

Air Force Missileers

The Quarterly Newsletter of the Association of Air Force Missileers

Volume 28, Number 1

"Advocates for Missileers"

March 2021

**Ground Based Strategic Deterrent
Charging Forward in 2021**

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

I'm writing this article after driving two hours to Miami and back to get my 2nd COVID shot - bring on the world! There are many arguments on either side of the COVID shot discussion but I'm hoping to get on the road this year to share our message and two shots were a small price to pay as "travel insurance."

I am really excited about 2021 and the future of AAFM. First, I'm convinced the National Meeting is a go. Business changes due to the shutdown put us into a better location in downtown SLC and we ended up with some better catering options than we had originally planned. As this is my first crack at planning a National Meeting I will be on edge all summer - good thing Charlie gave me some detailed checklists to follow (typical Missileer). Thirty members have signed up already so there is plenty of room. Please go to our website or see the inside back cover for more information and registration.

I'm also excited because this week we kicked off our corporate sponsorship program with invites to 19 companies in the ICBM business. We hope their future corporate sponsorship will allow us to achieve three major goals that your Board of Directors is working on: a scholarship program for our active members seeking a degree (launching this summer), an ICBM Hall of Fame (launching in 2022), and a larger media footprint contributing to our mission awareness goal (also starting this summer). We are working with 20 AF/JA so we can get back to visiting each missile wing so we can learn what you are doing and share your message with the American public (pending PA approval).

In this edition, we kickoff our information series on Team Hill. As a follow up to our December article on what it took to get to this point in the GBSD acquisition process, we are providing a feature article on the role of the GBSD SPO. We hope to hear more from the GBSD team during our base tour in October but this gives you some insight into what they are doing day to day. We continue our series on an active member and one who held a similar job in the past—in this case it is the 2M0X1 EMT career field that gets the recognition. If you are active duty and want to share your story, let me know and then I'll find another member to compare career paths and ambitions.

This month also marks a full year of our new website and supporting infrastructure that tracks membership data and dues. Many of you are now paying by credit card which we could only do in the past using PayPal. We also kicked off a membership drive this quarter and while the average new members per month increased we are still staying pretty steady at or under 1,800 active members - to stay viable, we need to do better so I ask each of you to reach out to a friend and help us grow.

I leave you with my latest commitment to AAFM and the ICBM mission. I wanted the Veteran/flag plate on my car so I figured why not make it personal and get people guessing about what AAFM means? If you have a plate that carries an ICBM message, please send me a picture. We'll carry future pictures either in the newsletter or on the website depending on space.

I look forward to hearing from you on AAFM topics and seeing many of you in SLC this October.

Jim Warner



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GBSD Deterrent Systems Directorate team at Hill AFB, UT. Taken after achieving Milestone B, all with masks to prevent exposure and transmission of COVID-19.

GBSD - Charging Forward in 2021 - *By Capt Paul Latt, AAFM Mbr No A3475 Hill AFB, UT*

Disclaimer: the views expressed are those of the author and do not reflect the official views, policy or position of the Department of the Air Force, Department of Defense or the U.S. Government.

Moving Towards EMD

In the December 2020 issue of this publication, CMSgt (Ret) Shane Finders wrote a thorough article describing the origins of the Ground Based Strategic Deterrent (GBSD) acquisition and the lead up to the Capability Development Document (CDD) validation by the Joint Requirements Oversight Council (JROC). As he noted, a colossal amount of work continues at the GBSD Systems Directorate since the JROC's decision in June of 2019. The CDD validation was a crucial point for not just GBSD but for the entire Intercontinental Ballistic Missile (ICBM) community. The validation of a CDD is an important entrance criterion for any acquisition program leading up to Milestone B (MS B) and the Engineering and Manufacturing Development (EMD) phase.

The CDD describes exactly what the final product does and when it needs to be able to do it, foundational to any Request for Proposal (RFP). With the CDD validated, the GBSD Systems Directorate, EMD Core Team - led by Col Don Hunt - refined the acquisition strategy and released the 3,400-page RFP in July 2019. With the RFP released, the GBSD Systems Directorate was poised to narrow the field of contractors from two to one and become an official program of record, crucial steps to delivering the next generation nuclear deterrent to the warfighter.

Competition and Defense Industry

Competition for the GBSD contract had been a foundational piece of the acquisition strategy since the analysis of alternatives. In 2017, the Air Force awarded Boeing and Northrop Grumman contracts for the Technology Maturation and Risk Reduction (TMRR) phase of the new ICBM acquisition. Both defense firms spent the next two years building up substantial GBSD teams at dozens of geographically dispersed locations with the goal of winning the EMD source selection competition.

The competition between Boeing and Northrop Grumman served multiple purposes: first, no complete ICBM system has been developed since the Trident missile system in the 1970s and Peacekeeper missile systems in the 1980s. Having two large firms fight for scarce ICBM resources restarted and revitalized the dormant industry.

Second, healthy competition drove both contractors to produce high-quality, innovative designs for the Air Force. The entire acquisition team relished the opportunity to review both contractor's designs and see what the revitalized ICBM industry was capable of. Both competitors brought low risk, technically mature baseline designs utilizing state-of-the-art strategies, which stood to bring unrivaled capability to the warfighter.

The third purpose of the GBSB competition was to drive costs down and ensure time-certain delivery. GBSB is a megaproject expected to operate through 2075 with projected costs of \$83 billion. The vast majority of megaprojects throughout history run high on cost and fall behind on schedule. With Minuteman III (MMIII) becoming less sustainable and operating 40 years beyond its intended service life, GBSB cannot afford to fall behind schedule. Further, with nuclear triad recapitalization eating a growing piece of the Department of Defense (DoD) budget, GBSB has very little flexibility to exceed its expected budget. Healthy competition between Boeing and Northrop Grumman encouraged both to hold costs down and keep the schedule on track.

Competition in the defense industry is great until the competition goes away. In July 2019, following the release of the request for proposal, Boeing informed the Air Force that they would elect not to bid on the GBSB EMD contract. This decision created the next challenge for the acquisition team, as it would need to pivot to a single-offeror proposal evaluation and contract negotiation without the benefits of dual contractor competition.

Challenges and Benefits

The GBSB Systems Directorate now faced a single-offeror environment with the associated challenges and risks. Fortunately, the EMD Core Team had built an incredibly versatile acquisition strategy with the flexibility to evaluate offers in both a competitive and single-offeror environment. This allowed GBSB to continue on the path towards proposal receipt and contract negotiations on a timeline which closely mirrored the original plan. In December 2019, the GBSB Systems Directorate received an EMD proposal from Northrop Grumman without a competing offer from Boeing. This was where the GBSB Systems Directorate, Source Selection Team got to work evaluating the proposal and negotiating the EMD contract.

Over the next nine months, while the source selection team focused on the EMD contract evaluation, the working level of the GBSB Systems Directorate was finally able to engage one-on-one with the working level of Northrop Grumman. This engagement was previously restricted to preserve the integrity of the competition. Allowing open conversation now increased velocity towards EMD and ensured that both the government and Northrop Grumman teams were ready to collaborate on EMD day one.

Preliminary Design Review and COVID-19

While the source selection team evaluated the EMD contract proposal from Northrop Grumman, the rest of the GBSB Directorate began preparing for the Preliminary Design Review (PDR). As the capstone project for the entire TMRR phase, PDR is where the contractor provides a complete picture of the entire design to the government for evaluation. Northrop Grumman provided all of the PDR deliverables on time in March 2020. While the GBSB Systems Directorate was ready, the COVID-19 outbreak and pandemic disrupted the typical workflow. The Air Force now had to find a way to execute PDR in largely classified environments without spreading COVID-19 throughout the team.

The GBSB Systems Directorate immediately formed a COVID-19 task force to keep the team healthy and continue the mission, despite the unprecedented situation. The task force's success has been astounding. Starting with PDR, GBSB enacted a shift work concept with three shifts. A-shift worked onsite evaluating PDR data from 0600-1130, B-shift from 1200-1730, and C-shift from 1800-2330. Each shift spends the last half hour cleaning and disinfecting their workstations, then leaves the building a half-hour before the next shift arrives. This prevents one COVID-19 case from infecting and spreading through the entire directorate due to exposure in one room or one building. While the American economy shut down and transitioned to telework, the GBSB Systems Directorate soldiered on, ensuring PDR, EMD contract award, and MS B completed on schedule.

