

Air Force Missileers

Volume 27, Number 3

"Advocates for Missileers"

September 2019

The Quarterly Newsletter of the Association of Air Force Missileers

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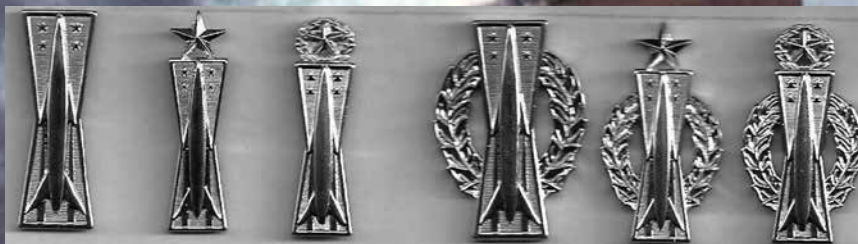
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The Mission of the Association of Air Force Missileers -

- 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 have really enjoyed my first year as your Executive Director - the phone calls and emails from members all across the country have been informative, interesting, and even fun. I will admit that working full time and doing this job has been a challenge, so I apologize to anyone who had to endure a delay in my response. I'm continually impressed with the things that Charlie Simpson worked every month in this task.

To that end, we are seeking volunteers to help with the newsletter and the web page. Charlie continues to be our newsletter editor but is ready to train his replacement. He also manages the web page but we could share those responsibilities, too.

As you will also read, we have two new board members with the resignations of Pat Fornes and Mark Salyards - I'm excited to hear the new ideas that Shane and Jock might bring to this team.

When you see the article from the Indiana Military Museum you will see that we are spending our grant funds wisely, restoring and maintaining the heritage of Air Force missile systems across the country. Next month we'll send out letters to more than two dozen museums across the country asking for their proposals for next year's grants. Our Museum Grant committee will sort through the applications and pick the most deserving within our budget.

By the time you read this, your Board of Directors will have met in Denver, CO, to assess the status of the organization and look at our future efforts. Of the many topics of discussion that we have on the agenda, two have my biggest interest: Membership (how do we get back members we have lost contact with, and how do we grow our base with younger members) and social media (how do we share our message to larger groups with tools such as Facebook, etc.). If you have any ideas on these topics, please feel to drop me a line.

Also by the time you read this we will have finalized plans for our 2020 National Meeting. What I can tell you is that we are headed to Utah in the Fall of 2020 (projected dates are 7-11 October 2020). What I can't tell you right now is if we are meeting in Salt Lake City or Ogden but we will include time at Hill AFB and hear about the future of Intercontinental Ballistic Missiles. There may even be something at the end of this newsletter if we get the final details before printing so read every page carefully!

Thanks for the opportunity to be your Executive Director - it's an honor to serve as part of this great organization.

Jim Warner

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Air Force Missileers

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JB-2 Loon



JB-1 Cruise Missile

Missile Milestones Updated - by Col (Ret) Charlie Simpson, AAFM Executive Director Emeritus

This list reflects the history of Air Force missiles and missileers, from the beginning concepts to the latest plans for Air Force systems, programs and events. It was assembled from various history publications, other documents and publications in the AAFM library and many other sources. You will find many historical articles and personal stories in our newsletter collection on our web page, complete with an index of all articles. If we missed an important event or program note, let us know.

Late 1944 - Production begins on the US version of the German V-1 cruise missile, called the JB-2 Loon. Over 200 are flight tested by August 1945.

December 1944 - First JB-1 flying wing cruise missile built by Northrop flight tested. Program terminated in March 1946.

September 1945 - JB-2 Loon production terminated after 1391 produced by Ford and Willys Overland.

April 1946 - Army Air Force (AAF) has 12 surface to surface and 3 surface to air missile programs underway, including Nativ, Navaho, Matador, Hiroc, Snark, Boojum, Banshee, GAPA, Condor, Wizard and Thumper. Programs were designated MX, with Matador designated MX-771A.

19 April 1946 - AAF awards contract to Convair to study a 1500-5000 mile surface to surface subsonic or supersonic missile, the MX-774.

1946 - 1st Experimental Guided Missile Group forms at Eglin AAF, FL.

June 1947 - AAF cancels contract with Convair due to reduction in missile development funds - Convair continues work on MX-774 on its own.

