various locations in ACC, USAFE, and Pacific Air Forces. Of course, as with any career field, 21M positions also exist on the Air Staff, in AETC, at the Air Force Safety Center, the Air Force Inspection Agency (both at Kirtland AFB, New Mexico), the Air Force Operational Test and

Evaluation Center, the Air Force 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 the following:

- A potential conflict between gaining and maintaining nuclear expertise and offering assignment variety to all 21Ms
- With a 50/50 split of less than 400 total 21Ms, the small numbers that would result if nuclear 21Ms were separated from conventional 21Ms
- 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 cross-flow 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 cross-flow into aircraft maintenance (21A AFSC) positions on the flight line. Maintenance group commanders will also cross-flow officers in the other direction, with 21As filling 21M positions at flying wings. Group or wing commanders make these cross-flow moves on an ad hoc basis, rather than following a documented cross-flow process or formal career path management strategy. According to AFPC, these cross-flows 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 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 20th Air Force staff, the A4, is currently filled by a communications officer (33S) and the current 21M career field manager (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 the Office of Manpower and Personnel's (AF/A1) 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 (FY) 2010.

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 Company Grade Officer (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 that the group commander fought to keep high on the list for retention. At the time, this RIF-eligible officer was filling a 21A position, 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. Because of the impact of the 1993 RIF on both aircraft/munitions maintenance and missile maintenance personnel, the Air Force 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 Air Force tried to address the potential for these types of shortages in later years. 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 Program Budget Decision (PBD) 720 cuts of Air Force 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]

Of the 320 total 21M billets reported to the author by AFPC, 44 (13.75 percent) 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 percent) are CGO billets and 155 (56.16 percent) are field grade officer (FGO) billets. According to AF/A1, "a generic standard for the sustainability of a career field is 60 percent CGO authorizations to 40 percent 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 US 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 Air Force 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 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 at least one below-the-zone promotion, depot (air logistics center) experience, and Joint experience, a review of GO biographies revealed that a significant number of maintenance colonels (both aircraft and munitions/missile, based on initial, or preponderance of, assignments) without Joint experience (10 of the 22 reviewed, or 45 percent) 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 4 years) aircraft maintenance experience as well, and only one had a munitions assignment as an FGO (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. 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 is that 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 senior developmental education. 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 total nuclear experience; previous success as the leader of a large, diverse unit; USAFE nuclear experience; primary job experience (21M, 21A, and 13S are three of the four AFSCs that have priority); and 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 Air Force is obviously not growing missile maintenance GOs.

A related problem regarding maintenance GOs is the fact that many of the most senior Air Force logistics positions are filled regularly by rated or nonrated 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 (AFMC/CC). Ideally, these types of positions would be the ones that 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 FY06 at least, this perception has been based on reality. A review of student (92S AFSC) to total active duty Air Force officer

personnel ratios for O-4 (major) and above, for each FY since 1999, shows that 21M student ratios were lower than the Air Force average the first two FYs and in FYs 06 to 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 FY07—now they are consistently lower. Because the 21M career field is smaller than the other two career fields, and because the difference from the average was less than half a percentage point since FY07, 21Ms do not currently appear to have a significant school selection disadvantage. Since FY07, 13Ss have had a greater disadvantage than 21Ms. On the other hand, 21As have had a significant school selection advantage since FY06. See Figure 2 for a graphic depiction of this information.

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 cross-flows, 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 caused by 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 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. 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 as follows:

- WA for 12 consecutive months of nuclear weapons maintenance management experience
- WB for a total of 48 months of nuclear weapons maintenance management experience