The Digital Engineering Revolution

GBSB is the first DoD acquisition program of its kind to mandate the use of Digital Engineering (DE) methodologies from day one. This modern approach - spearheaded by Col Jason Bartolomei - is the key to simplifying one of the most complex weapon systems ever to exist. As an enterprise-wide ICBM program, GBSB will modernize or replace the missile, Launch Facilities (LFs), Launch Control Centers (LCCs), payload transporters, weapon generations facilities, maintenance bays, command posts, missile alert facilities, command and control systems, communications networks, and every piece of equipment that goes into maintaining and operating the enterprise.

DE and the utilization of Model Based Systems Engineering (MBSE) brings GBSB to the cutting edge of modern engineering practices. Essentially, MBSE is comparable to having a flow chart mixed with a block diagram and an Excel spreadsheet on steroids. Information flows in all directions from one Authoritative Source of Truth (ASoT) which acts like a versioning system for configuration management. As an example, suppose a young engineer in the propulsion branch for of an ICBM system runs a simulation investigating range and payload versus cost of the third stage. Based on the simulation, the engineer decides the program could save money by shrinking the diameter of the third stage of the rocket while still meeting the range and payload requirement. Using the enterprise Weapon System Architecture

Model or WSAM (the mega block diagram), the engineer logs the simulation results and studies what would happen if the third-stage dimensions were changed. Using the WSAM, the engineer can see the digital thread, essentially the complete flow of consequences the change would have on the entire weapon system.

Consider the potential effect this type of change would have on an ICBM system. To list a few affected systems, the missile transport-erector would need to change its lowering hardware to accommodate the new third-stage diameter. The second stage of the missile may be able to stay at its original diameter, but it would likely need to change the interface that mates it to the third stage. The Post Boost Vehicle (PBV) would need to shrink its own diameter because of the smaller third stage. If the PBV diameter shrinks, then the Reentry Vehicle (RV) may need to shrink too.

Using document-based systems engineering processes, this change would drive the engineer to involve the transport-erector, PBV, second-stage booster, and RV working groups to inform them of the potential change and get impact responses confirming or denying their ability to support the change. This all takes time, increases cost and requires dedicated engineering hours to complete. There is also no guarantee the engineer would not miss an impacted group along the way! Using modern MBSE, the engineer can clearly see the potential impact this change would have on each system, subsystem, software, and piece of support equipment through a digital thread. Additionally, the engineer can trace all of these impacted groups and flow the design choices all the way back to the requirements and the CDD.

In our example here, the engineer would follow the digital thread to the RV where they would realize that the government supplies the RV for the ICBM, and that changing the size and shape is not within the program scope. Tracing the flow of requirements to the CDD reference, the young engineer realizes the ICBM has to be able to carry a certain number of RVs. Rebuilding the digital thread from this point, the engineer can see the required number of RVs and the diameter of each RV drives the required minimum diameter of the PBV, which drives the minimum diameter of the third stage. This leads the engineer back to the simulation that started it all, where it becomes clear that shrinking the diameter of the third stage would drive the ICBM to not meet a key system capability. The engineer makes note of this fact and logs the description of the proposed change, the simulation results, and the impacts and reasoning for not executing the change into the WSAM model and the ASoT. In this example, one engineer took initiative, studied the enterprise impacts of their initiative and filed the results of their work into the ASoT for all other program engineers to see. This not only encourages and enables individual initia-

tives to thrive, but also leads to a reduction of duplicative work and prevents the program from making a change which would cause diminished performance against requirements.

Thirty years ago, it would have taken a few dozen engineers and a couple of months to fully analyze the impact of this change, with no guarantee they would make the correct decision in the end. GBSD, using DE principles and a MBSE construct, can reduce this work to one engineer and a couple of days. This is the power of the DE revolution.

Modular Open Systems Architecture

One of the challenges facing America's current and past ICBM systems was obsolescence. Most of the ICBM systems deployed in the United States were closed, one-of-a-kind systems, which were not built with future upgrades in mind. During the Cold War, this was not an issue because defense spending allowed for the design, construction, and fielding of a new ICBM system about every ten years. This would come back to haunt the American ICBM industry after the collapse of the Soviet Union. The rapid pace of technological advancement that drove once innovative systems like the Atlas E, Minuteman IB, Titan II, Minuteman II, and Peacekeeper to a place where the antiquated technology and one-off parts required for upkeep and maintenance made system operations and sustainment costs untenable.

Even the sole survivor of America's ICBM legacy, the venerable MMIII, had to undergo significant upgrades during the 1990s and 2000s to ensure its viability in the modern age. The Rapid Execution and Combat Targeting (REACT) LCC upgrade deployed in the mid-1990s greatly increased MMIII's missile monitoring, retargeting, and launch capabilities. However, it brought with it the use of 3.5-inch floppy disks, large mechanical hard drives and a track ball, technologies already phased out of industry before fielding of the last REACT upgrades. The Guidance Replacement Program, Propulsion Replacement Program and Single Reentry Vehicle program all greatly extended the life of the MMIII aerospace vehicle equipment in the 2000s. Again however, many parts and pieces related to these upgrades were one-of-a-kind and difficult to maintain and sustain. The ending result, despite the best efforts of our incredible ICBM sustainment engineers, maintainers, and operators, was an analog weapon system in a digital world. The pending obsolescence of the MMIII weapon system was one of the driving factors for the GBSD analysis of alternatives, which CMSgt (Ret) Finders wrote about in the December issue.

How does GBSD avoid the pitfall of obsolescence? First, unlike previous systems designed to operate for only ten years, GBSD acknowledges that it will have to operate for at least fifty years. We are building the world's premier nuclear deterrent, which will protect and defend America and its allies from the late 2020s until at least 2075. There is no misconception about a future ICBM arriving in the 2040s or 50s. When the last MMIII is pulled from the LF and the last two LCCs run the console shutdown checklist, GBSD will stand alone in providing 24/7/365 operations for over

the next fifty plus years.

Acknowledging GBSD's true lifespan helps frame the big picture acquisition and has led the Air Force to mandate a Modular Open Systems Architecture (MOSA). Using a modular design and industry standard interfaces for the weapon system will help GBSD avoid obsolescence by allowing for a simplified upgrade process throughout its lifecycle. If one module becomes antiquated, an updated module can be acquired and swapped in using the standard interface without redesigning the entire system. The GBSD Systems Directorate is also acquiring the data rights for the design. By ensuring the government has the required depth of knowledge for each system and subsystem, GBSD can have open competitions for replacement parts, spares and updates to modules throughout the system lifecycle. This allows GBSD to avoid vendor lock and situations where the only vendor making a one-of-a-kind part goes out of business. Mandating MOSA and obtaining appropriate knowledge depth also saves lifecycle costs related to reverse engineering and reengineering one-of-a-kind parts. This is a common, recurring problem with MMIII, since many vendors and chunks of knowledge simply do not exist anymore.

The Path Ahead

GBSD is now a program of record, having passed MS B and entering the EMD phase of the major capability acquisition framework. A number of important tasks and reviews will be accomplished during EMD over the next seven years. Major EMD events include the critical design review (CDR), where the initial product baseline will be set and completed. First flight will happen shortly after the CDR, and will be the first time a new ICBM is flown out of Vandenberg AFB since 1983. Many systems and subsystems will undergo prototype, certification and qualification testing during EMD. Production readiness will also be demonstrated during EMD in preparation for the Milestone C decision, which is the point where GBSD receives permission and funding to enter low-rate initial production and begin deploying to its operational locations.

To My Missileer Friends

Many of my Missileer friends have reached out to me to find out how GBSD is doing and when the operators will be engaged or start to see things happening with GBSD. They are desperate to learn something about the brand-new system that will be deploying during their careers. After living the MMIII life for three years in Minot, truly I understand the strong desire to learn something about GBSD. However, when my friends call, I have to admit there is not much I can share about the weapon system itself, and we're still a few years away from engaging the crew dogs at the operational wings. Operators and maintainers have an operational mission to complete, and until GBSD reaches Initial Operational Capability (IOC), that mission will be complet-

ed using only MMIII.

