

Air Force Missileers

Volume 28, Number 4

"Advocates for Missileers"

December 2020

The Quarterly Newsletter of the Association of Air Force Missileers

Join AAFM in Salt Lake City in October

The Mission of the Association of Air Force Missileers -

- Preserving the Heritage of Air Force Missiles and the People Involved With Them
- Recognizing Outstanding Missileers
- Keeping Missileers Informed
- Encouraging Meetings and Reunions
- Providing a Central Point of Contact for Missileers

As you read this, the holidays are over and we are headed into another year. Vaccines are being mass produced, Americans are getting shots, and we are hopefully turning the corner on this pandemic. I mention this only to highlight the fact that our National Meeting is back on the calendar with 6-10 Oct 2021 as the planned dates. As I wrote this article the first week of December, everything was in place for the National Meeting. Then one of you called (thanks DJ) and said the hotel had been sold—another COVID hit! It took me a week to find someone to tell me what was going on and another to work put a replacement, but we now have the shell of a plan in place. By the time we go to print we'll have the hotel details worked out so you can make reservations, but the catering will take an extra week. We have suspended the meeting registration site but should be back up by mid-January. We have two great tours planned—Salt Lake and Park City on Thursday and Hill AFB on Friday. There is a discount on early registration so sign up as soon as we get the site back up!

One of the great parts of going to Salt Lake City is that we will spend a day at Hill AFB getting updates on the sustainment of Minuteman III and the acquisition and deployment of the Ground Based Strategic Deterrent (GBSD). To that end, this newsletter and the ones to come before our meeting will focus on what it takes to acquire and sustain a weapon system. Like the new helicopter for the missile field (MH-139), which started the requirements process in 1999 and is just about to be fielded, the GBSD requirements and acquisition process has taken forever—but hard work will be rewarded with the GBSD deployment.

When I started this position as Executive Director I was impressed with the data base that Charlie and team had assembled and the background materials they had gathered for our use in newsletter, newspaper articles, position papers, etc. One of the first things I did was to reach out to several non-profits to get some examples of their successes and then briefed our Board of Directors on building on Charlie's successes. The Board agreed that a Strategic Plan was critical to our future success. Don Alston stood tall and took the lead for developing our draft plan. We are at the point that we want your input into the draft plan. Have we hit the mark? What are we missing? Are our priorities right? What would you like to see added to the plan? We've posted the draft plan on our website and invite you to comment over the next sixty days. After that, the Board will finalize the plan and move forward. We look forward to your inputs and comments.

Finally, we are starting a new feature in this newsletter focusing on our members. Meet Capt Stephanie Frank at the 576th Flight Test Squadron and Col (ret) Paul Burnett who held the same job 36 years earlier. Next quarter, we'll pair up two Electro-Mechanical Technicians (EMTers) and then expand from there. Looking forward to seeing you in SLC in October!

In this Issue -	AAFM National Meeting In Salt Lake City	1
	The Long Road to GBSD	2
	Meet Your AAFM Members	8
	The 20th Air Force Page	12
	Missile Heritage Grants, Free National Park Access	13
	5th Cavalry, Help AAFM, Letters to AAFM	14
	New Members, AAFM Heritage Store	15
	Taps for Missileers, New Member Registration Form, Missileer Trivia	16
	National Meeting Registration Form	Inside Back Cover
	Reunions and Meetings	Back Cover

So Here's the Plan... -- Maj Gen (Ret) Don Alston, Chairman, Strategic Vision Committee

AAFM Board members, along with a couple of our general membership (Thank you Gary Kapka and Mike Lehnertz), have put together the relatively lean, draft strategic plan that is now posted on our website. It's not soup yet and we need your help with additional ingredients and seasoning. Please take some time to give it a read and pass your good ideas our way. Reach out to Jim Warner or directly to me (donalston@alstonstrategic.com). The Board spent considerable time discussing who we are and what we believe as an organization, and what do we need to do to best support our membership, the currently serving nuclear mission professionals and our country. Our framework includes six objectives plus some of the actions required to reach the end state.

This plan highlights the Board's belief that there has never been a more urgent need to communicate the importance and value the ICBM brings to US national security as we continue to make the required investments to assure effective nuclear deterrence in the decades to come. We intend to take steps to further improve our connections to our members and the active force. So, please measure our approach – the objectives, the priorities, the actions – give us feedback and add your voice to this process. After 1 March 2021, we'll react to membership input and take our next steps to ensure each action has an 'owner' to drive the activity as well ensuring we have a resource match -- or disconnect – to execute. Target for adoption of the AAFM 2021 Strategic Plan is 1 June 2021.

Air Force Missileers

The Quarterly Newsletter of the Association of Air Force Missileers

Volume 28, Number 4

"Advocates for Missileers"

December 2020



AFNWC Patch

Maj Gen (Ret) Ralph Spraker

Just as we were completing this issue, we learned that Maj Gen (Ret) Ralph Spraker, an AAFM founding member and our founding President, passed away in Colorado Springs. Gen Spraker was a B-47 navigator who came to Malmstrom as a missile crew member after ten years of flying. He was the commander of two missile squadrons, the 490th Strategic Missile Squadron (SMS) in the 341st Strategic Missile Wing (SMW) After a flying tour in Thailand, he commanded the 321 SMS in the 90 SMW, followed by a tour at Headquarters, Strategic Air Command (SAC), He was then Commander, 44 SMW, 351 SMW and the 3901st Strategic Missile Evaluation Squadron. He served in several Air Force Space positions at SAC, North American Aerospace Defense Command, US Space Command, and finally as Vice Commander of Air Force Space Command. He was AAFM president in 1993 and 1994.

AAFM National Meeting in Salt Lake City - 6-10 October 2021

Shall we try again? As you all know, COVID-19 put a damper on a lot of activities in 2020 and our AAFM National Meeting was no exception. With vaccines now becoming available, we "rolled the dates" into 2021 with plans to follow the same schedule for 6-10 October 2021 at the RL Hotel in Salt Lake City. Then, just as we opened registration for the hotel and event activities, we learned that the hotel had been sold and was closed for repurposing.

We now have two adjacent hotels in downtown SLC (Courtyard Marriott and Hyatt House). Hotel registration at both hotels is open now with details on the form on the inside back cover, with the rate still \$99 per night including breakfast for two each day. We are finalizing the pricing for the meals and plan to have everything ready within the next two weeks. Check our website at afmissileers.org in mid-January for a link to sign up for the tours and meals. For those of you without access to a computer, call your executive director at 719-351-3962 for more information and a paper registration form.

We will begin Wednesday, 6 October, with registration in the Hospitality suite. That evening, we will gather for a light buffet with pay as you go bar for our welcome reception. The Hospitality Suite will be open any time we are not scheduled for other activities, and your registration fee covers the cost of the suite, along with mementos and other meeting expenses. Note you can get a discounted registration fee if you sign up before 23 July.

On Thursday, following breakfast at the hotel, we will have a tour of the Salt Lake City area with lunch during the tour day. The tour buses will return us to the hotel in mid-afternoon that day. That evening, we will enjoy an informal dinner at the hotel, again with pay as you go bar.

Following breakfast Friday, we will board buses to Hill Air Force Base, the home of Minuteman Sustainment. We are excited that our tour will focus on the sustainment and acquisition team that support our intercontinental ballistic missiles with the Minuteman III program office and the ICBM Depot, as well as the new Ground Based Strategic Deterrent Program Office. We will have lunch during the tour, with the cost included in your registration fee. Note the identification requirements for the base tour on the registration form. Friday evening, we will gather at the hotel for an informal dinner.

Saturday morning the AAFM Board of Directors will gather at 0730 for a short meeting, followed by a General Membership Meeting open to all at 0900. This meeting will include our usual updates on the missile force, programs, the association and other topics. Lunch is on your own and the afternoon is free. Since our hotel in downtown, there are many opportunities for sight-seeing in the area. That evening, we will gather for the AAFM Banquet with featured speaker and special program. Breakfast is included Sunday morning before your departure.

If you are staying in a motor home, other hotel or with friends, or live in the area, you can attend any or all of the events. Complete the reservation form for the events you would like to attend.

The Long Road to GBSD – by Col (ret) Jim Warner, Executive Director

Ground Based Strategic Deterrence (GBSD) is a fast-moving program whose early foundations were laid by many AAFM members in their previous active, civil service, or contractor roles. In my mind, it all started 22 years ago - yes it has taken that long to determine the replacement for Minuteman III! It was in December 1998 that (then Col) Roger Burg, Exec to the Air Force Space Command (AFSPC) Commander, called the intercontinental ballistic missile (ICBM) team and asked if we could provide a briefing on ICBM programs to the Commander. Gen Richard Myers was quick to grasp the significance of the reliability issues that we were facing and directed that we take a briefing to the Pentagon! With Gen Myers direct involvement, we (AFSPC and the ICBM Program Office) took a briefing all the way to the Secretary of the Air Force and the Chief of Staff of the Air Force seeking full and final funding for the Guidance Replacement Program, the Propulsion Replacement Program, and the Safety Enhanced Reentry Vehicle Program to resolve the pending reliability issues and initial funding for the deactivation of Peacekeeper (PK). All four programs were tied together and three of the four received approval. The Peacekeeper funding was for advanced purchase of storage equipment for PK motors but since no specific retirement date had been announced that funding was delayed. During the briefing process we were asked what was next - these fully funded programs were only designed to get us to 2020. As a result of those inquiries, AFSPC/DRM initiated the Ballistic Missile Replacement Study and the long road towards a Minuteman III replacement began. We never believed it would take this long to see the full approval to field that replacement. The following articles tell that story by AAFM members who have been directly involved in the GBSD story - some of who are still executing the process in their day to day roles as government civilians and their support contractors. Without their dedication, we wouldn't be where we are today. GBSD is absolutely critical to upgrading the ICBM leg to meet emerging and future threats to our country and our allies. Let's hope we all get to see it through to deployment!