July 1947 - AAF narrows missile programs to Navaho, Matador, Boojum, Banshee, GAPA and Wizard.

Early 1950 - Boeing Airplane Company (BO) and the Michigan Aeronautical Research Center (MARC) begin to develop the BOMARC air defense missile.

19 January 1949 - First launch of the XSSM-A-1, the Matador prototype, at Holloman AFB, NM. The first test was a failure due to booster misalignment. The second launch, a few days later, was successful.

20 June 1949 - 1st Experimental Guided Missile Group replaced by the 550th Guided Missile Wing.

29 August 1949 - Soviets detonate their first nuclear bomb.

21 December 1950 - First test of a dummy Snark missile at Holloman by a Northrop Field Test Crew.

16 June 1951 - US Air Force awards contract to Convair to study a rocket powered glide or ballistic missile with a range of 5,500 nautical miles, a circular error probable of 1,500 feet and the capability to carry an atomic weapon.

September 1951 - Air Force directs Convair to work only on a ballistic system.

January 1951 - Convair names its program Atlas.

May 1952 - The first model N-25 Snark missile arrived at Patrick AFB, FL.

19 July 1952 - 6555th Guided Missile Squadron (GMS) activated for the Snark system.



Bitburg Missileers with Matador

May 1952 - First Navaho test vehicles delivered to Edwards AFB, CA.

10 September 1952 - First BOMARC A launched at Cape Canaveral, FL.

13 October 1952 - Quail missile program, GAM-72/ADM-20, begins to develop a decoy missile to be carried by the B-52.

1 October 1953 - First Navaho X-10 tested at Edwards.

1 October 1951 - 1st Pilotless Bomber Squadron (PBS) activated at Patrick AFB, FL, for Matador.

10 January 1952 - The 69 PBS activated, the second operational missile units in the Air Force equipped with the B-61A Matador.

September 1953 - AIM-9A, Sidewinder prototype first fired successfully.

1954 - AF Vice Chief General White assigns Project Atlas the highest AF priority.

1954 - Falcon Gar-1/AIM-4 air to air missile tested for the first time.

8 February 1954 - A RAND report states that Atlas can be operational by the early 1960s.

9 March 1954 - 1 PBS assigned to Bitburg AB, Germany, with Matador missiles on alert shortly after arrival.

July 1954 - The B-73, initially called the Bull Goose, a ground launched decoy missile to simulate bombers, assigned project MX-223, with the name changed to Goose in May 1958.

1 July 1954 - Western Development Division (WDD), under command of Maj Gen Bernard Schriever, activated with responsibility for and total authority over Atlas development.

1 October 1954 - 69 PBS arrives at Hahn AB, Germany.

31 October 1954 - The Von Neumann committee is formed to do a "searching analysis" of the Air Force Intercontinental Ballistic Missile (ICBM) program. A recent breakthrough by the Atomic Energy Commission for a high yield, light weight atomic weapon allows the committee to recommend that technological difficulties could be overcome and the Air Force should accelerate the development program.

May 1955 - WDD assigned responsibility for Titan, an alternative or backup ICBM to Atlas.

8 September 1955 - President Eisenhower assigns the highest national priority to the ICBM development program.

18 November 1955 - WDD tasked with establishing an Initial Operational Capability (IOC) for the ICBM program in cooperation with Strategic Air Command (SAC), with WDD retaining all responsibilities until IOC, when the responsibilities are transferred to SAC.

1956 - Sidewinder initial production version, designated AIM-9B, enters the Air Force inventory.

16 July 1956 - 1st Missile Division moved to Camp Cooke.

1 September 1956 - Camp Cooke designated as Intermediate Range Ballistic Missile (IRBM)/ICBM base.

1 June 1957 - Camp Cooke becomes Cooke AFB, CA

17 June 1957 - 17 Tactical Missile Squadron (TMS), Matador squadron activated at Tainan, Taiwan.

19 July 1957 - First launch of the Genie MB-1/AIR-2, an air defense missile designed to counter Soviet bombers, with either a conventional or nuclear warheads, from an F-89J.

13 July 1957 - Navaho program canceled so Air Force could concentrate on ballistic missiles rather than aerodynamic systems, although testing continued for research purposes.

23 August 1957 - Headquarters USAF awards North American Aviation a development contract for the Hound Dog air to surface missile.