Fear not, my friends! The GBSD Systems Directorate is full of seasoned operators and maintainers ensuring the warfighter needs are met. Northrop Grumman has also done a great job involving as many ICBM community members as they can to ensure they deliver a great weapon system. Additionally, Air Force Global Strike Command (AFGSC) is filled with former operators and maintainers filling an important role of in the acquisition process. They are the customer after all! AFGSC has positions on location with the GBSD Systems Directorate, as well as dedicated liaisons at AFGSC headquarters at Barksdale AFB. Last but not least, Air Force Operational Test and Evaluation Center (AFOTEC) has a number of Missileers, operators and maintainers in positions on site with the GBSD Systems Directorate.

To those still worried, I want to bring your attention to the active-duty opportunities GBSD presents to the operations community! Before crossflow went the way of the Peacekeeper, a number of Missileers, myself included, changed career fields and moved to acquisitions and engineering. In this career field we use our Missileer experience and take up leadership positions within the GBSD Systems Directorate, ensuring the modern Missileer has a voice. Additionally, many in the acquisitions and engineering career field have the opportunity for an operational experience tour in the missile wings, and they use that experience in the field to bring a piece of operational reality to the acquisition world. For those who are core Missileers, do not neglect active-duty opportunities to move over to GBSD after your crew tours! AFGSC has multiple active duty Missileer positions on site with the GBSD Systems Directorate and at the major command level. AFOTEC and the 576th Flight Test Squadron also have operator positions that will help guide operational testing over the next decade. Further, US Strategic Command and 20th Air Force frequently visit the GBSD Systems Directorate to review designs and plans for the weapon system and its deployment. Also, let us not forget about Air Education and Training Command. When GBSD reaches IOC, it will need trained and qualified operators and maintainers. The dedicated instructors at Vandenberg will need to know the system and be trained on it themselves if they are to successfully send teams to operate and sustain the first GBSD.

In Closing

To the Association of Air Force Missileers community and the ICBM community at large, I want to remind everyone of the colossal undertaking of GBSD. This acquisition process actually began with the approved initial capabilities document in 2012. The material solution analysis and TMRR phases are in the rearview mirror now, and in 2021 GBSD has a prime contractor that is powering into EMD on the way to a final design and a production decision. We must all consider our small piece of this massive puzzle. GBSD deployment and MMIII retirement is not a trivial undertaking, and many Missileers may not realize their role in the

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transition until after it has completed. The last MMIII alert will likely be pulled by young crew dogs who are probably in middle school right now, and the first GBSD alert will be pulled by aspiring Missileers who are still working to receive their high school diplomas.



Capt Paul T. Latt is an acquisitions officer at Hill AFB, UT, working for the GBSD Systems Directorate as the Reentry Systems Branch Modeling and Simulations Section Lead. His previous assignment was the 741st Missile Squadron, 91st Missile Wing, at Minot AFB, ND. While in Minot, he recorded 214 operational MMIII alerts from May 2016 to February 2019.

**Help us keep AAFM growing
Invite a Missileer friend to
join our great organization**

Join Us In SLC

We are only a few months away from the 14th National Meeting of the Association of Air Force Missileers, 3-6 October 2021 in Salt Lake City, UT. COVID did us in for our normal rotation of a 2020 meeting, but as COVID rules relax and we return to normal, we are looking forward to our gathering this fall.

You can find details on the inside back cover or on the AAFM web page at <http://www.afmissileers.org>, and you can register online or by mail. A number of Members have already registered - get yours in now.

We have two great, adjacent hotels, some great gatherings over the four days to discuss Missileer issues and tell stories, tours of the Salt Lake area and Hill AFB, and much more. Those of you who have attended our previous meetings know well that you will have a very busy, event-filled time with us, see many old friends and get updated about our business.

Get your registration in now - see you in Utah.



Our Salt Lake City Hotels



Missileer Trivia Quiz

December 2020 Question - Name by site designation the most eastern, western, northern and southern ICBM sites that are/were on Strategic Alert.

Answers:

North - Minuteman, LF A-08, 446 SMS, Grand Forks AFB Lat 48 degrees 58 minutes 36 seconds N.

South - Titan II, Site 571-6, 571 SMS, Davis-Monthan AFB Lat 31 degrees 38' 39" N.

East - Atlas F, Site 556-3, 556 SMS, Plattsburg AFB Long 073 degrees 08' 17" E.

West - Titan - I, Site 851-C, 851 SMS, Beale AFB Long 121 degrees 51' 10" E.

Congratulations to our first repeat Winner: Maj Cory Kuehn, Minot AFB, ND.

March 2021 Questions (a two part question):

1 - Which missile wing(s) had the best winning percentage during Missile Competitions that had all nine (6 MM and 3 Titan II) wings competing?

2 - What year did the first women compete in a Missile Competition?

Send your answers to imagei@rocketmail.com with the title "AAFM Quiz Answer" not later than 15 May 2021. Winners announced in the June 2021 AAFM Newsletter.



SSgt Sullivan



Airman Mark Silliman (1505s) and his Chanute Classmates

Meet Your AAFM Members

This is the second in our series matching an active duty AAFM member with a retired/discharged member. This quarter, we focus on Electro Mechanical Team (EMT) members, one assigned to Vandenberg Air Force Base (AFB), CA, and the other one of our AAFM Board Members.

SSgt Donte' Sullivan

Missile Assignments

Summer 2012 Vandenberg AFB, CA (532nd Training Squadron

2012-2017 Minot AFB, ND (91st Missile Wing (MW), 91st Maintenance Squadron)

2017-Present Vandenberg AFB, CA (576th Flight Test Squadron (FLTS))

How did you get into the missile business?

I selected my job at MEPS (Military Enlistment Processing Station). It was one of my many options; I actually had no knowledge of what the job entailed at the time, but the title of Missile and Space Systems Electronic Maintenance Technician sounded way too cool for me to not choose. Even after Technical School I could not completely comprehend the impact that Intercontinental Ballistic Missiles (ICBM) actually had on the world.

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

In the beginning of 2017, I was approached by the Command Chief Master Sergeant of 20th Air Force and asked if I would be interested in going to the 576 FLTS to help in the Missile Communications shop, and I immediately told him I would be happy to. I loved being a Team Chief and Instructor in Missile Communications in Minot, so I was really excited to have the opportunity to do the same job in sunny California. When I arrived at Vandenberg, I was caught off guard by what my job would actually entail and what all missions the 576 FLTS actually accomplished. In my time here, I have been a Technician, Team Chief, and Instructor for the operational directives of our Operational Test Launches. I have also been able to be a part of the first enlisted members from the 576 FLTS to join the test team for

6
Software Operation Integration Tests (SOT). Being able to work more closely with ops during the SOTs helped give me a better understanding of our communication systems and their importance in the nuclear enterprise. I did not have much EMT experience in Minot and zero test experience prior to coming to the 576th, but I have become a significantly better Airman and Missile Maintainer in my 3 years here.

What got you interested in AAFM?

I actually learned recently about AAFM and it seemed like a great way to envelop myself in our missile heritage. The missile realm of the Air Force is completely unique from anything else and the fact that individuals took the time to make sure that the history will never be forgotten is amazing. There is no better way to understand the full legacy of missiles than to be able to connect with the past Missileers who paved the way for us.

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

I think that it is very important to make sure that everyone that works in the missile business knows how necessary they are to keep this nation safe. Too many times, we focus on our specific craft without actually going out and learning what our brothers and sisters do on a day to day basis to keep this mission going. Since I have been at the 576 FLTS, I have been fortunate enough to work for and side by side with some amazing Airmen who have all taught me something. Whether it has been how to be a better leader, listener, friend, or noncommissioned officer, I am forever grateful for everyone in the only ICBM test squadron in the world!!