Thoughts on Acquiring the Next Generation

ICBM – by Lt Col (Ret) Steve Manley, AAFM Mbr No A3451, Oak Hill, VA

As someone who's been involved in ICBMs one way or another for the last 30 years, I've attempted to recollect the adventures I've been through from my time as a Minuteman III (MM III) Missileer at FE Warren to the present. Working at the wing, major command (MAJCOM), air staff and Office of the Secretary of Defense (OSD) has allowed me an opportunity to follow the track of the current and future ICBMs. I began my missile crew time in 1986

and at that time the MM III was only 6 years past its intended life. Now, it's 40 years past and it is expected that the last of the MM IIIs will be in the field well past the 60-year point – a tremendous testament to those who acquire, support, maintain and operate the weapon system. For now, support to resource and prioritize a new ICBM is strong throughout most levels of government.

Background – Initial Efforts

From the initial ICBM through continuing timeline of the nation's land-based deterrent, attempts to develop new weapon system is sprinkled throughout. Currently the MM III, as the last remaining ICBM, is in dire need of replacement. The GBSD program on-going now is not the first attempt to replace the MM III. In the late 1990s the Ballistic Missile Requirements (BMR) Study was conducted to examine what a replacement for the MM III would look like. Following the BMR Study, in the early 2000s, an Analysis of Alternatives (AoA) was held for the Land Based Strategic Deterrent (LBSD) but a potential replacement program was put on hold and the MM III was life extended through 2030. Finally, the GBSD program has been officially recognized and resourced and is moving forward to replace the legacy MM III.

A program with requirements to not just replace, but improve the capability of, the land based strategic deterrent which has served the country for 5 decades is one which must be approached with thoughtful consideration from all of the Department of Defense (DoD). The task is so important for the nation that failure is not an option.

With that said, the road to a MM III replacement began well before now. In 1999, the ICBM requirements division in AFSPC – long before there was the current Air Force Global Strike Command (AFGSC) – began a study to begin an initial look at what might be the requirements for a future system to replace the MM III. The ICBM Demonstration Validation Program funded the Ballistic Missile Requirements (BMR) Study to examine the missile system and what could be done in the future, not just through 2030 and not just to replace the MM III one for one, but to make the leap to a more advanced system. The study evaluated the boosters, guidance system, reentry system to include the reentry vehicles (RV), the liquid propulsion system rocket engine (PSRE) and some elements of the ground system, in particular the quality and life expectancy of the concrete launch facility (LF) and the launch control centers (LCC).

Because of the study's charter was to not just replace, but investigate improvements, it was an exercise in what could be possible in a new missile. The booster portion of the study very early on eliminated a liquid booster version and embraced a solid rocket motor (SRM). With the MM III SRM as a baseline, the study examined increased range options, a two and three stage option, and already existing versions like the sea launched ballistic missile (SLBM) version (83" diameter, vice the MM III 66" stage I) or a Peacekeeper 92" version.

The BMR examination of the guidance capabilities used the current guidance instruments (accelerometers/gyroscopes) as the baseline to measure against many different guidance candidates, such as potential solid-state solution. The various guidance candidates were at different stages of technology readiness and the study tried to take into account the timeline to develop, manufacture and produce. Other areas of examination included reliability, and resources necessary to have the instruments developed. Modular capabilities were part of the effort, such as using a drawer type system to remove/reinsert the guidance instruments without having to remove the warheads, reentry bus and complete guidance set (also called the guidance wafer or can) should a guidance failure occur.

While the MM III Mk12A and the Mk21 reentry vehicles were used as the baseline for looking at reentry capability, the study examined maneuverable reentry vehicles, both trajectory correcting and trajectory shaping. Various in-flight updating methods of increasing the accuracy of the RV upon atmospheric reentry were studied.

For the Propulsion System Rocket Engine (PSRE), the study took into account the environmental impact of the current liquid fuel and oxidizer mixture, while investigating whether a solid fuel PSRE could be used with a motor that could be turned off and on at will.

At the time, AFSPC was the major command for the ICBM requirements branch and in 2002, a Ballistic Systems Division (BSD) mission needs statement for a Land Based Nuclear Strategic Deterrence, which was converted to the LBSD initial capabilities document (ICD) in 2004, was developed. These documents identified requirements to replace the MM III which had been active for 30 years at the time – note that currently, we are still reliant on the MM III after 50 years of service! This speaks to the commitment, professionalism, initiative and industriousness of the men and women of Strategic Air Command, AFSPC, ICBM Systems Program Office (SPO), AFGSC, US Strategic Command (USSTRATCOM), Air Staff, and others. But the true heroes of the accomplishment are those that kept, and continue to keep, a missile with a 10-year life expectancy viable and on alert for 50 years, and soon to be more than 60 (2036) years are the maintainers. Generation after generation have gone above and beyond to ensure the nation's ICBM force is on the highest level of alert.

Struggle for Recognition and Support

In this same time period, 2001, a Nuclear Posture Review (NPR) was published that addressed many of the issues of the day for the MM III and Peacekeeper ICBMs. The NPR also called for the nation to replace the MM III missile with a new weapon system by 2018. While the timing of a new ICBM is different than what the NPR called for, the good news is that a replacement program, GBSDB, is under-

way.

After AFSPC got the ICD approved and validated through the upper echelon of the Pentagon, the ICBM requirements group successfully acquired funding for an AoA which did a thorough examination of all aspects of the missile itself as well as various launch techniques. The AoA was non-controversial for the most part but then a decision had to be made...a financial decision.

The background of the DoD's post-Cold War support for nuclear systems and ICBMs in particular was pretty much out of sight, out of mind. The MAJCOM in charge of funding ICBMs jumped from SAC to Air Combat Command to AFSPC to finally, AFGSC. The mission was shipped around the AF as an unwanted, unimportant, likely to go away mission. No MAJCOM wanted to use their funding to support the ICBMs. When the ICBM mission was part of AFSPC, during the early 2000s, the Under Secretary of the Air Force for Space questioned why we would spend funds on ICBMs and couldn't we just let them die out unilaterally? For those of us in this meeting it was clearly a message about support and funding -- this attitude was not unusual. Huge hurdles existed and it was apparent that ICBMs, and nuclear systems in general, were not prioritized in any organizations in the AF.

A Change in Priority

Something had to happen...and it did. Issues regarding integrity and system sustainment made the national news. As many in leadership were criticized for ignoring sustainment of nuclear systems, attitudes were quickly forced to change, studies were commissioned and led by some of the biggest names in the nuclear business which resulted in recommendations on how to 're-invigorate' the nuclear business.

It took a while, but eventually it was recognized that nuclear weapons systems, and certainly the weapons themselves, were different and should be treated differently than conventional systems. Accountability began to be discussed and referenced in support of the nuclear enterprise. But issues remained.

Resourcing a re-invigorating nuclear enterprise was expensive, few government experts remained in the nuclear business, the industrial base had dwindled, all nuclear systems (ICBM, SLBM, Bombers) needed to be replaced, organizational support needed to be re-done. Many of these and other issues were identified by the previously mentioned studies which lent a necessary measure of credibility to the re-invigoration effort.

Some recommendations of the studies that took place, four-star general in charge of a new nuclear major command – AFGSC); an acquisition organization specifically dedicated to AF nuclear – Air Force Nuclear Weapons Center (AFNWC) and a two-star Program Executive Officer; an Air Staff directorate (A10) dedicated solely to the nuclear mission. These actions provided a renewal of the ICBM nuclear enterprise and gave hope that eventually a

replacement for the MM III might actually happen.

So, nothing is easy when dealing with the US government and the effort to support a new missile was no different. The LBSD AoA was completed, a budget built, and the importance of the effort recognized. The sticking point? The budget. The AF leadership spoke in platitudes that the nuclear enterprise was their number one priority at almost every opportunity, then the budget numbers hit them. While it was still constantly mentioned as the number one priority, it was considered unaffordable – it clearly wasn't the number one priority. The replacement was put on hold for 10 years for a less expensive MM III life extension through 2030. It was recognized at the time that MM III end of life was a real thing and this would be the last life extension effort because the next was likely to be as, or more, expensive than replacing with a new more capable system. Whether knowingly or not, this delay of new ICBM program put a crunch on any time margin between sustaining the now very old MM III and transitioning to a new system.

AFGSC, to their credit, recognized the lead-up time needed to begin a replacement program and developed a new ICD, calling it the Ground Based Strategic Deterrent with updated capability requirements and anticipating a life through 2075. With the requirements defined, an AoA was accomplished which took into account the political climate of acceptance for modernizing all nuclear systems, while managing resource requirements. The manpower, funding and industrial base needed to pull off the effort, not only to replacing the missile itself, but building new launch facilities (LF) in existing silos and new Launch Centers (LC) most in existing locations, the communications linking all facilities, secondary launch platforms, support equipment, transportation equipment, test facilities at Vandenberg and many other areas that need to be acquired. After all that, make sure it's nuclear certified. Oh, and keeping the 50-year-old MM III weapon system fully operational for another 10 years while you do all that and then transition to the new system is going to be crunch the schedule dramatically.