1 October 1957 - Snark N-69Ds launched by the 6555 Guided Missile Test Wing, the first blue suit launch.

15 December 1957 - The 556th Strategic Missile Squadron (SMS) activated under the command of Lt Col Richard W. Beck at Patrick, as the Snark operational unit.

1 January 1958 - Cooke AFB moves from Air Research and Development Command (ARDC) to SAC.

8 May 1958 - First Atlas ICBM delivered.

4 October 1958 - Cooke AFB becomes Vandenberg AFB.

16 December 1958 - First missile launched at Vandenberg - a Thor IRBM.

December 1958 - Goose program canceled.

23 May 1958 - Missile badge authorized

June 1958 - Construction begins on Atlas ICBM launch and support facilities at the 706 SMW (later the 389 SMW) at FE Warren AFB, WY.

1 July 1958 - 564 SMS (Atlas D) at Warren activated.



Navaho Missile Test Vehicle



Emplacing an Atlas D at Vandenberg

July 1958 - Chief of Staff of the Air Force awards the first two Guided Missile Insignia (later renamed the Missile Badge) to Col Erlenbusch and MSgt Kindsfather.

15 July 1958 - 58 Tactical Missile Group (TMG) activates at Osan AB, Korea, with Matador missiles.

26 September 1958 - SAC awards the first two missile badges to Capt Loughbridge and MSgt Mustaine.

18 November 1958 - Final flight for the Navaho G-26. Every test failed somewhere in the flight, with the ninth flight the longest, with the ramjets reaching a speed of Mach 2.8 and traveling over 1,075 miles downrange.

2 August 1958 - First successful launch of Series B Atlas ICBM (booster and sustainers) from Cape Canaveral marked first successful staging (stage separation) of US ICBM.

6 August 1958 - Development of the Minuteman ICBM approved by Air Force.

1 September 1958 - First Royal Air Force (RAF) US Air Force Thor squadron, the 77 SMS, activated at RAF Feltwell, UK.

25 September 1958 - First Titan I ICBM wing activated.

28 November 1958 - First full-range flight test success of Atlas B ICBM with flight 5,500 nautical miles from Cape Canaveral.

1 December 1958 - 565 SMS (Atlas D) at Warren activated.

23 December 1958 - First successful Atlas C ICBM launch from Cape Canaveral.

1 January 1959 - SAC activates the 702nd Strategic Missile Wing (SMW) (ICM-Snark) at Presque Isle AFB, ME. (ICM - Intercontinental Cruise Missile)

6 February 1959 - First successful Titan I ICBM launch from Cape Canaveral.

12 February 1959 - SAC sets requirements for mobile Minuteman using railcars.

26 March 1959 - 576 SMS accepts delivery of first Atlas D at Vandenberg.

April 1959 - 556 SMS at Patrick assigned to the 702 SMW.

23 April 1959 - A B-52 launches the first flight test of a prototype Hound Dog missile at Eglin.

December 1959 - The first Hound Dog-equipped B-52G unit

is the 4135th Strategic Wing (StratW), Eglin.

May 1959 - First BONARC B launched.

15 July 1959 - The 556 SMS inactivated and absorbed into the 702 SMW.

28 July 1959 - First successful launch of Atlas D ICBM at Cape Canaveral.

9 September 1959 - Following first successful launch of Atlas D from Vandenberg, Gen Thomas S. Power, Commander in Chief, SAC (CINCSAC), declares Atlas operational.

28 September 1959 - First Atlas D deployed to 564 SMS at Warren.

31 October 1959 - First US ICBM equipped with nuclear warhead, Atlas D at Site A, on alert at Vandenberg.

21 December 1959 - Gen Thomas Power, CINCSAC, accepts the first production Hound Dog Missile at the North American Aviation's Downey, CA, plant.

29 February 1960 - SAC launches its first Hound Dog missile.

18 March 1960 - 702 SMW placed the first Snark on alert,

11 April 1960 - A B-52 took off from Eglin carrying two operational Hound Dogs, and flew to Florida's east coast, where one of the missiles was launched over the Atlantic Missile Range.