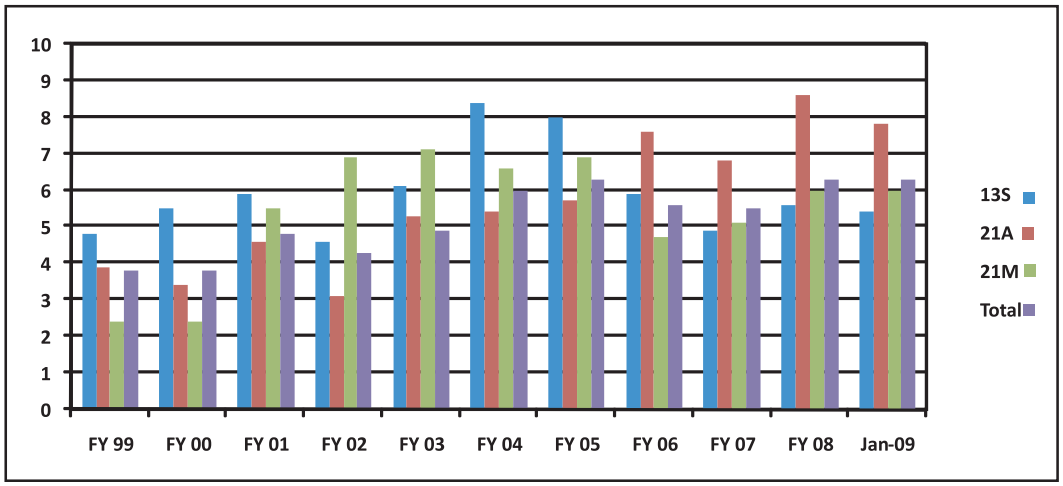

Figure 2. Percentage of FGO Personnel with Student AFSC

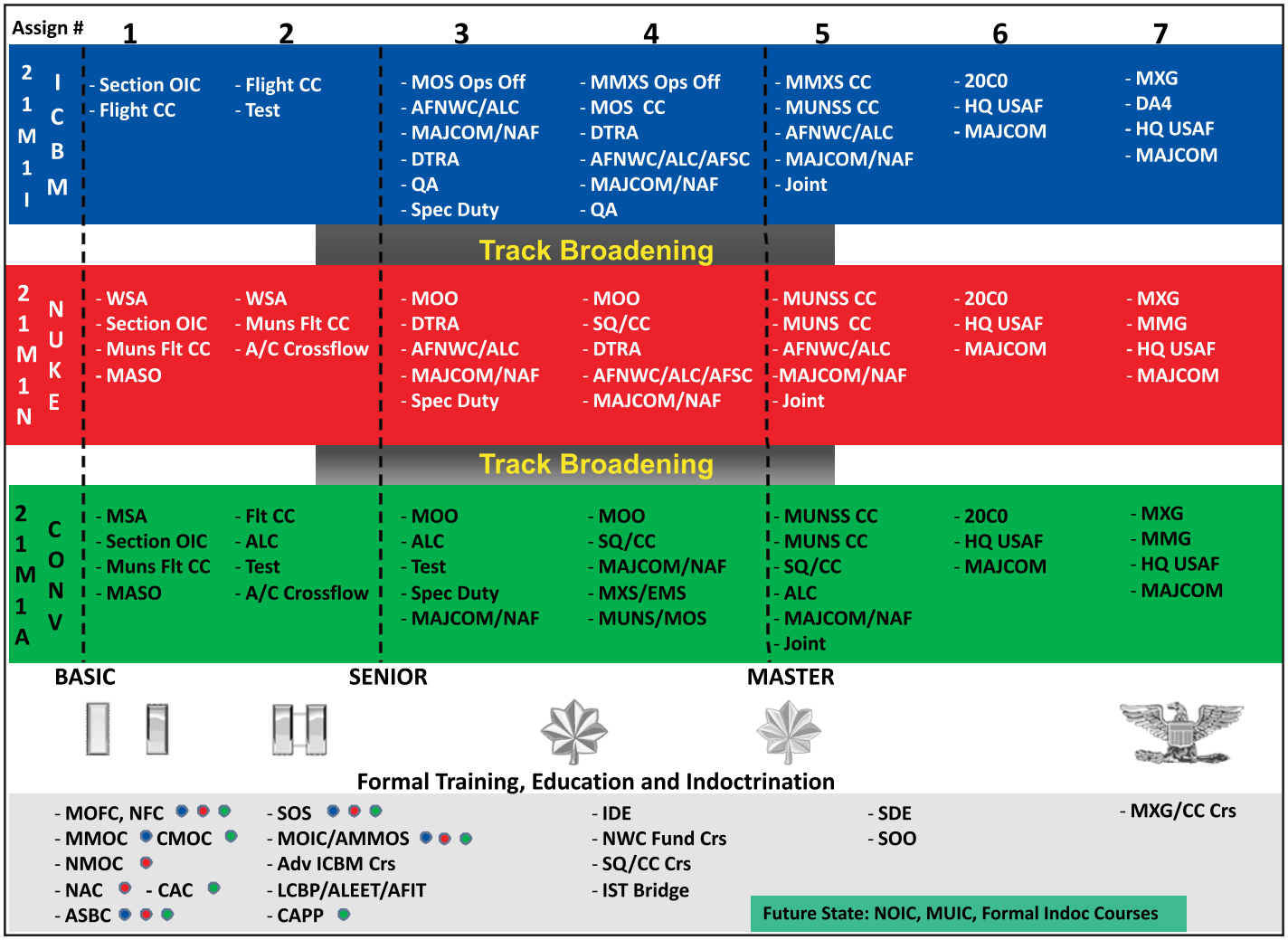

Figure 3. 21M Career Field Progression

- WC for a total of 96 months of nuclear weapons maintenance management experience
- Similar SEIs (QT, QU, and QV) for ICBM maintenance management experience.[41]

In a related effort to develop ICBM officers with greater breadth of experience, the 13S and 21M CFMs formalized the 13S and 21M cross-flow process. The new process, called the Missile Operations and Missile Maintenance Exchange Program (MOMMEX), establishes a competitive selection process for officers who wish to cross into the other AFSC for a 3-year exchange tour. The number of officers who can cross-flow 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 NWC. However, contrary to a recommendation in the *Schlesinger Report*, the Air Force 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 Air Force nuclear enterprise since the demise of SAC.[44] Therefore, the Air Force 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 for the new nuclear directorate (AF/A10) on the Air Staff.

The Air Force is also implementing or considering other personnel-related changes in response to the unauthorized movement of nuclear weapons. These further changes include the following:

- Requiring additional training and experience (WA SEI) for munitions accountable systems officers (MASO) to improve nuclear weapons accountability and reporting practices
- Developing a new nuclear fundamentals course to instill every 21M with basic nuclear knowledge
- Providing deployed-in-place credit for full-time nuclear personnel, especially those in one-deep positions
- Requiring commander approval for volunteer deployments
- 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 because of the resulting deleterious impact to the remaining portion of the 21M career field.[45] However, 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 approximately the 100 (or below) needed to assess the health of a career field.[46] Alternatively, if conventional munitions were 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:

- Work with people who treat me with respect. The reinvigoration of the nuclear enterprise is now the Air Force'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).
- Interesting work. Although nuclear deterrence theory is interesting, the actual work, by necessity, is repetitive with no margin for error.
- 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.
- 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.