Acquisition of GBSD

The planning and execution of an extensive new program may be centered around the acquirers at the SPO, but external stakeholders are a constant source of taskings, oversight, and requests for meeting that challenge the time and manpower of the SPO. While most of the requests are legitimate, it doesn't eliminate the fact that the drain on the SPO's resources are real. The Congress, OSD, Air Staff, AFGSC, STRATCOM, National Nuclear Surety Agency (NNSA), and many others need to understand the progress of the program, resources requested and expended, reliability of software, hardware and integration, nuclear certification requirements, and many others.

So there's a lot of things happening to, and around,

the SPO and external stakeholders. An important, probably the most important, challenge to GBSD program success is the Prime Contractor. This is the contractor that's going to actually build the replacement system. It's easy to just brush past the term, "replacement system", but keep in mind this refers to a completely new missile, 450 new/completely redone LFs, up to 45 LCs, all new facilities at Vandenberg to support training, greatly expanded software, all new ground and support equipment, etc. And the contractor is pushing as hard as the SPO to deliver the new system on time. And while the task is daunting, new tools have been developed to advance the ability of the SPO and contractor team, things like digital engineering and agile acquisition.

So, how's the GBSD program progressing? While there were many who doubted whether an infant MAJCOM and traditionally sustainment organization could pull this off, the team has met every milestone and is actually reinventing acquisition just as ICBMs under Gen Schriever established the foundation for "systems engineering". After completing the Materiel Solution Analysis Phase which included a review of the AoA results and development of a draft Capability Development Document (CDD), the program successfully met the Milestone A in the acquisition process. The successful Milestone A included, not only the draft CDD and the AoA, but also multiple statutory and regulatory requirements. A successful Milestone A (MS A) is an investment decision to commit resources to enter a Technology Maturation and Risk Reduction (TMRR) phase of the acquisition process. Post-MS A is prior to the program becoming official, but calls on the AF to recognize and fund the effort to prepare for an official program decision at Milestone B (MS B). A successful MS B allows the official program to enter the Engineering and Manufacturing Phase (EMD) of the program which will lead to production. In September 2020, the GBSD team successfully met the MS B and proceeded into the EMD phase. EMD can be lengthy and strains the budget and schedule since the GBSD program has so many areas that need to be developed.

Maintaining the schedule is extremely critical to successfully replacing MM III. The schedule has to be very precise to ensure the timing of various deliveries. If, for example, the missiles are scheduled for delivery in 2029, but the modification of the LFs has been delayed significantly to perhaps 2031, doubt creeps into the total delivery schedule. Questions like, "do we stop, or slow, funding to the missile?" Simple question. But when asked by Congress, OSD, and possibly Air Staff, program resources become susceptible to reductions. Fighting off the notion that the program is broken and needs realignment is a difficult task. And with a program like GBSD billions of dollars could be at stake. It would also put pressure on MM III sustainment.

GBSD is recognized by all departments and Congress as a very expensive and very complex program with a very tight schedule. Now throw in COVID-19 restrictions and yearly resource uncertainty with Congress' Continuing Resolutions

(CR) – every year Congress misses the 1 Oct deadline to produce a budget and instead continues the business of government with a limited CR, pressure to maintain schedule had more attention.

The good news is that the GBSD program is proceeding very close to its published schedule. The team at the SPO is exceptional in terms of work ethic, professionalism, and expertise. The MAJCOM, STRATCOM, NNSA and other external DoD and Department of Energy partners are committed to providing a high level support. The support at the Pentagon is very strong and hopefully will stay that way for the foreseeable future. Congress has recognized the modernization of the nuclear triad as a hugely important aspect of national defense.

So, what's next for the GBSD Program? The GBSD team continues its daily grind in concert with the Prime Contractor and respond to external forces to meet the performance needs of the next generation ICBM while emphasizing the need to remain on schedule and budget. It's an exciting time for the next generation of ICBMs, but it's a long road and support and resources must remain in place to ensure the land-based leg of the nuclear deterrent will continue to support and defend the nation.

The LBSD AoA – by Lt Col Jay Block, AAFM MbrNo L758. *Rio Rancho, NM*

In 1995 when I was assigned to Minot AFB as a brand new 2nd Lt maintenance officer, I could not have imagined, like many of you, the path we would embark on and the exciting things we would be doing for our country. Nine years later I arrived at AFSPC as an action officer assigned to AFSPC/DRM to be part of the MM III follow-on. I was excited to be part of the ground floor working something that our country needed. I was also excited because after maintenance and operations tours and an acquisition assignment leading the Rapid Execution and Combat Target (REACT) Service Life Extension Program (SLEP), I felt I had the skillset to help move this new system forward in some small way to the next level. During this time, the MM III ICBM was going through numerous modernizations efforts across the system as I mentioned above. These efforts were designed to ensure MM III would operate to 2030 and possibly beyond. I saw this as a problem, and I will explain a little later.

The MM III was deployed in the early 1970s and over the years, several modernization efforts were incorporated across the system from REACT in the LCCs to numerous modernization efforts on the ICBM itself, and the LFs. It was in this environment during my DRM assignment that I was tasked to write the LBSD ICD.

As a senior Captain in the headquarters, this was the first major staff work I was ever assigned and I was eager to start the process. Looking back, I was impressed with

the amount of expertise I had experienced with numerous professionals in the operations, maintenance and acquisition communities. However, two officers stood out who I worked with day-to-day, Maj Curtis Hunt and Maj Trevor Flint. Thanks to them and with the guidance of Col L.B. Mobley and Col Rick Patenaude I was able to receive Joint Requirements Oversight Council (JROC) approval of the ICD with no questions and no action items. I remember standing there dumbfounded--there were no questions from these senior leaders? I got out of that room as soon as I could! Our next step was putting a team together of active duty, government civilians and contractors to conduct research, modeling and simulation, and evaluation of different follow-on solutions. This was the AoA phase of LBSD and this would take up to two years to conduct at a cost of approximately \$10 million. Our incredible subject matter experts conducted the analysis and wrote an in-depth report detailing various alternatives for a follow-on ICBM from basing to nuclear command, control and communications to new maintenance, security and operations concepts. This was very exciting working on this project with so many talented people and agencies. Through this process, there were serious disagreements between agencies as expected but one thing I came to realize that helped me through this process was that the vast majority of people agreed we needed a new viable and robust nuclear deterrent. However, agreeing on the path to get there was very challenging. The other benefit of the LBSD AoA was bringing the conversation forward around several communities regarding the importance the land-based system is and why it is needed. Being in attendance in many briefing rooms either listening to experts and senior leaders pushing a new program was an education I knew I would not receive anywhere else. Watching senior leaders prioritize and debate the nuclear issues of the day was something I will never forget.

I have been asked over the years why LBSD never went forward. I tell people it wasn't one thing, but several. In 2004-2006 while I was working LBSD, we were in the middle of two wars and getting ready for a surge in 2007. The dollars to fund LBSD for the next 20 years through the acquisition process just weren't there. Additionally, the nuclear deterrent mission did not have the traction inside the building at AFSPC. Space was the priority and we knew it. The motto in the building was "If you ain't in space, you ain't in the race." So, even getting strong advocacy through our own staff was difficult. Lastly, the MM III was in the middle of serious modifications as I explained earlier to extend the life of the system from 2020 to 2030, so why do we need a new system now? As we all know, luck and timing is critical in one's career and it's the same in the acquisition process. We didn't have either one for LBSD.

But a few years later things changed. In my opinion, things it started with the Minot incident in 2007. The spotlight was on the nuclear community which created an opportunity to move the enterprise forward in regards to injecting

much needed funding into human capital, new programs and ramping up our industrial base. Over these past 13 years we have seen it come to fruition and now we are finally fielding a new ICBM in for the first time in almost 40 years.

Looking back over my career in ICBMs and the DCA mission I feel blessed. I am blessed because of what I was able to learn from great enlisted/officer leaders who taught me so much in regards to maintenance, operations, acquisition and how to push the system to acquire that much needed advocacy. That has helped me in my post-career in industry and as an elected official. I will always be a strong advocate for our nuclear enterprise and we must continue to educate the American public, even those in our own enterprise about the criticality of these weapons and why deterrence matters. We must always remember that we use nuclear weapons every day in this country to deter, assure and dissuade. I am still very proud to be in this business and I am very excited to see the newest ICBM fielded with a sense of pride that I had a very small part to play around great leaders who may not be in the history books but who had huge impacts in our national security.

The GBSD AoA – by *CMSgt (Ret) Shane Finders, AAFM MbrNo L761, Bossier City, LA and Col (Ret) Deb Kirkhuff, AAFM MbrNo L544, Kaysville, UT*

Revelations within any society can be started by the masses or by leadership. In the case of ICBM reinvigoration, it took Presidential focus and bipartisan congressional backing to get the GBSD train moving. That focus manifested itself in the form of the 2010 NPR. That document was a proverbial reset in thinking, refocused the defense of the nation on strategic systems, and ultimately shaped the GBSD AoA. It recognized the massive achievements of the MM III system, but identified recapitalization was an overdue bill, repeatedly traded for capabilities required to fight the Global War on Terrorism (GWOT). However, threats come in many forms. In the sense of strategic capabilities, indicators of our adversaries' technological advancement and mammoth investment were not fully recognized and matched over the last two decades. Deterrence is predicated on retaining a credible capability that prevents our potential adversaries from gaining a warfighting advantage and give pause should they contemplate the use of weapons of mass destruction. GBSD matches the capabilities of our adversaries, but more importantly, postures our systems to economically, efficiently, and effectively remain viable for the next 50+ years. The AoA was the foundational effort that analyzed potential material solutions and varied applications and set the stage for nearly every approach currently in work.