CMSgt (Ret) Mark Silliman

Missile Assignments

1973-1974 Chanute AFB, IL, Technical School Student

1974-1984 Grand Forks AFB, ND, 321st Strategic Missile Wing (SMW), EMT Team Member/Chief, Instructor, Technical Engineer and Quality Assurance Evaluator

1984-1988 Vandenberg AFB, CA, 1 Strategic Aerospace Division, Test and Evaluation, Flight Analyst

1988-1992 Offutt AFB, NE, Headquarters Strategic Air Command (SAC), Directorate of Requirements, ICBM Current System Requirements Manager

1992-1993 Langley AFB, VA, Headquarters Air Combat Command, Directorate of Requirements, ICBM Current Systems Requirements Manager

1993-1997 Peterson AFB, CO, Headquarters, Air Force Space Command (AFSPC), Directorate of Logistics, Chief ICBM Hardware Systems and Command Career Field Manager

1997-2000 FE Warren AFB, WY, 90 MW, 90th Logistics Group, Quality Assurance and Maintenance Superintendent

2000-2002 Malmstrom AFB, MT, 341 MW, Command Chief Master Sergeant

2002-2003 FE Warren AFB, WY, 20 AF, Command Chief Master Sergeant

2003-2010 Peterson AFB, Headquarters, AFSPC, Directorate of Requirements, ICBM Current Systems, Contractor

2010-2018 Barksdale AFB, LA, Headquarters Air Force Global Strike Command (AFGSC), Deputy Chief, Requirements, Government Civilian

2019-Current, Wright Patterson AFB, OH, AFGSC, Liaison, Contractor

How did you get into the missile business?

My soon to be father-in-law was on active duty as a missile systems analyst specialist working on the Hound Dog Missile and he was a Master Sergeant assigned to 17th Bomb Wing at Wright Patterson AFB, OH. When I was dating his daughter (Dee) and now my wife of almost 47 years, I asked him, what was his job called, and he said, “a 316” and he mistakenly left off the last several important identifiers.

After signing the paperwork at the recruiter office and qualifying as a “316,” I headed to basic and then technical school at Chanute AFB, IL. I completed the basic electronics portion of the course and was provided my final AF specialty code – “316X0H” meaning I was in the Minuteman B system and my orders were to Grand Forks. The other option was Malmstrom AFB, but that was not going happen...at least for now. After graduating from technical school, we married and headed north – “Only the Best Go North!

Tell us a little bit about your assignment in EMT at the 321 SMW, Grand Forks AFB, ND.

I arrived on Grand Forks on Labor Day, 1974. On Monday morning I headed for the barber shop and then to find the 321st Missile Maintenance Squadron (321 MIMS). After being teamed up with two other maintainers waiting a Team Training Branch (TTB) slot, we trained throughout the winter, graduated and I became an EMT team member. We were working High Priority Maintenance (HPM) staggered shifts, scheduled maintenance and doing our training days. EMTers responsibility included but was not limited to facility work (diesel, environmental control system, sump pumps and other tasks) and in the future, these type tasks transitioned to Facilities Maintenance Teams) plus EMT did startups/shutdowns, electronic drawer replacement, missile cooling, -6 requirements and battery replacement and normal nuts, bolts corrosion and repairs in the work packages. Periodic Maintenance and Facility Maintenance Teams did not exist at that time. EMT even installed the work cage and did launch tube sump pump maintenance at the bottom of the hole. Our timelines were 16 hours plus a few minutes if we needed to get back on base versus RON (remain over night). We penned launch facilities (LF) with a single security guard. Security enhancement was not part of our language...chasing “green time” was.

There were a lot of cross trainees from career fields being reduced after the Vietnam War and they were great maintainers who brought with them good stories and maintenance practices.

The coldest night I remember was at a Lima Flight LF and the Missile Maintenance Team could not get an inner zone reset on the launcher closure door. It was a long cold night, sitting topside waiting on a Camper Team driving from base. The weather stripping in that old International pickup truck was non-existent and it was like the windows were open. The best day in the field was a spring day in Echo Flight, and we completed a C225 Power Supply drawer replacement and startup. The capsule crew said the sortie was back in alignment and were on the way home after 5 hours. It was a perfect day in the height of the Cold War.

What got you interested in AAFM?

I was a member of the Society of SAC and there was an opportunity to join AAFM. I received a call from Col (Ret) Charlie Simpson. He was looking for an active-duty enlisted person to serve as an associate board member. So I have been a part of AAFM since mid to late 1990s...if my memory serves me well. AAFM has always reached out financially and supported the competitions, recognition programs and museum improvement through grants. I have been a lifetime member for many years and no longer worry about my dues being late. The new board has transitioned to new media venues and refocused on how we can best support the entire missile community.

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

The ICBM weapon system is a critical national asset. The men and women who serve as Missileers are of the highest quality and reflect daily extraordinary commitment and integrity. The execution of your mission is truly service before self and it epitomizes the AF Core Values. Never sell yourself short because Missileers are in high demand now and in the future, while on active duty and in a post AF career. Approaching retirement from active duty, I, like a lot of people transitioning, was anxious about finding post military employment. On the contrary, I found out that there was plenty of opportunity and advancement in industry and in government service careers. With your experience, you are now, and in the future, “priceless.”

Keep your contact information, address and dues current. You can email updates to director@afmissileers.org or by mail to AAFM, PO Box 652, Johnstown, CO 80534.

Help us dedicate more of AAFM's funds to our programs by selecting the electronic newsletter option, saving us printing and mailing costs.



Artist Depiction of GLCM and W-84

JCMPO and the W-84 Warhead - by

Lt Col (Ret) Robert Couch, AAFM Mbr No A3081, Corrales, NM.

In January 1982 I was at the Air Force Weapons Laboratory (AFWL) at Kirtland Air Force Base (AFB), NM. My primary specialty code was 2665, nuclear research officer and had previous exciting tours as an intel white coat Lab rat and analyst. With degrees in geology along with a Reserve Officer Training Corps commission with an Air Force Institute of Technology civilian institution program Masters, I headed up a group of scientists and engineers focused on nuclear weapons effects. Specifically focused on strategic structures and associated geologies of interest. I was finishing up looking at the geology investigation results of 23 western state valleys that were being proposed for Missile -X (MX), with 200 missiles in a 4,600 acre track shelter scheme in Western Basins for housing the mobile transporters of the MX missile. At the time it was a leading contender of multiple aim point ideas we had explored for the AF Ballistic Missile Office. In another scheme we were looking at various western geologies that might hide a deep underground MX missile complex. We were monitoring underground tunneling tests at the Nevada Test Site to see how a large tunnel boring machine actually performed.

This intercontinental ballistic missile (ICBM) basing approach would be used to dig out for a launch from a secretive location after nuclear hostilities had been initiated. We were also supporting high explosive tests designed to develop and perfect predictive weapons damage codes focused on strategic structures and geologic contributions. These tests in-part were helping to better understand "beneficial siting and geology" for assessing structural hardness of a complete ICBM system. I was also digesting the recent data my team and I had collected overwater and underwater (think Jacques Cousteau or Navy SEALs) at Enewetak Atoll, the historic Pacific nuclear test site. This project focused on several very large 1950s megaton yield nuclear craters blasted into the reefs/islands and now flooded in shallow water. The weapons effects community and Strategic Air Command (SAC) could not calculate with existing predictive formulas and algorithms predicting the actual crater size and associated potential ICBM silo killing ground shock impulses generated by these excavated huge megaton-created craters.

New, emerging first principle computational codes indicated the craters should be much smaller and with

less ground shock. We were trying to figure out the huge discrepancy by understanding how the craters formed in this unique marine setting. We were also privy with alarm to what the Russians were doing in this arena to protect missile silos.

In April 1982, AFWL was tapped to urgently provide a nuclear warhead officer for an important new system. My exposure to the historic nuclear weapon development and testing in the Pacific, led somebody to suggest I might be a good fit to help out with Department of Energy's (DOE) struggles to field a new nuclear weapon package. I soon received a call from Gen Robert Marsh, Commander, Air Force Systems Command (AFSC). I could not believe he remembered me from way back at my first AF assignment as a lieutenant way down in his chain of command 10 years past! He mentioned he was a Matador and Mace Program Manager back in the '50s and that there was now a follow-on of a hot little new cruise missile needed in Europe. He also said he had a nuclear munitions background appreciating the challenges DOE was having with building a new nuclear device but their progress chart he reviewed every month was all red. He wanted me to go to Crystal City, VA, to ensure the new Ground Launch Cruise Missile (GLCM) got its nuclear warhead on time for the fast-paced deployment to North Atlantic Treaty Organization (NATO) countries. The DOE was struggling to meet the first warhead delivery schedules for Initial Operational Capability (IOC). He wanted me to help turn that chart to green! I had never heard of the GLCM, or Crystal City for that matter, and wondered if this was some sort of backwater job. Crystal City conjured up a sci-fi glass fantasy metropolis to me. I agreed to go at his insistence, saluted smartly over the phone, and said I would rush to Washington, DC, as soon as possible.