- Working for people who listen if I have ideas about how to do things better. Although processes can be improved at 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.
- 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 carry out instructions when performing the mission. This necessity would not preclude, however, providing an opportunity for officers to think for themselves about other subjects, such as nuclear deterrence theory.

Some of Cohen's other seven motivators also yield insights relative to the 21M career field.

- 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.
- Working for efficient managers. No significant difference from other career fields.
- 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.
- 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.
- 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.
- High pay. Whereas Navy personnel receive nuclear incentive pay, this pay does not exist for Air Force nuclear personnel.
- 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 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 because of 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 (for example, separate nuclear and conventional), the small numbers would potentially lead to the same limitations and decreased attractiveness.

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. 21M officers were electing to stay in flying units to fill maintenance jobs in the weapons storage area, or on the flight line because of the perceived unattractiveness of the missile maintenance portion of the career field.

The BRR 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 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. 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.

The 21M CFM should be an officer with the 21M AFSC. Because of 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.

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. For example, if sufficient medical support 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 example, selection to AMMOS), the career field will be less attractive if deployments are denied.

In September 2003, a RAND team completed research for their study *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 (AFPC), operational level (CFMs), and strategic level (AF/A1). They found that at 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 meets 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 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 Air Force 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 sections entitled Career Field Management and Incentives for additional recommendations related to the RAND findings.