The Pre-work

Before GBSD could get to its current EMD phase the AF had to complete numerous studies according to the Joint Capabilities Integration and Development System

(JCIDS) process outlined in the JCIDS Manual. Steve mentioned some of these products in his article: The Capabilities Based Assessment, the ICD, the Materiel Development Decision (MDD) brief and finally the AoA. In 2010, AFGSC performed an ICBM mission set Capability Based Analysis (CBA). The CBA report detailed capability gaps and platform shortfalls. After the problem set was defined, members of AFGSC and AFNWC began a concept characterization and technical descriptions to frame potential material approaches, including a MM III life extension option.

In August 2012, the ICD for GBSD was briefed to the Joint Requirements Oversight Council (JROC) and validated the need for a modern ICBM. The ICD was approved by the Joint Staff as documented in the JROC Memorandum 117-12. The Director, Cost Analysis and Program Evaluation (D, CAPE) issued AoA study guidance for development of an AoA to evaluate alternatives to replace, refurbish, or modernized the ICBM system. In May 2013, the GBSD AoA Study Plan was developed and on September 8, 2013, was approved by the D, CAPE. At the same time the MDD was issued which formally kicked off the AoA.

The AoA Team

OSD Cost Assessment and Program Evaluation (OSD/CAPE) chartered the analysis and oversaw the preparation, planning, execution, and reporting of the AoA. AFGSC was tapped to lead the analysis, with Maj Gen Clint Crozier named as the GBSD Study Director, Mr John Correia, Study Lead, and direct support and partnership provided by the AFNWC team led by Mr Anthony (Tony) Rendon. They quickly assembled a team of experts necessary to evaluate threats, technologies, vulnerabilities, effectiveness, and risks preparing to execute a 24-month study. However, as the kick-off date approached, OSD/CAPE asked the team to truncate the AoA timeline and reduce the budget, but not compromise quality. This was no small task, but legacy analysis (2006 LBSD AoA) augmented many areas of the effort.

Completing the Concept Capabilities Technical Document (CCTD) prior to AoA initiation was a key time-saving effort as the study team would have had to complete those before starting AoA work.

The AoA study team was comprised of the Technology Alternative Working Group (TAWG), the Effectiveness Analysis WG, the Employment Concepts WG, the Cost Analysis WG and the Threats and Scenarios WG. The study director (AFGSC/A5I) led the Working Integrated Product Team (WIPT) and was responsible for coordinating actions of the various working groups.

The busiest WG is always the TAWG. Team member Don Jensen recalls, "During the pre-AoA period, following two Requests for Information from industry and numerous visits to USAF and contractor facilities, we developed nine missile alternatives. Once we got started with the AoA, a couple of the alternatives were eliminated per OSD direction and a couple other alternatives that were variations of

the remaining six alternatives were created. One was a mix and match approach that changed based on the intended mission rather than a homogenous fleet. The TAWG developed a process for concept development and analysis that took the hundreds of possible combinations down to the reasonable 8 missile alternatives, 4 ground (command and control or C2) alternatives that were combined with basing approaches (although there were 4 main types of basing, some had variants), and 2 security system alternatives. The alternatives were intended to be representative of the different technologies with the option for tweaks once a specific technology was selected. We had Air Force Research Laboratory - Edwards run Program to Optimize Simulated Trajectories for the alternatives to help us refine the performance of the various technologies. Not all missile and basing/C2/security alternatives were paired together, but there was good representation of how the different technologies could work with each other.”

The First of Two Phases

The AoA was quickly divided into two distinct studies; basing and capability. Basing was executed first and looked at nearly every possible option for possibilities of enhanced survivability. Where was the best possible location for the follow-on system? Candidate deployment options included ideas of tethered/canisterized systems in the great lakes, in-land river deployed submarines, behind large south-facing mesas, road mobile, remote deployed below-ground tunnel-based train networks to name a few. In the interest of completeness and objectivity, no rock was left unturned. The evaluation criteria was extensive and comprehensive, including, cost analysis, environmental impacts, public interface requirements, system exposure, survivability, maintainability, adversarial cost to attack, our ability to retain retaliatory capacity, and manpower to operate just to name a few. At the end of the evaluation, two viable options remained; fixed silos (MM III reuse) and a hybrid of fixed silos and a limited force of road mobile missiles.

The second phase

After basing was decided, threat-based assessments were done on all facets of the system and evaluation of material approaches for flight, ground and support system infrastructure began. Missile sizing was widely evaluated including MM III refurbishment, MM III-like sizing, commercial lift vehicles, D-5 in current silos and small missile options for applicability. The need for margin in range-to-payload, flyout survivability, safe transportation/handling/storage, and procurement/integration costs were critical elements that led to the selection of an enhanced, three-stage, solid fueled rocket motor assembly that employed a larger liquid fueled post-boost assembly. Strategic Guidance options and varied levels of accuracy was evaluated for deterrent effect. A key finding was technology existed to enable “better that

Peacekeeper” accuracy was available and cost-efficient to procure. This was critical to closing performance gaps.

Varied reentry system applications were also evaluated for cost and effectiveness. Numerous solutions were evaluated, and viable solutions were identified that enhance strategic capabilities and survivability. Other technologies evaluated included Protection Level-1 resource transportation/Launch Facility security applications, command and control systems, smart information systems employment, and possible secondary launch operating concepts. In aggregate, the potential to reduce the number of Launch Control Centers and drive other manpower efficiencies were assessed and deemed viable options. Costs of potential solutions were reported on all elements.

Nine months after the start of the AoA, the AFGSC and AFNWC team presented their final report to the OSD/CAPE-led Study Advisory Group (SAG). The SAG reviewed the findings and accepted the report in its entirety. This landmark report was a culmination of a high-pressure, time sensitive, critically-valued effort. Analysis of this scope had never been previously accomplished in such a short period or at a low cost and was lauded “the roadmap for all future AoAs to follow.” The Air Force subsequently used the AoA results to develop the Draft Capabilities Description Document. With the official “sufficiency” ruling, the race was on to secure funding and start the process towards Milestone A, the farthest this process had gone since Peacekeeper was approved.

The CDD codifies the first-ever set of ICBM Requirements and enabled the prompt/effective GBSD acquisition effort.

Post GBSD AoA/Pre-Acquisition Effort – by CMSgt (Ret) Shane Finders, AAFM MbrNo L761, Bossier City, LA

Satisfaction...the feeling the team had as the AoA concluded and was accepted by the OSD-led SAG on 1 July 2014. We had cleared the next level of analysis and it was a big one. However, we were directed to continue development of system level, capability-enabling technology. In concert, AFGSC immediately began framing “draft” requirement. Schedule pressure was on as the SPO stood up a small and highly performing organization of GBSD engineers and program managers to look at the problem set and start acquisition exploration. The challenge was identifying who the players were from industry, how they could possibly solve performance gaps, and reinvigorating an industrial base that hadn’t been asked to accomplish this type of work and scale since MM III was fielded in the early 70s.

Post-AoA work

Although the SAG directed the reuse of current silo property, there was still interest in studying the enabling technology (weapon system command and control (WSC2) and guidance mechanization) that would enable a pivot to a road mobile option if it was called upon in the future. Industry began looking at key technologies well before the Requirements were codified. They explored the “art of the possible”

based on well-shaped, yet, “draft” system Requirements. Early technical maturation studies were contracted to examine candidate guidance, communications, and booster technology. These would prove valuable to future developments and serve as “starter programs” to ignite the industrial base. They evaluated various material approaches to the performance of any follow-on system and reduced schedule and performance risk.

Requirements vs. Acquisition

Writing Requirements was complicated. AFGSC Requirements lead, John Correia was tapped to develop the “draft” system Requirements supporting MS A mandates. Fact be told...in the roughly 60 years of ICBM of development and operations, codified Requirements had never been written for any system. Rather, weapon system specifications were relied upon for all acquisition/life extension efforts. GBSD was (and still is) assumed to operate through 2075 and may be called on to deliver a much longer service life. System Requirements had to define performance characteristics, endure/remain relevant though out the lifecycle (regardless of threat advancement), and not hamstring aerospace providers material trade-space. The problem set was framed looking at the totality of capability...a system of systems. This was paramount to delivering compounding operational effects and enabling a fresh look at the construct of a new system.

The first Senior Program Manager (SPM) was Col Chris Green. Steeped in high profile Air Force acquisitions, he understood the need for “Requirements” to properly frame the problem set and focus industry on what was needed operationally. His team was small, yet high performing, and very motivated. He led many collaborative reviews, arbitrated Requirements and acquisition strategies, and architectural frameworks.

Col Green enjoyed the talents of a young Lt Col Bartolomei as his deputy. On his first day, he met with AFGSC staff who had been working the issue for 4-5 years and discussed approaches to a new system design. It was interesting to see his initial thoughts, as he arranged all critical subsystem elements in a horizontal structure with systems engineering “beneath” the structure. This drove very “pointed” (and sometimes argumentative) conversations between the two organizations. Ultimately, this approach developed into the roots of a robust systems design/evaluation process grounded in Model Based Systems Engineering.

Lt Col Bartolomei tirelessly wrestled with acquisition approaches. Would we sink new missiles in MM III silos and reuse the MM III WSC2? Would we incrementally attack sagging infrastructure like the fast-rising b-plug and other aging system components? Or...could we use the 50 warm (empty) silos to perform full system recapitalization and fielding? I remember many late evenings of brainstorm-

ing in his office about the many ways to skin this cat. We knew we had to economically execute this effort and deliver the capability in the timeframe the nation needed it and make things better for the missile wings.