3 June 1960 - First Thor IRBM and its warhead mated in the 77 RAF SMS at Feltwell.

11 July 1960 - First Jupiter IRBM emplaced at an Italian missile base.

9 August 1960 - First Atlas D squadron, 564 SMS at Warren, declared operational.

13 September 1960 - First Quail missile delivered to the 4135th Strategic Wing, Eglin.

19 September 1960 - First BOMARC squadron, the 46th Air Defense Missile Squadron (ADMS) at McGuire AFB, NJ,



BOMARC Launch



Titan I Acceptance Ceremony

attains operational status.

28 February 1961 - The 702 SMW declared "operational."

28 March 1961 - President Kennedy declares the Snark "obsolete and of marginal military value,"

3 February 1961 - First flight of Looking Glass, SAC's 24 hour Airborne Command Post.

8 February 1961 - 498 TMG, with Mace missiles, activated at Kadena AB, Okinawa.

30 March 1961 - Last Atlas D squadron, 549 SMS (originally designated the 566 SMS) at Offutt, declared operational.

May 1961 - the last Atlas D, in the 549 SMS on alert.

May 1961 - The AGM-28B, an advanced version of the Hound Dog, first flies. It incorporates an improved Flight Control system using Terrain Following equipment and had greater range.

3 May 1961 - First Titan I launch from Vandenberg by an Air Force Systems Command (AFSC) crew.

11 May 1961 - Last Matador launch at Patrick.

June 1961 - The first launch of a AGM-28 Hound Dog Missile from White Sands Missile Range, NM. (A total of 17 were launched there between 1961 and 1967.)

1 June 1961 - First BOMARC B squadron, the 37 ADMS, operational at Kincheloe AFB, MI.

25 June 1961 - SAC inactivates the 702 SMW and by July 1962 all missiles have been destroyed.

1 July 1961 - SAC MIKE at BMD closed.

1 July 1961 - the 3901st Strategic Missile Evaluation Squadron activated at Vandenberg.

15 July 1961 - 341 SMW, the first Minuteman wing, activated at Malmstrom AFB, MT.

25 August 1961 - The first Hound Dog missile delivered to Beale AFB, CA, and mated to a B-52 on 2 September 1961.

October 1961 - first Atlas E on alert, 567 SMS, Fairchild AFB, WA.

November 1961 - All Atlas E missiles except those used for training on alert in the 567 SMS, Fairchild, 548 SMS, Forbes AFB, KS, and 389 SMW, Warren.

7 November 1961 - First Jupiter IRBM in Turkey manned by US personnel while training Turkish crews.

20 November 1961 - final Atlas E squadron, 566 SMS (initially designated the 549 SMS) at Warren, declared operational.

7 December 1961 - Mobile Minuteman canceled.

8 December 1961 - Combat Evaluation Launches begin at Eglin by elements of the B-52G equipped 4241 StratW, Seymour Johnson AFB, NC.

1962 - SAC activates Airborne Missile Maintenance Squadrons at each B-52 base to provide the maintenance for the Hound Dog and its sister missile, the Quail.

9 January 1962 - Under Operation "Jetblack", the first SAC Combat Evaluation Launch of a GAM-77 Hound Dog missile was made. A B-52G crew from the 4126 SW, Beale AFB, CA, launched the missile down the Atlantic Missile Range. The missile flew 607 nautical miles and impacted a target down range.

17 January 1962 - The 4038 StratW at Dow AFB, ME, with B-52Gs, became the first SAC unit to carry Hound Dog missiles on Strategic Airborne Alert (Chrome Dome) missions.

20 January 1962 - First Titan I launch by a SAC crew.

20 April 1962 - first Titan I squadron operational, 848 SMS (redesignated the 742 SMS), in the 703 SMW (redesignated the 451 SMW) at Lowry AFB, CO.

6 August 1962 - Last Titan I squadron, 569 SMS at Mt Home AFB, ID, operational.

1 April 1962 - First Titan II squadron, 570 SMS at Davis Monthan AFB, AZ, activated.

15 April 1962 - Quail missiles delivered to the fourteenth and last bomb wing to receive them.

August 1962 - First Atlas F on alert, 577 SMS, Altus AFB, OK..

9 September 1962 - Atlas F squadron, 550 SMS at Schilling AFB, KS, operational.

September 1962 - Last of the six Titan I squadrons, 851 SMS, Beale, on alert.



President Kennedy Visits Malmstrom After Cuban Crisis



Thor on Alert in the UK

28 September 1962 - First Minuteman I launch by a SAC crew.

22 October 1962 - SAC bombers and missiles put on increased alert due to Cuban Missile Crisis. All remaining Atlas F missiles not yet on alert are rushed to alert.