Career Field Management

The 21M CFM should be an officer with the 21M AFSC. Because of 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 Air Force 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 Air Force should consider eliminating all incentive pay, such as Aviator Continuation Pay bonuses and the Critical Skill Retention Bonus, especially in 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.

Nonmonetary 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: They need to be available to all applicable personnel, unlike LeMay's spot promotions, which were not available to tanker crews.[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 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 Air Force MAJCOMs except Special Operations Command are headed by four-star commanders. To maintain credibility in their effort to reinvigorate the nuclear enterprise, senior Air Force 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 nonoperational 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 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 Air Force should strive to grow officers to fill both of these positions within the 21M community. If senior positions requiring missile or nuclear weapons maintenance expertise are filled by pilots, navigators, or 13Ss, 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 (Secretary of the Air Force) 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 preselection brief 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 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 be tempted to place additional missile operators in career broadening missile maintenance assignments, including the field grade level, in violation of the MOMMEX program. To be successful, leaders at the highest levels must concur and comply with MOMMEX. General 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:

- Become maintenance experts on the ICBM weapon system (for example, at the WSA on a missile base)
- Be assigned somewhere besides the northern tier (such as overseas at a USAFE unit)
- Be exposed to an aircraft base (such as Barksdale AFB, Whiteman AFB)

What can be done to ensure an adequate number of volunteers for 13S cross-flow 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 life cycle 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 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 cross-flow 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

The Air Force has decided to treat USAFE units differently than the AFSPC and ACC WSAs by not aligning the USAFE nuclear weapons maintenance units under the NWC. Therefore, 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 US 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 1 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 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 BRR reported, "The force development strategy to produce Airmen with the right skill sets needs to be enterprise-wide, long-range, and aligned with established priorities."[64] Although the recently updated AFI on force development reflects the need for cross-functional representatives (such as nuclear), 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 to include the missile operations portion of the 13S career field, the ICBM, and nuclear portions of the 21M career field (21MxIs and 21MxNs), would provide maximum visibility on the Air Force 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 experience should be included on the officer preselection brief 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 misperception that nuclear officers are at a disadvantage for promotions.

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 be unable to attract and retain the nuclear maintenance experts that the Air Force requires. For example, young officers could view the new three-track system as further stovepiping of an already small career field, making it even less attractive to them. Also, senior officers (group or wing commanders and GOs) could make 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 nonrated operations officer rather than with a 21M. Finally, the Air Force could fail to promote 21M officers who have been developed for particular assignments requiring nuclear maintenance experience at the senior grades. Because there are currently no pure 21M GOs, except Major General Deppe (other GOs with missile and munitions maintenance experience also had either 13S or 21A backgrounds), 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 Air Force and Joint positions requiring nuclear maintenance expertise.

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. On the other hand, 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 conventional 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 developed for senior positions requiring nuclear maintenance expertise by providing them ample opportunities at the lower grades to learn missile maintenance. In either case the NWC FAM would have to work closely with the AFGSC FAM and the appropriate CFMs to develop the nuclear weapons sustainment expertise required.

These 13N and 13I alternatives should only be a contingency plan. The best option for the Air Force 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 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 Air Force leadership to ensure the changes being made to the 21M career field actually lead to the desired results. The 21M changes must be assessed continually to ensure the desired results are actually experienced and, if they are not, adjustments made to provide the environment that attracts the best and brightest officers to nuclear maintenance. If the changes appear to fail, however, the 21M decisionmakers 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 Air Force 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 Air Force avoid additional problems like the two recent events related to the nuclear enterprise.

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When the political and tactical constraints imposed on air use are extensive and pervasive—and that trend seems more rather than less likely—then gradualism may be perceived as the only option.

—Gen Joseph W. Ralston, USAF

It is the politics of the moment that will dictate what we can do.… If the limits of that consensus mean gradualism, then we're going to have to find a way to deal with a phased air campaign. Efficiency may be second.

—Gen John P. Jumper, USAF

The preeminence of air power will stand or fall not by promises and abstract theories, but, like any other kind of military power, by its relevance to, and ability to secure, political objectives at a cost acceptable to the government of the day.

—Air Vice Marshal Tony Mason, RAF