He assured me it would be rewarding and important assignment, but I was not convinced. Surely a System Program Office (SPO) slot was going to be a bore and I'd be sitting behind some desk pushing papers. It was not geology! Ok, so it was definitely not geology, but I was very wrong on the boring part! My change of station orders showed up that very next week for the Joint Cruise Missile Program Office (JCMPO) and noted that I report in 3 weeks! I quickly started to do my homework on what JCMPO was all about. What was GLCM? What was so special about this new W-84 warhead? In June 1982, arriving at the Crystal City's Navy Air System Command's offices that housed the JCMPO on the 11th floor of a nondescript office highrise, I first was escorted by a Navy petty officer to what was to be my cubbyhole. The dreaded desk did have a window. Then I met my immediate nuclear focus team and learned my position was actually a Navy engineer's billet. I was to track the W-84 progress at the DOE Complex, address issues with meeting the new IOC of December 1983 and help the JCMPO payload team with the nuclear certification process which was also challenged to meet IOC. Lots of TDY would be in the offering, starting soon.

The GLCM SPO as I found it, had Col Ron Couture

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in charge who reported to the JCMPO Adm Locke and AFSC's Gen Marsh with AFSC Vice Commander Lt Gen Robert Bond tracking GLCM. Small teams of Air force officers with a minimum support staff headed up six GLCM Division Subsystems. The subsystems were: All-Up Round, Transporter Erector Launcher (TEL), Launch Control Center (LCC), Logistics Support, Operations, Basing and Personnel, and Mission Planning. My team of five officers, headed by Lt Col Ed Hamilton, was a somewhat overarching independent group looking across the whole system and specifically at nuclear certification, safety issues, configuration control disconnects and payload issues.

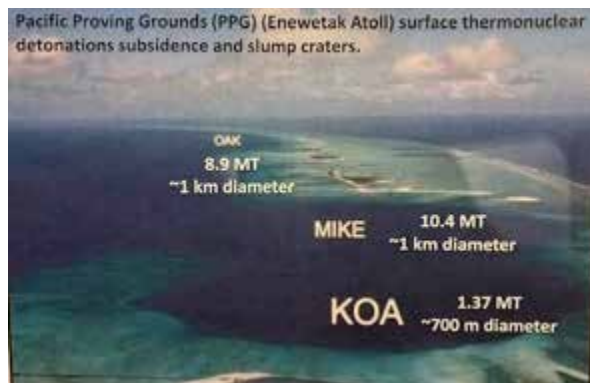
So what was JCMPO anyway? In January 1977 the Defense System Acquisition Review Council providing advice to the Secretary of Defense (SecDef), who generally took their advice, mandated a joint Air Force-Navy project office to streamline acquisition management of the developing family of related but individually distinct missiles underway by both services. The program office was headed up by a Rear Adm Walter Locke who would be replaced in August 1982 by Adm Stephen Hostettler. The Navy SPO had a charter to provide a nuclear air launched cruise missile (ALCM) for the Air force and a ship and submarine launched version (SLCM) for the Navy. The Navy also envisioned a nuclear, conventional, air launched (medium range Air to surface missile (MRASM) and anti-ship version of the General Dynamics (GD) Tomahawk cruise missile. The basic GD missile had been in development since the mid 70s. It was no coincidence that the missile looked like a torpedo with wings. The Navy had a prototype of the GD SLCM under contract in 1976. The nuclear strategic ALCM was also in development with a Boeing prototype developed from a cruise armed decoy. The final ALCM missile design was to be chosen by a fly-off between GD and Boeing. GLCM emerged as a nuclear tipped version of SLCM conveniently filling a reemerging role that might fill gaps left by previous retired European deployed Intermediate Range Ballistic Missiles (IRBM).

Importantly GLCM and a new Army Pershing

9
upgrade addressed a 1977 response to the emerging Soviet mobile, accurate, long range, and multi warhead SS-20 that was threatening most of Europe was underway. Cruise missile technology had matured significantly in the early 1970s with advances in miniaturization of guidance components, small reliable jet engines and significantly more compact efficient nuclear warhead packages. The new cruise missile arrival was an attractive, affordable, low risk option for the services to supplement ballistic missiles and bombers. However the air breathing cruise was not universally embraced by the rank and file aviators who didn't want competition to their mission. An often asked question on the GLCM mission as to why it was not to be an Army ground pounder role? The Air Force got the 1,500 mile range mission because back in 1956, SecDef Wilson directed the Army to stand down with efforts to develop long range missiles that exceeded 200 miles. This edict helped resolve major service responsibilities debates and institutional conflicts at the time with Mace and Matador ranges and the Army's Jupiter/Redstone medium range ballistic missile. Army's Pershing I missile improvements latter crept up to an almost 400 mile range from the initial 100 mile range. The new Pershing II range was waived to address the dual track NATO GCLM/Pershing II policy and the employment and development that could take advantage of the Pershing I infrastructure already fielded.

By mid-1977, JCMPO staff grew to over 300, half USAF, mostly blue suiters, and the other half mostly Navy civilians, all under Adm Locke. The Navy and Air Force had to work out many incompatibilities, like funding approaches, command chain and differences in contracting and acquisition approaches. This Joint management approach provided control over configuration and maximum component commonality reducing vendor numbers and oversight. However for various reasons Boeing was selected for ALCM and over 100 JCMPO USAF staff moved back to Wright-Patterson AFB, OH, ALCM SPO. However the Air Force agreed to keep, for the Boeing ALCM, the engine, most of guidance and the compact W-80 warhead provided by Los Alamos for SLCM. The smaller Navy/Air Force contingent was left to focus on developing the SLCM/GLCM. Their job was refining the missile, the command and control process, the transportation system, the basing and protective shelters, manning, training and logistics. The W-80 warhead was already in development since 1976 by DOE for SLCM and would be just plug into the ground launch Tomahawk. But this was not to be the case, and changes filled Gen Marsh's "red lined meatball chart."

After a more complete understanding of the GLCM concept of land operations started to unfold and GD trade off studies emerged, big issues showed up. It became obvious to the DOE labs, the Military Liaison Committee (MLC) and the W-80 warhead project officers group that the Military Characteristics (MC) and Stockpile to Target Sequence (STS) being formalized for the W-80 use in SLCM and ALCM was incompatible with GLCM's envisioned ground



Enewetak Lagoon Craters



Hardtack Oak Nuclear Test Crater, June 1958 9 Megaton B53/W53-TitanII ICBM warhead prototype

mobile employment. The MC was the formal Department of Defense (DOD)-DOE requirements process that looked at how the weapon would be employed. This detailed classified document covered all aspects and purpose of the weapon and required by DOD and what was achievable by DOE. The STS was a corollary to the MC which looked at the operational and logistical environment and associated risks the system would see in its fabrication to decommissioning lifetime. The W-80s to be employed in the ALCM and SLCM (latter called TLAM in the conventional warhead version) were in relatively benign and controlled operational environments. This GLCM weapon was going to live in a potentially very hostile environment riding around in the friendly or not so friendly countryside under a whole host of threats and ugly possibilities not encountered by ALCM or SLCM. The USAF safety community had huge concerns and saw a daunting task of nuclear certification for so many pieces of the complex support equipment and employment scenarios with a schedule that seemed highly optimistic, if at all possible, by May 1982. Fuzing options and yields for more targeting flexibility were needed for NATO role than what was currently on the W-80 in the strategic role.