27 October 1962 - Minuteman I missiles of A Flight, 10 SMS, Malmstrom rushed to alert during Cuban crisis.

November 1962 - Minuteman Education Program starts at Malmstrom.

11 December 1962 - First two flights of Minuteman I in 10 SMS at Malmstrom operational,

20 December 1962 - Last Atlas F squadron, 556 SMS at Plattsburgh AFB, NY, operational.

1963-1964 - Project Red Heat (Atlas) and Top Banana (Titan I) upgrade modification programs implemented at Atlas F and Titan I sites.

1963 - Two new versions of the Missile Badge introduced, the Senior and Master badges.

24 January 1963 - President Kennedy announces the phaseout of Jupiter missiles in Turkey and Italy.

18 February 1963 - The first attempted dual launch of Hound Dog missiles in the Atlantic Missile Range successful.

28 February 1963 - First Minuteman squadron, 10 SMS at Malmstrom operational.

28 Mar 1963 - North American Aviation completes the last production Hound Dog missile.

April 1963 - First Titan II on alert, 570 SMS, Davis-Monthan.

15 May 1963 - 4315th Student Squadron redesignated as the Combat Crew Training Squadron (CCTS), absorbing the training functions previously under the 576 SMS (Atlas), 394 Missile Training Squadron (MTS) (Minuteman) and 395 MTS (Titan). The 394 and 395 redesignated SMS.

8 June 1963 - First Titan II squadron, 570 SMS at Davis-Monthan, operational.

July 1963 - First Minuteman IB model on alert, 66 SMS, Ellsworth AFB, SD.

31 December 1963 - Last Titan II squadron, 374 SMS at Little Rock, operational.

23 August 1963 - Last Thor squadrons deactivate at RAF North Luffenham, UK.

23 November 1963 - Air Force approves program for a Short Range Attack Missile (SRAM).

29 February 1964 - First ripple launch of two Minuteman I missiles from Vandenberg, by crews from the 10 SMS.

21 April 1964 - Number of ICBMs on alert equals the number of bombers on alert.

16 May 1964 - McNamara announces phaseout of Atlas and Titan I to be complete by the end of FY 1965.

1 October 1964 - Last Atlas D removed from alert to complete Atlas D phaseout.

1 March 1965 - Project Long Life, a seven second long flight of a Minuteman I launched from an operational base silo at Ellsworth, the only successful operational base launch.

23 March 1965 - Development of the SRAM, AGM-69A, approved.

12 April 1965 - Last Atlas F off alert, completing phaseout of the Atlas D, E and F and Titan I.

Mid 1965 - SAC changes Minuteman crew structure to three man crews since crew members will no longer be allowed to sleep in the launch control center.

30 August 1965 - The last launch of a AGM-28 Hound Dog over the Atlantic Test Range. There were 77 launches from 1959 thru 1965.

31 October 1965 - First flight of Minuteman II, 447 SMS, Grand Forks AFB, ND, on alert.

February 1966 - Mace replaces Matador in Okinawa and Matador missiles leave Korea and Taiwan.

24 February 1966 - First salvo launch of two Minuteman I missiles from Vandenberg.

2 April 1966 - 576 SMS, the last Atlas squadron inactivated.

25 April 1966 - First Minuteman II Squadron, 447 SMS at



Titan II Control Center

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321 SMW Celebrates 1969 Missile Competition Win

Grand Forks operational.

7 May 1966 - Force Modernization of Minuteman I begins at Whiteman AFB, MO.

25 September 1966 - The Mace missile program ends in Germany with the deactivation of the 38th Tactical Missile Wing (TMW).

16 October 1966 - The second attempt to launch a modified missile from an operational silo is attempted at one of the Grand Forks launch facilities. This attempt and two others, titled Long Life II and then Giant Boost, fail due to problems with the safety circuits installed for the launches.

1967 - Foil Packs replace cooked meals at Minuteman launch control facilities due to a shortage of cooks caused by the war in Vietnam.

3-7 April 1967 - Curtain Raiser, the first SAC Missile Combat Competition, conducted at Vandenberg.