The Decision Made Easy...

Post-AoA, Brig Gen Crosier, Director AFGSC Plans, Programs and Requirements, chartered numerous review teams including leaders from various Federally Funded Research and Development Corporations, and experts in ICBM and Naval operations. These teams gave advice on draft Requirements and acquisition approaches, reporting opinions to the Senior Executive Steering Group (SESG). The SESG was comprised of the AFGSC/CC, (Commander), Air Force Materiel Command/CC, SAF/AQ and USSTRATCOM/CV (Vice Commander). They also took numerous briefings on candidate approaches and were presented every ounce of costing/funding data, what the unit would be tasked implement acquisition options, and what would be gained or lost operationally. Lt Gen Kowalski, USSTRATCOM/CV was adamant GBSD would have to be developed, tested, procured, and fielded as a full system for synergies of Requirements and implementation to be fully realized. A table slap was head from the four principals and we had our marching orders.

The Challenges Continued

John Correia and his team continued refinement of Requirements and moved towards coordination and concurrence through the Joint Requirement Oversight Council (JROC). As the final document took shape, we realized the compounding effect of the combined Requirements; improved reliability, enhanced security systems, line replaceable unit maintenance concepts, increased security force situational awareness, improved WSC2, and reduced numbers of Launch Centers were just a few. The AFGSC/CC, Gen Ray dubbed these synergies a “value added proposition” that would return early development and procurement investment to the American taxpayer in the form of reduced lifecycle operating costs and reduced operational risk to his commanders.

The Payoff

Col Heath Collins had taken over when Col Green retired. He pushed the development of the acquisition strategy and the formation of the statutory-required documentation needed to move toward system acquisition. AFGSC was very fortunate to have superior officers, teammates and acquisition experts over the five years following the AoA and leading up to the Engineering and Material Development phase.

The CDD was finally codified by the JROC on 19 Jun 2019. AFGSC took the overarching CDD Requirements and worked diligently with the SPO to mature a Weapon System Specification that further defined the performance of the new system; the requirements now on contract for development.

A newly promoted Col Jason Bartolomei returned to

AAFM Newsletter

Volume 28, Number 4

December 2020

the GBSD program as the Senior Material Leader and senior acquisition officer. He immediately resumed his partnership with AFGSC and led a team of experts as they architected a digital engineering framework. This work continues today as the Air Force model for acquisition, ensuring GBSD will be delivered on time, within budget, and meet operational warfighting demands.

About the authors: Steve Manley, Jay Block, Deb Kirkhuff, and Shane Finders are all AAFM members and retired missileers who operated and maintained ICBMs in their active duty career and are now serving a second career as defense contractors supporting various parts of our ICBM system. They each wrote their articles from a historical perspective as participants and do not represent an official Air Force position in any capacity.



Capt Frank and Col Burrell

Meet Your AAFM Members

In this edition of the Association of Air Force Missileers (AAFM) Quarterly Newsletter, we are starting a new section featuring you, the members of AAFM. Our goal is to write about an active duty AAFM member and then find another member who held the same job in the past. Many of you may have seen the article in the [Air Force Times](#) featuring Lt Col (Ret) Linda Tonnies and her daughter Lt Taylor Tonnies, who 26 years apart turned keys on a Minuteman (MM) III flight test at Vandenberg Air Force Base (AFB), CA.. Both mom and daughter were crew members at Minot AFB, ND. Linda and her husband Lt Col (Ret) Keith Tonnies are part of the “joint” membership plan - we just need to convince Lt Tonnies to join AAFM.

Following on the Vandenberg launch theme, this quarter we feature Capt Stephanie Franks at the 576th Flight Test Squadron (FLTS) at Vandenberg and Col (Ret) Paul Burnett who was part of the what was then called the Top Hand program, returned as a Task Force Commander and later commanded the 595th Test and Evaluation Group

which included the 576 FLTS.

We asked each a series of questions:

Capt Stephanie Frank, Active Duty Missile Assignments:

2011-2012 Vandenberg AFB, CA (392nd Training Squadron)

2012-2013 FE Warren AFB, WY (321st Missile Squadron (MS), 90th Operations Group (OG))

2013-2015 Minot AFB, ND (740 MS, (91 OG)

2015-2018 Fort Meade, MD (National Security Agency)

2018-Present Vandenberg AFB, CA (576 FLTS)

How did you get into the missile business?

Like many missileers, I like to say “missiles chose me.” I commissioned out of AF Reserve Officer Training Corps (AFROTC) and was originally slated to be a 61CX (chemist); however, the year I commissioned, the Air Force swapped a majority of the 61X AFSC billets to undermanned career fields. A couple of months before commissioning, my phone rang and my AFROTC Detachment Commander said something along the lines of “well Cadet, looks like you’re going Space and Missiles, so get ready to be cold!” Looking back at my career thus far, I feel so fortunate that the Air Force had different plans for me than my original plan to be a chemist. I have met some of the most amazing, genuine people and have been able to be a part of some incredible teams. I wouldn’t trade my time for anything else.

Tell us a little but about your assignment in the 576 FLTS

When I found out about being selected for the 576 FLTS, the only mission set I knew about was Operational Test Launches (OTLs). When I arrived, I quickly learned that the 576 FLTS does significantly more than just OTLs. I have been a part of operational test and evaluation for critical software that supports the weapon system, helped out with future Tactics Development and Evaluation (i.e., testing non-material solutions for improving our weapon system and how users utilize the weapon system), been a part of modernizing the weapon system, and lastly, been on the launch team that sent a MM III down range. We have an amazing Total Force team of Airmen that ensure our mission gets done, and there is nothing like knowing you are making an impact to ensure the weapon system is effective and suitable for our brothers and sisters up north!

What got you interested in AAFM?

The missile community is tight knit with a proud heritage, and in order to ensure it stays that way it’s important to support organizations like AAFM. I have met so many people who have retired or separated that have been a part of this unique mission through this organization, and I love talking to them and seeing the differences between “then” and “now”.

If you could share one thought with our readers, what would it be?

You don’t realize how true the statements “it’s a small Air Force” and “your career goes by fast” are until

you're staring at the last half of your career in front of you and wondering where the last ten years went. Like everyone, there have been ups and downs on my journey, but the people I have met and the teams I have been a part of have made my time in the missile community one that I wouldn't trade for the world. So, if you focus on building positive relationships with your teammates and look after one another, you will be proud of your career whether it's 3 or 30 years.

Col Paul J. Burnett, Retired

Missile Assignments:

I've never stopped being a missileer ... it'll stay with me until all my actions are complete and the clock has been advanced for the final time, as all lines are lost and I eventually go status out.

1978 Commissioned through AFROTC at the University of Louisville

1978-1979 Vandenberg AFB Student at 4315th Combat Crew Training Squadron (CCTS)

1979-1983 Minot AFB, 91st Strategic Missile Wing (SMW), (740 Strategic Missile Squadron (SMS), 91 SMW/DOTI (Instructor), and 91 SMW/DOV (Evaluator)). Participated in a Minuteman III "Glory Trip" Follow-on Operational Test (FOOT) Launch

1983 Minot AFB 57th Air Division, (Executive Officer/Missile Staff Officer)

1984-1987 Vandenberg AFB, Project Top Hand, 1st Strategic Aerospace Division (STRAD), Test and Evaluation Directorate (TE), (What would now be considered a part of the 576 FLTS)

1987-1990: Offutt AFB, NE, Headquarters (Hq) Strategic Air Command (SAC), (XPQ later XRQ) working acquisition of future intercontinental ballistic missile (ICBM) systems, specifically, most of my time was on Peacekeeper Rail Garrison

1990-1991: Maxwell AFB, AL, Student at Air Command & Staff College

1991-1994: Pentagon, Hq USAF Multiple ICBM positions ranging from Program Element Monitor (PEM) for Minuteman/Peacekeeper/Air Launched Cruise Missile Weapon Systems for AF/XO to leading Space/C4I/Nuclear Deterrence Team for AF/PE

1994-1995 Newport, RI, Student, Naval War College, College of Naval Warfare

1995- 1998: Minot AFB, 91st Maintenance Squadron Commander, Task Force Commander, and Deputy Operations Group Commander, 91st Space Wing

1998-2000: Peterson AFB, CO, US Space Command

2000-2002 Schriever AFB, CO) 595th Test and Evaluation Group (TEG) Commander (later Space Group) which included the 576 FLTS

2002-2006: Hq Air Force Space Command (AFSPC), XP

(later A8/A9) ... started as XPP (i.e., POM building) and spent majority of my time as Deputy XP (A8/A9)

How did you get into the missile business?

Coming out of college my less than perfect eye sight kept me from being pilot qualified and I had no ambition to be a navigator ... so I figured being a SAC Missile Launch Officer was my best course of action. I was also drawn to the opportunity to get a graduate degree through the Minuteman Education Program. However, I soon found out I enjoyed being a "SAC Trained Killer" in the missile business and thrived upon the challenges that came with the profession.

Tell us a little but about your assignment in the 576 FLTS

Back in the olden days of SAC in 1984, missileers had to compete for, and be board selected to get into the ICBM test program through a process known as Project Top Hand. After being one of the dozen or so selected through this yearly process, my wife and I packed up our belongings in late December 1983 and moved with our one-year old daughter to Vandenberg to be part of the 1 STRAD/TE family. As a Minot crew member, I had participated on a Glory Trip FOOT shot in January of 1982, so I'd already heard the mission brief on SAC's ICBM test and evaluation program and understood how important it was to gather test data. I had also heard the 1 STRAD Commander passionately talk about how important it was for us as a nation to "Demonstrate Deterrence" to potential adversaries (remember this was SAC during the Cold War) ... and I was anxious to join TE and get started!