In the late 60s and more recent DOE nuclear weapon safety studies had strongly recommended emerging safety and security design philosophy and technology be installed wherever feasible in any new system. These features were now available to use to address the long list of concerns identified in the GLCMs deployment. Getting these features in one warhead was considered herculean given the time constraints and testing necessary for GLCM IOC. But in 1978 DOE labs said they could do this with extraordinary effort. This would be essentially a seriously modified or new warhead incorporating all these new safety design approaches and specialized components fresh from the drawing board. The task was assigned to Livermore Labs and their most esteemed bomb designer was tasked to lead the challenging effort. Dr Seymour Sack had a resume of successful bomb

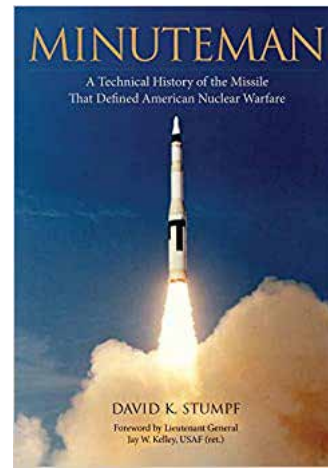
designs, had been responsible for smaller, compact systems and was known for getting things impossible done! He was to be the designer and director. Importantly, he advocated for, and then went on to develop many of the proposed safety features. He started with a highly modified cousin of W-80 that would use Los Alamos mature B61 design aspects as a baseline to install all eight safety features, hopefully feasible in time. These features included: insensitive, plastic bonded high explosive; Fire Resistant Pit; Enhanced Nuclear Detonation Safety (ENDS/EEI) with detonator strong-links; Command Disable; and the most advanced digital Permissive Action Link (PAL F) envisioned. The warhead had to be rugged and road worthy with attention to access denial and exposure to a multitude of abnormal environments. These all had to be designed and tested in a new package. It turns out the W-84 is the only device in the nuclear inventory to date with all the recommended safety features installed. The Pershing II W-85 had some of them installed as well, and future refits and refurbishments for other inventory systems would be so fitted, but the W-84 remains the only inventory weapon to capture all the features.

In my new Navy JCMPO position, I spent time at DOE offices of Military Applications in Germantown and in the DOE headquarters in the Forrestal building, learned how the national and NATO command system worked for this new mobile system at the National Security Agency and the Pentagon. I also visited with the warhead's Livermore design team and the prime storied design leader Dr Sack (who insisted and ensured that the W-84 was the safest/securest nuke ever fielded), and on road trips gave pep talks at the DOE Texas (Pantex) and Kansas City production facilities that were working 24/7 to hand-build enough of this sophisticated weapon to make the first IOC, a politically fixed and immovable date. I attended eight Project Officers Group (POG) meetings and made seventeen European trips to all the GLCM bases present and future. I also monitored weapon fusing and flight tests over Naval Air Station China Lake, CA, and Dugway Proving Ground, UT); attended the Site Activation Task Force Meetings in England and Germany; reviewed the nuclear weapon safety analysis and key standard operating procedures; and was a critical field observer at the Fort Smith, AK, and Fort Lewis, WA, deployment exercises that focused on physical security and nuclear weapon surety. As in observer, with clipboard in the rain, I watched Army special ops forces take over a fielded GLCM site. I went on to make suggestions as how to better protect the missiles. I flew from London to San Diego, for an urgent fix for a connectr that the weapon maintenance team found did not fit at Royal Air Force Greenham Common. I was sent to Portland, OR, to help Hyster, Inc., a heavy equipment company, figure out how to come up with a nuclear certified forklift. Then there were the rodents hungrily eating the fiber optic cables running from the LCC and the TEL. I watched a GD TEL test burn up the hydraulic piston in a multi-cycle test in a scenario not envisioned in the original design. A

fix was found by changing to synthetic lubricants. There were irregular components that did not mate together in the final physics package assembly at Pantex in the last hours of assembly. Some of my fond JCMPO memories include \$600 dollar warhead wrenches that got Congressional attention citing them as an example of the high cost of nuclear weapons! This, too, was an example of DOE costs not captured in the DOD acquisition cost.

I directly reported every month to my boss, sometimes, to the new Adm Hostettler prior to IOC, and to Richard Pearl, Assistant SecDef for International Security policy, on the warhead delivery and DOE status or any other big issues of interest to the SecDef. The chain of command was pretty short at JCMPO. In many ways, our surety and warhead team operated independently in the organization as we tried to ensure there were no fatal flaws or issues that could waylay deployment. There were many bumps in the road for the warhead as the missile and associated systems but these were solved by the army of driven DOE engineers, dedicated contractors and an outstanding blue suit team. Everything needed to get nuclear certified got certified or appropriately addressed.

We made the Greenham IOC just fine in 1983, out of breath but jubilant thanks to the efforts of hundreds of individuals working around the clock for the just-in-time December 1983 W-84 deliveries. On my last watch in August 1984, as I prepared to moved to my next assignment, there was the underground nuclear test at the Nevada Test Site of Fusileer-Corro, a low yield nuclear option, that demonstrated that the W-84 actually worked with all its safety features in place! Despite many failed historical DOD attempts at Joint programs and despite the Navy and Air Force having different approaches to acquisition, not to mention legacy rivalries, the JCMPO effort seemed to be a success from my perspective. Although the nuclear tipped Tomahawks have come and gone, honorably serving as negotiated set pieces, the conventional Tomahawk has become the go-to missile in all recent conflicts. Despite my earlier misgivings, the assignment was anything but boring, incredibly rewarding and educational, with lots of beautiful European countryside, piles of frequent flyer miles and I finally got my basic missile badge. Looking back now I'm very proud to be a part of Cold War history!



“Minuteman” by David Stumpf

David Stumpf’s new book on Minuteman is available for order at <https://www.uapress.com/product/minuteman/>

With an introduction by Lt Gen (Ret) Jay Kelley,, many AAFM members have made substantive contributions to this effort. It’s a great historical reference everyone should have on their bookshelf. As J. D. Huntley writes on the back cover, “Even those who are extremely knowledgeable about Minuteman can learn a great deal from David Stumpf’s account”.

This is Stumpf’s second book on Intercontinental Ballistic Missile history. “Titan II” is still available on Amazon. Stumpf also authored and edited the AAFM 1998 book, “Air Force Missileers.”

Competition Patches

20th Air Force is seeking the following competition patches for their display in Building 65 at FE Warren AFB, WY. If you have any of these patches tucked away that you are willing to donate, please reach out to Monte Watts at montewatts@comcast.net. Monte has volunteered to serve as our artifacts liaison. More on that in a future update.

Olympic Arena (vivid):

1967, 1970, 1983, 1989, 1991, 1993.

Olympic Arena Winner (vivid):

1969, 1978, 1989, 1980, 1981, 1982, 1983, 1984, 1985, 1986, 1987, 1988, 1989, 1990, 1991, 1992, 1993. (We are not aware of any other winner patches - if you have some not listed, let us know.

Guardian Challenge (vivid):

2001, 2003, 2005, 2007, 2008.

Join us in Salt Lake City in October

Register now online or by using the form on the inside back cover



The 20th Air Force Page



Maj Gen Mike Lutton, 20 AF commander, and CMSgt. Charles Orf, 20 AF Command Chief, address cadets during a virtual outreach event'

20 AF Informs and Inspires Air Force's Future Officers - by Capt Ieva Bytautaite, 20 AF Public Affairs

20th Air Force (AF), the US Air Force Academy (USAFA) and Headquarters, Air Force Reserve Officer Training Corps (AFROTC) are collaborating on an outreach effort for cadets who are interested or have been selected for the missile operations (13N) and missile maintenance (21M) careers fields. Over 70 cadets from detachments across the US and USAFA have joined the Facebook outreach group, which allows the cadets to connect to active duty Minuteman III operators and maintainers to find out more about the career field. The 20 AF team has hosted several Zoom sessions to brief the cadets about the ins and outs of the career field, answer questions and share career perspectives.

One such event was held Friday, 26 February 2021 via Zoom. Over 40 participants joined the virtual event, which was kicked off by comments by Maj Gen Mike Lutton, 20 AF Commander.

"Our objective here is to connect with those cadets that are in AFROTC or at the US Air Force Academy, and help them understand what our mission and our career field is about so they can make informed decisions about their careers," said Lutton.