On my very first day in TE I found out I had been assigned to the "Puppy Farm" for training. My newly assigned gray metal desk was turned over, my bowls of water and puppy chow were properly laid out, and newspaper covered the floor of my area "just in case" since I wasn't properly trained yet! As I soon found out, this "puppy farm greeting" was a tradition that every new Top Hander assigned to the operations division (aka Puppy Farm) experienced as they started their three-year training process. And so, the journey began....

Over the next three years I completed multiple training courses related to the ICBM business and testing. These included: training for and completing each of the launch countdown team positions; time in the 4315 CCTS (school house) learning the various ICBM system configurations (other than the MM III AM/CDB configuration at Minot that I came from); time with the ICBM maintenance community completing ADSAC (SAC Additional Duty Career Development Program) for award of a maintenance AF Specialty Code (AFSC); time with the Western Test Range personnel learning how the range worked and their various sensor capabilities (to include working launches and launch support for other than our SAC test programs); how to be a test manager; time with the various defense offices, contractors and labs that supported the ICBM programs; and finally numerous courses in everything from the Department of Defense weapon system acquisition process to the planning,

AAFAM Newsletter

Volume 28, Number 4

December 2020

programming and budgeting system. The training was never ending and one of the best perks of the assignment. And, if there was something ICBM related that you wanted to study that currently wasn't part of the program, all you had to do was ask and it would be made available. Needless to say, by the end of the assignment we all left with a great working knowledge of ICBMs and how to conduct a test.

What struck me most about my assignment in TE was the quality of the people assigned to the organization. It started at the top with the 1 STRAD Commander, Maj Gen Jack L. Watkins. Every week he would have us form up in front of the headquarters building flagpole for retreat. After the music stopped and the flag came down, Gen Watkins would have a short speech about how important our daily efforts were for the security of our nation. Looking back, I now believe this was one of his ways to help keep us focused on the mission at hand and to keep us from becoming complacent. The older I get, the more I appreciate his leadership style and what he did to motivate us.

All of the 1 STRAD/TE personnel, from the TE himself (a respected colonel) down to the youngest administrative airman, were handpicked. There were no average performers in the organization - everyone was a top shelf, highly motivated, proven professional (even the Titan guys). This created an interesting dynamic whereby everyone wanted the mission, the organization, and the people to succeed - we were a close-knit family that worked hard and played hard together. Consequently, the TE organization was always rated "Outstanding" on inspections, received more than its share of awards, in-resident school selections, and below the zone promotions. Graduates of the program were highly sought after for follow-on ICBM assignments at the major command and Air Staff level. Many of us fellow "graduates of the puppy farm" kept in contact throughout our careers and remain trusted friends.

Fortunately, my time with the test and evaluation business wasn't complete when I was reassigned in August of 1987 to Hq SAC. Several years later, as a squadron commander, I had the pleasure of leading a Minot test launch task force for a FOOT shot at Vandenberg. And in June of 2000, I had the honor of being the first 595 TEG Commander for AFSPC. The 576FLTS was one of the squadrons assigned to the 595 TEG and I spent a great deal of time with them demonstrating the deterrent value of our nation's ICBM forces.

What got you interested in AAFM?

When I went back into the missile field as a Squadron Commander, I experienced first-hand how the AAFM was making a difference with our troops and trying to preserve our missile heritage. Then, I heard Charlie Simpson give his pitch at the base club and I knew I had to support the effort and be part of the team.

11
If you could share one thought with our readers, what would it be?

First and foremost, the ICBM mission is just as important today as it has ever been. For those of us that are no longer on active duty and in the arena, I believe ...

Even though we are a little older, a little slower, and probably a lot heavier, we are still serving ... and an important part of our mission is to support those that are currently in the arena fighting the good fight. It's our responsibility to pass on our aged knowledge, wisdom, and BS to the next generation. Just like those who came before us did for us. Or said in a slightly different way, lets help the youngsters learn from our past so they won't make the same mistakes we did.

For those that are in the arena today fighting the good fight, I believe ...

The Missile business is a small world, and it gets ever smaller the longer you stay in it. Everybody knows everybody else, or at least they know somebody that knows you. Consequently, you need to make the best of every opportunity that comes your way and be sure to do everything you can to be competitive for future opportunities.

And finally, for those in the test launch arena today, something I learned from the NCO bandits in launch analysis (something besides "good" launch directors provide a case of "cool refreshing beverages" for the analysis team).

Once the keys have been turned and the missile clears the ring ... *It Is a Successful Launch* ... anything else that happens is just an accuracy concern!

Can We Change Your Newsletter to "Electronic"?

Each year nonprofits look for new ways to bring in extra revenue to cover operating costs or trim the costs to stay within the planned budget. Our biggest expense each year is the AAFM quarterly newsletter. Putting the newsletter together and doing the technical editing is done by volunteers but the printing and postage expense drive an expense of nearly \$3,000 quarterly. To the 704 members who elect to get a hard copy each quarter, would you consider switching to the electronic version? Here is an advantage - you get the electronic version an average of two weeks ahead of the hard copy and you save our budget expense for other recognition and education programs. If interested, you can change your profile on line or send me an email at

Director@AFMissileers.org

loyalty and devotion to duty. For the rest of your life, you will recall with pride that you were once a member of that team.



*Maj Gen
Lutton
and
CMSgt Orf*



2020 Wrap Up: Looking Back and Charging Ahead - Maj Gen Michael Lutton, Commander, 20 AF, and CMSgt. Charles Orf, Command Chief, 20AF

Many of us may be holding our breaths as we count down the last several days of 2020; what a challenging year it has turned out to be. The COVID-19 pandemic changed many aspects of our lives, both personal and professional. We had to adjust how we perform our day-to-day operations, from implementing telework, figuring out virtual meetings, courses and professional development seminars, to how to best protect our missile alert force from the deadly virus. Chief and I are extremely proud of 20 AF Airmen and their families for the strength, camaraderie and work ethic they have shown during some of the most trying times for the nation. We know that both our Sentinel Warriors and their families had to make sacrifices to ensure our vital nuclear mission does not stop, under any circumstances - and we appreciate them more than words can express.

Although many of us might look back at this year as a rough patch, as a command we had many wins. Our modernization efforts are moving forward both on the Ground Based Strategic Deterrent (GBSD) and MH-139 Grey Wolf. The Air Force awarded an Engineering and Manufacturing Development contract for GBSD on 8 September to Northrop Grumman. The contract, valued at \$13.3 billion, is an investment in enhancing the United States nuclear deterrence, as the nuclear force remains the cornerstone of national security policy and fundamental in continued protection for the US and its allies. As most are aware, the GBSD ICBM is the follow-on to our current LGM-30G Minuteman III ICBM, which first became operational in 1970. GBSD will have increased accuracy, enhanced security and improved reliability as compared to today's nuclear alert forces.

Another milestone in ensuring the nation's nuclear deterrent remains safe, secure and lethal, is the addition of the MH-139 Grey Wolf. The new helicopter closes the capability gaps of the current UH-1N Huey in the areas of speed, range, endurance, payload and survivability. Recently, the

Secretary of the Air Force selected Maxwell AFB, AL, as the preferred location to host the MH-139 Grey Wolf Formal Training Unit. Their mission will be to train pilots in providing security and support for the nation's ICBM fields.

Additionally, following a successful Missile Procedures Trainer demonstration in August 2019, we successfully completed the electronic technical order (eTO) demonstration (Jan - Aug 2020) in the 742d Missile Squadron, Minot AFB, ND. This demonstration, designed to assess ICBM combat crews' ability to use eTOs during day-to-day operations, was the next step in developing and sustaining eTOs across the ICBM enterprise. We'll work with the system program office to refine eTO functionality and look to field in late Calendar Year 2021.

The command continues to take steps to foster an environment of dignity and respect. Diversity and inclusion committees have stood up at all 20 AF bases, and work hand-in-hand with Airmen and local leaders on various initiatives to ensure Airmen feel represented in their communities, both off and on base. We are committed to ensuring this doesn't turn into a 'program' but remains an ever-present part of the fabric of our command.

Lastly, Chief and I would like to thank the Association of Air Force Missileers for your continued support. Thank you for welcoming our Airmen into your communities and helping them feel at home; for sharing your past experiences with us and allowing us to share the latest developments in our mission. There is no doubt about it - we are stronger and more lethal when we work together, and you all play a critical role in the 20 AF team! Happy Holidays!

Missile Heritage Grants 2020

Each year, AAFM provides funds to museums for missile displays. To date, we have funded more than \$300,000 in projects to more than 30 museums. We honor members who have passed away in the year the grants are awarded by providing the grants in their memory. The complete list of deceased AAFM members can be viewed under the History and Preserving History and Heritage tabs at our website <http://www.afmissileers.org>.

A committee of three board members, Bob Parker, Jock Dodson and Mike Kenderes reviewed six applications for 2020 grants. AAFM funded 4 of the 6 grants for a total \$8,200. They were: \$2,000 to Peterson Air and Space museum for Minuteman III display enhancement project; \$1,200 to Ronald Reagan Minuteman Missile SHS for computers to allow visitor to interface with missile history; \$2,000 to Western Museum of Flight to develop a missile historical display; and \$3,000 to the Warren ICBM & Heritage Museum for Missile Display Graphics.

National Park Access for Veterans Free

On 10 November the the Department of the Interior announced that all US service veterans, as well as all gold

AAFM Newsletter

Volume 28, Number 4

December 2020

star families, will be granted free lifetime access to 2,000 locations and more than 400 million acres of public lands. A veteran is identified as an individual who has served in the United States Armed Forces, including the National Guard and Reserves.