Col Ted Welch, AFROTC deputy commander, also provided some opening comments. "This is an awesome opportunity for you all to learn about the 13N career field - one of our biggest strategic missions for the United States," said Welch. "You will get an opportunity to hear what the career field is about and what your future as a 13N will look like."

During the event, the cadets received a briefing from Lt Col Isaac Williams, Nuclear and Missile Operations Force Development, Strategic Deterrence and Nuclear Integration (AF/A10) chief. During his brief, Williams addressed the

importance of the ICBM mission, career progression for 13Ns, and what the cadets could expect as Air Force Missileers.

Several Missileers from the missile wings also joined the event to share their career perspectives and answer questions.

The Facebook group has given the cadets a chance to connect with current Missileers and maintainers, ask questions or other concerns. Ultimately, the goal of the outreach program is to make the cadets feel more prepared and excited for active duty.

Anthony Lee is an AFROTC cadet and a senior at the University of Hawaii at Manoa, and joined the outreach group last month. "I love these outreach events," said Lee. "Especially living in Hawaii where it's difficult to find in-person 13N and 21M officers. There are many misconceptions surrounding these AF Specialty Codes and these events help illuminate what's true and what isn't. I feel way more connected to the career field now and I feel incredibly fortunate to have been selected as a 13N."

If you would like to join the group or find out more about future outreach events, contact 20 AF Commander's Action Group at 20af.ccx@us.af.mil.



Cadet Anthony Lee at Detachment 175, University of Hawaii at Manoa.

Diverse Team Supports MMIII Operational Test Launch - By Capt. Ieva Bytautaite, 20th Air Force Public Affairs

An operational test launch of an unarmed Minuteman III (MMIII) intercontinental ballistic missile (ICBM) is a sight to see. The ground rumbles as the missile roars upward and lights up the night sky. After a minute or so, the night goes quiet again and the MMIII missile travels thousands of miles to its destination.

For the bystanders watching the launch, the show may only last a couple of minutes, but for 20th Air Force (AF) Airmen, launch night is the culmination of months of preparation and hard work, from security forces defenders, maintainers and operators, to contractors, Guardians and other support personnel. The MMIII test launch mission, the primary responsibility of the 576th Flight Test Squadron (FLTS), headquartered at Vandenberg Air Force Base (AFB), CA, is a mission that requires precision, excellence



A diverse team of Airmen participated in Glory Trip 237

and teamwork.

“We truly have a wealth of talent, expertise, and competency within our squadron,” said Col Omar Colbert, 576 FLTS commander. “Our members are capable of resolving any technical issue and devising some of the most creative solutions you’ll ever see, which have enabled an over 50-year-old ICBM to remain confidently on alert.”

For the test launch last night, referred to as Glory Trip 237, Airmen from different career fields came together to ensure mission success. An immense amount of planning and fine tuning the smallest details goes into an operational test launch.

“From the moment the sortie is selected by Air Force Global Strike Command (AFGSC), the 576 FLTS engages the whole operational test launch team to tackle the arduous task of preparing the ICBM for launch,” said Lt Col Janet Dewese, 576 FLTS director of operations. “The defenders, maintainers, and operators at the operational missile wing work together to disassemble and ship the components for launch. Air Force Nuclear Weapons Center personnel and contractor partners analyze missile component history and condition while aiding the shipment process. Finally, maintainers and operators at the 576 FLTS, with the help of missile wing task force members, reassemble the ICBM and install the Department of Energy test reentry vehicle to posture the missile for alert. Teamwork gets this mission done; the support, commitment, and outstanding professionalism of each of these mission partners is critical to mission success.”

Capt Tarina Crook, missile combat crew commander at the 741st Missile Squadron (MS), Minot AFB, ND, is one of the Missileers who was selected for GT237. “I definitely had the opportunity to experience and grow from the enormous amount of teamwork between the operators, maintainers, and other personnel while at Vandenberg AFB,” Crook said. “A big part of making this teamwork successful is simply taking the time to learn what other parts of the team have

to do to contribute to the mission. Realizing that everyone plays an essential role, learning that role, and respecting it is the difference between having a vision and actually executing it.”

1st Lt Haylee Saucedo, mission lead commander, 10 MS, Malmstrom AFB, MT, was also part of the launch and was grateful to get a closer look at some of the maintenance operations she doesn’t get to see first-hand. “Typically, the relationship between maintainers and operators is through the phone,” Saucedo said. “It was great to be able to go out to site and actually watch them do their thing.”

Diversity and inclusion is an important priority for the Air Force, AFGSC and 20 AF. A diverse and inclusive environment ensures that not only the mission is accomplished, but a high degree of excellence is reached as well. “Our squadron succeeds in mission execution because we do such a phenomenal job of including our entire team, as well as mission partners, in game planning and execution,” Colbert said. “I often refer to our active duty, Reserve, civilians, and contractors simply as ‘Airmen’, so when we roll up our sleeves to attack a problem, we can bring the entire weight of our in house team, the MMIII System Program Office, AFGSC, and Headquarters 20 AF, to bear and we always come up with solutions together. I don’t think we could ever complete an ICBM test event successfully and on time without the efforts of our entire team, and we wouldn’t have it any other way.”

A diverse and inclusive environment fosters teamwork and innovation, and with a mission as important as ensuring the Nation’s most responsive leg of the nuclear triad remains ready and lethal, failure is not an option.

“When Airmen perceive they’re not a part of the team, when they clearly see they are not being included on key projects and social outings, when other Airmen use inappropriate or derogatory language and no one corrects them, and when they feel their opinion and perspectives are often discounted, squadron members may show up for work, but they won’t effectively complete their missions with initiative and innovation as we desire and expect them to,” Colbert said. “Optimizing the work environment and pool of diversity allows for the development of a greater wealth of ideas and talent which can be applied to our ICBM test mission and significantly enhance our mission readiness.”

“The 10th Missile Squadron is the most diverse organization I’ve ever been a part of, having grown up and attended school in largely homogenous areas,” Saucedo said. “Mere exposure to a diverse group of others has helped me improve my leadership skills and perspective on life. But it’s not enough to have people around who look and think differently than each other. We need to pay attention to who is making decisions for our force, and how those decisions affect all of their people.”

Although the Air Force has made great strides toward inclusivity, more work remains to be done. Recognizing how diversity positive affects the mission is vital and a

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great step in making positive and lasting change.

“Diversity is integral and fundamental to our daily mission,” said 1st Lt Shane Knowles, deputy combat missile crew commander, 740 MS, Minot, and one of the six operators selected for GT237. “Our operations require a vast number of personnel to come together for our common goal. In that pursuit, individuals from all walks of life, backgrounds, and perspectives are serving our country; diversity in all aspects will only help our force grown stronger and adequately represent the country we serve.”

Book Review of “The Librarian” -

by Col (Ret) Jim Warner, AAFM Executive Director

The setting is Royal Air Force Greenham Common, UK, in the early 1980’s when the Peace Women had camps outside base gates 24/7 to protest the placement of ground launched cruise missiles (GLCM) in Britain. Famous is the Embrace the Base Event in December 1982, which attracted celebrities and 30,000 individuals.

Author W. F. Whitson, an AAFM Member who served in Titan II, Minuteman and GLCM, was the first US Air Force missile maintenance officer assigned to Greenham Common and was there during the period of this novel.

Whitson weaves in the story of a Russian spy who, taking advantage of the disruptions by protesters, uses a skilled professional criminal and Scottish illegal drug traffickers’ to produce a dirty bomb and deliver it onsite to create panic and contaminate the property, making it unusable for years.

Are the spy and his helpers foiled? Read “The Librarian: Intrigue at RAF Greenham.” With back cover comments by Gen Lord, AAFM President, the book will be available on Amazon in April 2021.

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 31 December 2020 -

Justin Ahrens
John Barger
Terry Beguhn
Martin Bessant
Ken Beuton
Marc Boswell
Roger Brewer
William Cowper
Robert Foster
Jarrod Godwin
James Grogan
Kenneth Hamilton
Mark Hoffman
Ralph Jones

Cliff King
Donald Kniesche
Timoth Krause
Robert Lamond, Jr.
Paul Latte
Brock Lusk
Jay Lyle
Charles Miller
Russel Miller
Kent Montgomery
Daniel Mosqueda
Cameron Nigg
Paul Saunders
Howard Scholl Jr.