Veterans must be able to present a Department of Defense Identification Card, a Veteran Health Identification Card (VHIC), a Veteran ID Card, or a Veteran designation on their state-issued driver's license to be able to take advantage of the program. Gold Star Families are next of kin of a member of the United States Armed Forces who lost his or her life in a qualifying situation, such as a war, an international terrorist attack, or a military operation outside of the United States while serving with the United States Armed Forces. The free entry program is now in effect. Application must be done in person at any National Park location.



5th Cavalry – Ft D. A. Russell

Do you have personal memories of the Bicentennial Wagon train passing through Cheyenne, WY, escorted by the 5th Cavalry? Col (Ret) Gary Bottorff, is looking for Air Force Missileers that may have participated in activities celebrating our country's two hundred year's history. Colonel Bottorff was the executive officer to the Wing Commander, Maj Gen Chris Adams, the 90th Strategic Missile Wing Commander during 1976.

As part of FE Warren's contribution, a group of some 20 Missileers "reorganized" the original 5th Cavalry that was sent West by Abraham Lincoln to protect the crews building the Western expansion of the railroad from the Indians. Their encampment later became FE Warren AFB, and Cheyenne.

Help Wanted For AAFM

If you are interested in joining the team that is working to share our message please see the needs below and reach out to Jim Warner for more information at Director@afmissileers.org or at 719-351-3562

1 - Do you have expertise in the GLCM deployment timeline. We would like to build on the ICBM timeline on our website but need your help.

2 - Are you a frequent user of social media? We are hoping to post information daily or weekly on ICBM historical events but need an experienced wizard or two to help.

3 - Are you interested in leading our Education team? We are looking for someone to chair and others to support our efforts to educate our Nation on the importance and the legacy of ICBMs.

As part of their ceremonial activities, the Calvary Unit escorted the Bicentennial Wagon Train (100 wagons) traveling West to East reenacting the pioneers moving West across the State of Wyoming on a three day trek. This and hosting the Bicentennial Train at FE Warren was yet another major contribution.

If anyone participated in these or other activities supporting this period of our Nation's history, Gary Bottorff would like to hear from you. He is hoping to capture these and many other war stories about the Bicentennial in a historical record. Please contact him at garybottorff@aol.com, or 703-591-2190.

Letters to AAFM

Address letters to AAFM, Box 652, Johnstown, CO 80534, or send by email to director@afmissileers.org. Letters may be edited, content/meaning will not be changed.

No letters this quarter, but a couple of comments from your Newsletter Editor

Missile Duty – The last three issues of Air Force Magazine have included a series of letter on missile duty. I contributed a letter to the December issue, clarifying points made by the original letter writer, plus disagreeing with some of his ideas. I referenced the contribution from some great bomber and tanker veterans who were sent to missile duty in the early days as SAC phased out systems and greatly decreasing flying duty slots.

We Found a Titan I – A recent Facebook post on one of the missile group pages had a photo of a Titan I at the Discover Park in Union City, TN. I was interested for two reasons – first, I had signed for missile 61-4496 when we accepted it from the Martin Company in 1962. The missile was in Mt Home AFB silo C-1. As Job Control Officer, I sighed for each of our ten missiles, including the spare. For many years, this missile was in storage at Huntsville, AL, and the Discover Park had it transferred to their new park, refurbished it, painted it white and marked it and mounted it vertically. The reentry vehicle is not accurate, but the missile looks good. The park also has a Titan II reentry vehicle on display. The second reason is that I was born and finished high school a few miles away in Trenton, TN. I had relatives in Union City, and, since our town theater was closed on Sundays (blue law rules) we went to movies in Union City on Sundays. High school friends have told me that I need to visit Discover Park, and I plan to in the next year or so.

New Members

We continue to welcome new Members to our Association, as well as those longtime members who have decided to convert from annual memberships to lifetime memberships. New Members can learn more about Member benefits by visiting the AAFM at afmissileers.org or by reviewing our Newsletter Archives that are part of the web page.

New Members since 30 September 2020 -

Pat Baum	Nicholas Eckenrode	Steve Manley	Donte Sullivan	New Life Members
Greg Campbell	Carli Frasier	Sterling Perry	John Wood	Doug Carmean
Cal Collier	William Lamb	David Sistrunk	Michael Woods	Thomas Richmond
John Douglas	David Kingsella			

AAFM Missile Heritage Store

Send this form to PO Box 652, Johnstown, CO 80534 or go online to afmissileers.org

See pictures on our store site

Lapel Pins – any two Pins \$10, any 6 \$25, and any 15 \$50

Missile badge: Silver 1 ¼ inch

Basic ___ Senior ___ Master ___

Missile badge with Ops Designator:

Basic ___ Senior ___ Master ___

AAFM: ___ Cuban Crisis: ___

Minuteman II Alerts: 100 ___ 200 ___

Space: Basic ___ Senior: ___ Master: ___

Challenge Coins: \$10 ea or 3 for \$25

AAFM ___ 3901 SMES ___ Cuban Crisis ___

AAFM 25th Anniversary ___

Missile Competition (Guardian and Global Strike)

Any 3 for \$15

2006 ___ 2008 ___ 2010 ___ 2011 ___ 2012 ___

2014 ___ 2019 ___

AAFM Logo:

Brief case: \$15 each ___

Ball cap: \$15 each ___

AAFM Patch (3" or 4") 2 for \$10 or 5 for \$25

Patches: \$10 each (Most are reproductions)

Subterranean Patch: ___

321 OSS instructor: ___

Cuban Missile Crisis: ___ w/ velcro ___

341st Missile Maintenance Squadron: ___

395th Strategic Missile Squadron: ___

Strategic Air Command patch, 4 inch with SAC Strip: ___

510 SMS: ___

341 SMW/SW/MW 50th Anniversary: ___

389/706 SMW Patch: ___

6555th Aerospace Test Wing: ___

Full Size Missile Badges: \$10 each

Missile badge:

Basic ___ Senior ___ Master ___

Missile badge with Ops Designator:

Basic ___ Senior ___ Master ___

Combat Crew Badge \$10 each

Books

A Cold War Legacy: Large, 700 page "Tribute to Strategic Air Command - 1946-1992" by Alwyn Lloyd. Many photos and histories of specific events, organizations and more \$30
Air Force Fifty: An Air Force Association coffee table book commemorating the 50th anniversary of the Air Force. Lots of photos, unit histories, personal stories, but almost nothing on missiles. \$20 ___

LeMay: Warren Kozaks' "The life and wars of General Curtis LeMay." \$20 ___

Broken Arrow : Second Edition of Joel Dobson's book on the '61 B-52 crash \$20 ___

Nuclear Express: Former SecAF and AAFM Member Tom Reed's book covering nuclear weapons development in every country who had or has a program \$20 ___

AAFM's Missileers and the Cuban Missile Crisis \$15 ___

Prints: \$15 each

Cuban Missile Crisis A06 on alert ___

Countdown 5,4,3,2 ___ ,1

The Guardians ___

AAFM CD and DVD Collections:

\$10 each set or \$25 for any 3

CD sets - AAFM and Historical Data ___ Early and

Airlaunched Missiles ___ Atlas D, E, F ___

Titan I and II ___ Minuteman I, II and III ___ C

Competitions and Peacekeeper ___ GLCM ___

Matador and Mace ___

DVD Sets - AAFM and Historic Videos ___

Atlas D, E, F and Titan I and II ___ GLCM ___

Minuteman I, II, III and Peacekeeper ___

Early Airlaunched Missiles ___

Air Force Space Videos ___

SAC ___ Competitions ___

SAC Memorial DVD - Dedication at Dayton ___

AAFM 2012 National Meeting at Malmstrom ___

The Groobers Missile Music CD ___

Taps for Missileers

MSgt (Ret) Roy Aldridge, an AAFM member, served in Minuteman I in the 341 SMW and 394 SMS, and at the Air Force Nuclear Weapons School, and lived in El Paso, TX.

Former Capt Charles T. Bolena served in Minuteman III in the 341 SMW and lived in Penn Township, PA.

Brig Gen (Ret) Elmer Brooks, an AAFM member, served in Atlas F in the 551 SMW, Titan II in the 381 SMW and was wing commander, Air Staff, Joint Staff, and on the Agena, Apollo and Gemini and lived in Potomac Falls, VA. Gen Brooks played a direct role in formulating the Intermediate-Range Nuclear Forces and the Strategic Arms Reduction Treaty in Switzerland.

CMSgt (Ret) Ben Hines, an AAFM member, served in Minuteman I, II, and III in 455/91 SMW, 90 SMW, and 351 SMW, and in the 3901 SMES and lived in Taylorsville, NC. Chief Hines recognized as "Mister Missile Handling" and was recently recognized as the longest serving civil servant in the state of North Carolina.

Col (Ret) Michael Jackson, an AAFM Life member, served in Minuteman I, II, III and Peacekeeper in the 44 SMW, 90 SMW, 91 SMW and 321 SMWs, 1 Strad, 394 SMS, BMO, and SAC), and lived in Colorado Springs, CO.

Major (Ret) Michael R Johnson, an AAFM member, served in Minuteman I and III, in the 91 SMW, 4315 CCTS, 4 ACCS, at SAC, and USAFE, and lived in Omaha, NE.

Maj (Ret) John Ransome served in Titan II in the 390 SMW and was in the first Minuteman CDB class sent to the 91 SMW.