Tyler Terrel
Timothy Webster
James Wren
Max Walter

New Life Members

Dennis Brooke
S. L. Davis
Donald Ferneding
George Kennedy
Tom Lockhart
David Nordel

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.

Maj Gen Spraker - As did many, I knew Ralph Spraker well. We worked together at Strategic Air Command Headquarters in the early 1970s, and again when I was in the 3901st Strategic Missile Evaluation Squadron, and he was the commander for the last several months while I was transferring to Denver. He had given me an open invitation to stop by and see him anytime I was in Colorado Springs and he was commander there of the space wing (both while I was still in the AF or after he retired and I retired and was a contractor) – it was more than a casual invitation as I really could stop by sometimes without an appointment and we would spend time catching up and then make arrangements to go to dinner. He was a wonderful friend and a great leader of personnel. *Lt Col (Ret) Dar Johnson, AAFM Mbr No L378, Albuquerque, NM*

2020 Missile Heritage Grants Thank You Letters

Western Museum of Flight - Your generous gift has made a substantial and timely improvement in our institution’s financial condition during this time of great difficulty. I cannot thank you enough. Together, we have fortified the museum’s financial outlook as we stand ready to welcome visitors back to the museum grounds. *Cindy Macha, Western Museum of Flight, Torrance, CA*

Minuteman Missile State Historic Site - On half of the State Historical Society of North Dakota, thank you for your grant to the Ronald Reagan Minuteman Missile State Historic Site. We are most grateful for your donation. *Bill Peterson, State Historical Society of North Dakota, Bismarck, ND.*

AAFM Member Book Release

Longtime Life Member Jeffrey Bair has authored "Random Factor - Courage in Cold War," described in the post on Amazon in these words: The legitimate launch of a nuclear weapon is unthinkable. Yet, once, it happened from a place surrounded by history and natural beauty, simple and complex at the same time. Experience what it is like to hold the fate of humanity in the palm of your hand. Share in the pressure of nuclear duty and learn what life was like on the great prairie before modern man changed the landscape from local law and order to the ultimate threat to adversaries thousands of miles away. Discover if events unfold randomly, or if some order predetermines outcomes from great human activities.

Available from Amazon - make sure you search for the full title or with the author's name - there are several "Random Factor" books on Amazon.

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

Maj (Ret) Ron Anderson was an enlisted aircraft maintenance technician, and after commissioning, served in Minuteman in the 351 SMW.

Capt (Ret) Douglass Ray, an AAFM Member, served in operations Atlas F in the 578 SMW, in Thor 578th and 82 SMS, and in Ft Worth TX.

Former A2C Harry Bosch, Jr, an AAFM Member, served in Matador in the 585 TMMG, and lived in Grants Pass, OR.

Col (Ret) Jerry Brown, an AAFM Life Member, served in Atlas E, BOMARC, in Minuteman in the 321 SMW and 341 SMW, in Peacekeeper and at the JCS, Air Staff and Western Test Range, and lived in Lexington, MO.

MSgt (Ret) Alex Clark served in Minuteman in the 44 SMW and the 3901 SMES and lived in Roswell, NM.

Former 1Lt John J. Costa, Sr, an AAFM Member, served in Minuteman operations in the 91 SMW, and lived in Centerburg, OH.

Col (Ret) James Council, an AAFM member, served in Minuteman in the 44 SMW and at 15 AF, SAC and lived in San Antonio, TX

MSgt (Ret) William Crytzer, an AAFM Life Member, served in Matador in the 310 TMS, in Mace in the 498 TMG, in Atlas F in the 550 SMS, MM I, II, in Titan II in the 390 SNW, in Minuteman in the 321 SMW and 341 SMW, in the 394 SMS and lived in San Antonio, TX.

Col (Ret) Kirby Fetzer served in Minuteman in the 91 SMW, 4315 CCTS, and at the Air Staff, AFSPC and Air Force Safety Center, and lived in Bristol, TN.

MSgt (Ret) Donald Foote, an AAFM Member, served in Mace in the 498 TME, , in Titan I in the 568 SMS, and in Titan II in the 381 SMW, and lived in Livingston, TX.

Col (Ret) John S. Fortenbury, an AAFM Member, served in Titan I in the 569 SMS, in Minuteman in the 351 SMW, in Titan II in the 308 SMW, at SAC, and lived in Jacksonville, AR.

CMSgt (Ret) Charles Kilgore, an AAFM Member, served in Mace in the 498 TMG, in Titan II in the 381 SMW and 390 SMW, in the 392 TRS, at SAC, and lived in Ft Worth, TX.

Former Capt Morris Lobrecht, an AAFM Member, served in Minuteman in the 91 SMW, and lived in Ft Worth, TX.

Major (Ret) Leonard Mitchner served in Minuteman in the 341 SMW and lived in Fredericksburg, VA.

William T (Tim) Ryan, an Honorary AAFM Member, served on the 341 SMW Military Affairs Committee and lived in Kalispell, MT.

Col (Ret) Richard Sandercock, an AAFM Member, served in Minuteman in the 44 SMW and 90 SMW, in Titan I in the 850 SMS and in Titan II as Commander, 381 SMW, at SAC, AFIG, and 15 AF, and lived in Lake Ozark, MO.

Maj (Ret) Richard Stutte served in Minuteman in the 44 SMW, 91 SMW and 4 ACCS, and lived in Bellevue, NE.

Maj (Ret) Stephen Tiner served in Minuteman operations in the 91 SMW and lived in Tahequah, OK.

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

Awarded Missile Badge - Yes ___ No ___

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

Signature Active Duty ___ Retired ___ Discharged/Separated ___
Guard/Reserve ___ Civilian ___

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.

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

Hotel Reservations - We will be using two hotels, the Marriott 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. You can reserve your room online at www.afmissileers.org or call one of the numbers listed. The Courtyard reservation number is 801-875-4677 and use the code AF Missileers. Breakfast at the hotel you are staying in included. The Hyatt House reservation number is 801-875-4677, use code AF Missileers. Breakfast is at the hotel where you are staying.

Not Staying at the Hotel? - If you are staying in another hotel, RV resort, 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 \$30 until July 23; then \$35

1800 - Welcome Reception, pay as you go bar, \$25 per person - at Courtyard

Thursday, 7 October 2021

0700 - Breakfast (included in room rate)

0830 - Depart hotel for Tour of SLC area-bus and lunch \$48 per person

1800 - Dinner at the hotel, pay as you go bar - \$30 per person - at Courtyard

Friday, 8 October 2021

0700 - Breakfast (included in room rate)

0830 - Depart hotel for tour of Hill AFB - \$48 for bus and lunch

1630 - Return to hotel

1800 - Dinner at the hotel, pay as you go bar - \$35 per person - at Courtyard

Saturday, 9 October 2021

0700 - Breakfast (included in room rate)

0730 - 0830 - AAFM Board of Directors Meeting - at Courtyard

0900 - General Membership Meeting Lunch at Courtyard - \$20 per person.

1800 - AAFM Banquet with featured speaker and special program. - \$45 per person, choice of steak, chicken, or vegetarian, pay as you go bar - at Courtyard.

Sunday, 10 October 2021

0700 - Breakfast (included in room rate)

1100 - Depart hotel

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-\$30/35 eac	_____	_____	Welcome Reception- \$25 each	_____	_____
Thursday Tour \$48 each	_____	_____	Thursday Dinner \$30 each	_____	_____
Friday Tour \$48 each	_____	_____	Friday Dinner \$35 each	_____	_____
Saturday Lunch \$20 each	_____	_____			
Banquet \$45 each	_____	_____	Number of each Steak ___ Chicken ___ Vegetarian ___		
Special meal requirements (specify) _____			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

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Reunions and Meetings

341 MW/SMW Malmstrom Missile Maintenance - 2-3 July 2021 in Great Falls, MT. For more information Contact: Lonnie and Sheryl Yocum at lonnie267@min.midco.net.

390 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 17.

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.
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