Col (Ret) Julius F. Sanks, an AAFM Life member, served in Minuteman MM I, II, and III in the 44 SMW, 321 SMW and 341 SMW and at SAC as Director of Missile Maintenance, and lived in Cincinnati OH.

Maj Gen (Ret) Ralph Spraker, AAFM's Founding President, served in Minuteman in the 341 SMW, 90 SMW and SAC, and as Commander, 44 SMW, 351 SMW and 3901 SMES, in several Air Force Space positions, including first Commander, 1 SW, and Vice Commander, AFSPC, and lived in Colorado Springs, CO.

Association of Air Force Missileers - Membership Application

Complete and mail to AAFM PO Box 652 Johnstown, CO 80534 or log on to afmissileers.org

Membership Categories - Free for Active Duty Enlisted Annual (\$20) ___ Active Duty/Student (\$5) ___ Three Years (\$50) ___ Active Duty/Student (\$14) ___ Lifetime (\$300) ___ (Payable in up to 12 installments)

Name			Phone
Address			Email
City	State	Zip	Rank/Grade
Signature		Active Duty ___ Retired ___ Discharged/Separated ___ Guard/Reserve ___ Civilian ___	

Awarded Missile Badge - Yes ___ No ___

Can AAFM release this information - only to members and missile organizations? Yes ___ No ___

Include a List your Missile Experience including Systems and Units - e.g. - Minuteman, 90 MW, Atlas 556 SMS, HoundDog 319 BW, etc. Include all higher headquarters, training, test, evaluation or other special assignments.

Missileer's Trivia Quiz - The question in September's newsletter was: Name both the states that have had multiple ICBM weapon systems on strategic alert and correctly identify which specific weapon system each state.

Eleven States: California (Titan I at Beale AFB, Atlas D, E, F and Minuteman (MM) during Cuban Missile Crises at Vandenberg AFB); Colorado (Titan I at Lowry AFB, Atlas E and MM I and III from FE Warren AFB); Idaho (One Atlas E from Fairchild AFB, Titan I at Mountain Home AFB); Kansas (Atlas E at Forbes AFB, Atlas F at Schilling AFB and Titan II at McConnell AFB); Missouri (MM I and II at Whiteman AFB); Montana (MM I, II, and III at Malmstrom AFB); Nebraska (Atlas D at Offutt AFB, Atlas F at Lincoln AFB and Atlas E and MM I and III from Warren); North Dakota (MM II and III at Grand Forks AFB), MM I and III at Minot AFB, South Dakota (Titan I and MM I and II at Ellsworth AFB); Washington (Atlas E at Fairchild, Titan I at Larson AFB); Wyoming (Atlas D and E, MM I and III and Peacekeeper at Warren.). Congratulations to our Winner: Maj Cory Kuehn at Minot! Robert Brantley and Michael Binder also got them all but were a tad late; Julius Sanks, got the 11 states but omitted 2 systems in 2 states and Lt Col Douglas Carmean got 10 states, omitting Idaho. Congratulations to all!

December Question of the Quarter (this is easier) - Name by site designation (e.g. MM, LF A-06, 10 SMS, Malmstrom AFB) the most eastern, western, northern and southern ICBM sites that are/were on Strategic Alert. Send your answer/guess to imagi@rocketmail.com with the title "AAFM Quiz Answer" NLT 15 February 2021. The winner will be recognized in the March 2021 newsletter.

AAFM National Meeting - Salt Lake City 6-10 October 2021

Hotel Reservations - We will be using two hotels, the Marriot Courtyard and Hyatt House, side by side in downtown. The hospitality suite and all dinners and meetings will be in the Courtyard. The rate is \$99 per day including breakfast for two at both hotels. The Courtyard link <https://www.marriott.com/event-reservations/reservation-link.mi?id=1609879017352&key=GRP&app=resvlink> or call 801-875-4677 and use the code AF Missileers. Breakfast at the hotel you are staying in included.

The Hyatt House link is https://www.hyatt.com/en-US/hotel/utah/hyatt-house-salt-lake-city-downtown/slcxd?corp_id=G-AAFM or call 801-875-4677, use code AF Missileers. Breakfast at the hotel you are staying in included.

Not Staying at the Hotel? - If you are staying in another hotel, Join AAFM in Salt Lake City or with friends, or live in the area, you can attend any or all of the events. Complete the form for the events you would like to attend.

Hospitality Suite - Open every day in the Marriott Courtyard when no other activities are scheduled, with snacks and refreshments and some items from the AAFM store. Registration fee covers suite operation.

Attire - Casual dress for all events except for the Banquet: business casual (open collar shirts, coats optional, no jeans)

Special Needs - Let us know of any special diet needs, handicapped access, etc.

Schedule of Events –

Wednesday, 6 October 2021 at Marriott Courtyard

1300 - Registration, Hospitality Suite open Early Bird \$xx until July 23; then \$xx

1800 - Welcome Reception and pay as you go bar, \$xx per person.

Thursday, 7 October 2021

0700 - Breakfast (included in room rate)

0830 - Depart hotel for Tour of SLC area-bus and lunch \$xx per person

1800 - Dinner at the hotel pay with as you go bar - \$xx per person at Courtyard

Friday, 8 October 2021

0700 - Breakfast (included in room rate)

0830 - Depart hotel for tour of Hill AFB - \$xx for bus lunch

1630 - Return to hotel

1800 - Dinner at the hotel pay as you go bar - \$xx per person at Courtyard

Saturday, 9 October 2021

0700 - Breakfast (included in room rate)

0730 - 0830 - AAFM Board of Directors Meeting

0900 - General Membership Meeting Lunch on your own.

1800 - AAFM Banquet with featured speaker and special program. - \$xx per person, choice of Steak, Chicken, or Vegetarian and pay as you go bar. at Courtyard.

Sunday, 10 October 2021

0700 - Breakfast (included in room rate)

1100 - Depart hotel

We are in the final stages of negotiations with our new hotels and will have full details as soon as possible for registration for tours and meals. Check the AAFM web site at afmissileers.org beginning in mid-January, or, if you don't have access to a computer, call Jim Warner, the Executive Director, at 719-351-3962 for the latest details and pricing information

Registration Form - 2021 National Meeting

On line registration at AFMissileers.org or via Mail with check to AAFM, PO Box 652, Johnstown, CO 80534

Name _____ Address _____

City, State, Zip _____ Phone _____

Number Attending _____ Spouse/Guest Name _____

Arrive _____ Depart _____ Special Requirements _____

(Enter names as preferred on name tags)

	Number	Amount		Number	Amount
Registration fee-\$xx each	_____	_____	Welcome Reception- \$xx each	_____	_____
Thursday Tour \$xx each	_____	_____	Thursday Dinner \$xx each	_____	_____
Friday Tour \$xx each	_____	_____	Friday Dinner \$xx each	_____	_____
Banquet \$xx each	_____	_____	Circle one per person: Steak Chicken Vegetarian		
			Total Amount	_____	_____

For Base Tour For Active/Retired Military or spouse with ID card - Full name and SSN

Member: _____ SSN _____

Guest: _____ SSN _____

For those without active/retired ID cards, Full Name, State Driver's License No and last four digits of SSN

Member _____ DL No _____ State _____ SSN Last Four _____

Guest _____ DL No _____ State _____ SSN Last Four _____

Association of Air Force Missileers
PO Box 652
Johnstown, CO 80534

NON PROFIT
US POSTAGE
PAID
Norfolk,NE
Permit # 125

Change Service Requested

Reunions and Meetings

390th SMW Memorial Association - 22-26 September 2021 in Tucson, AZ. For more information: Contact: John Lasher, 520-886-3430; Dick Kampa, 520-747-7592; Joe Brown, 520-886-2379 or redsnooty@comcast.net.

Association of Air Force Missileers 2021 National Meeting - 6-10 October 2021 in Salt Lake City, UT. See page 1..

Plan your unit reunion in conjunction with our National Meetings and let AAFM take care of all the details. Get your reunion notices in early so we can help spread the word. Keep in mind that a significant number of our members do not use Facebook or email, so include a telephone contact number in your announcement.



Keep your mailing address, email address and dues current with AAFM. Email us at aafm@afmissileers.org, call 719-351-3962, or mail to AAFM, PO Box 652, Johnstown, CO 80534

AAFM is a non-profit, tax-exempt organization under section 501c(3) of the IRS Code. The Newsletter is published quarterly, printed by Lakes Marketing and Printing, Spirit Lake, IA, with proofreading by Black Cat Copyediting.

Board of Directors -

President - Gen (Ret) Lance Lord, Aurora, CO **Vice President - CMSgt (Ret) Mark Silliman, London, OH**
Secretary - Col (Ret) Tom Cullen, Colo Spgs, CO **Treasurer - CMSgt (Ret) Shane Finders, Bossier City, LA**
Maj Gen (Ret) Don Alston, Cheyenne, WY **Col (Ret) Bernard (Jock) Dodson, Jr., Draper, UT**
CMSgt (Ret) Hank Habenick, Cottage Grove, OR **CMSgt (Ret) Bob Kelchner, Torrance, CA**
CMSgt (Ret) Mike Kenderes, Santa Maria, CA **Maj Gen (Ret) Bob Parker, San Antonio, TX**
Col (Ret) Randy Tymofichuk, Layton, UT **Monte Watts, Monument, CO**
Executive Director - Col (Ret) Jim Warner **Newsletter Editor - Col (Ret) Charlie Simpson**
Association of Air Force Missileers, PO Box 652, Johnstown, CO 80534 719-351-3962
afmissileers.org aafm@afmissileers.org or director@afmissileers.org