17 April 1967 - First Airborne Launch Control System (ALCS) launch of a Minuteman missile.

21 April 1967 - Last Minuteman squadron, the 564 SMS at Malmstrom operational.

31 May 1967 - ALCS declared operational.

Mid-1967 - Two piece blue alert uniforms replace white coveralls.

October 1967 - The Emergency Rocket Communications System (ERCS) is operational in the 510 SMS at Whiteman.

1968 - SAC Missile Combat Competition canceled due to Vietnam involvement by SAC.

29 June 1968 - Survivable Low Frequency Communications System (SLFCS) fully operational.

12 February 1969 - Last Minuteman LGM-30A removed.

17-24 May 1969 - Olympic Arena, the second SAC Missile Combat Competition conducted at Vandenberg.

October 1969 - The last Mace missile, a CGM-13B, is taken off alert at Kadena in the 498th TMG.

31 December 1969 - 395 SMS (Titan) at Vandenberg inactivated and 394 SMS absorbs Titan capabilities.

Early 1970 - Decision made to close down the entire air defense missile system including BOMARC.

17 April 1970 - First Minuteman III emplaced in the 741 SMS at Minot AFB, ND.

19 August 1970 - First Minuteman III on alert, 741 SMS, Minot.

25 March 1971 - Last Launch from White Sands Test Range of a AGM-28B, missile SN 62-0139 from Robins AFB, GA.

29 December 1970 - First Minuteman III squadron, the 741 SMS at Minot, operational.

1972 - SAC begins deploying the SRAM and phasing out the Hound Dog.

August 1972 - First AGM-65A Maverick accepted.

15 September 1972 - First bomb wing receives the SRAM, the 42 Bomb Wing (BW), Loring AFB. ME.

1 October 1972 - Last BOMARC missile at McGuire, removed, ending the operational life of the system.

24 July 1973 - The last Hound Dog operational test at the Eglin water test area.

February 1974 - Air Force enters into contract to develop and flight-test the prototype AGM-86A Air Launched Cruise Missile (ALCM), which is slightly smaller than the later B, C and D models.

30 June 1975 - After thirteen years of alert duty in SAC, the last Hound Dog missile removed from Alert Status. Note: The 416 BW did not complete weapons package changeover until after 1800Z on 1 July due to a unscheduled aircraft change over - HQ SAC refused to reconfigure the remaining aircraft until the changeover was complete. The last B-52G on alert with AGM-28 Hound Dog missiles at Griffiss AFB, NY, was B-52G SN 59-2585.

5 March 1976 - First powered flight of the ALCM, AGM-86A.

28 June 1976 - Last Titan II ICBM launch, to test the Rivet Hawk AC-Delco guidance system. The new system replaces the original guidance system in the Titan II force.

January 1977, - Full-scale development of the AGM-86B ALCM, , which greatly enhances the B-52's capabilities'.

May 1977 - Last Mace missile, MQM-13A, launched by the 4751 ADMS at Hurlburt Field, FL, the last of 165 Mace



Minuteman Dual Launch at Vandenberg

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Minuteman Crew on Alert in Two Piece Blues

launches there. The CGM missiles had been redesignated MQM drones for use as targets at Eglin.

December 1977 - AIM-9J, a conversion of the AIM-B and E models, with maneuvering capability for dogfighting, and greater speed and range, begins delivery to equip the F-15 and other Sidewinder-compatible aircraft.

31 March 1978 - Project Rivet Save completed, allowing one crew member to sleep resulting in a return to 24 hour alerts and reduction of 600 crew members in Minuteman.

15 June 1978 - The 42 BW, Loring, destroys the last Hound Dog missile in the SAC inventory.

30 June 1978 - Last Quail missile removed from alert.

18 August 1978 - first alert by an enlisted female crew member, Titan II, 381 SMW, McConnell AFB, KS.

16 September 1978 - first alert by a female officer crew member, Titan II, 381 SMW.

February 1979 - Air Force selects Hughes Aircraft and Raytheon, for the validation phase of the AIM-120 advanced medium-range air-to-air missile (AMRAAM), an air-to-air missile with an all weather, beyond-visual-range capability.

18 September 1980 - The Titan II missile complex at Damascus, AR, part of the 308 SMW at Little Rock AFB, AR, is destroyed in an explosion. One Air Force member dies as a result of the accident.

1981 - Hughes Aircraft's Missile System Group selected as the full-scale developer for AAMRAM.

11 January 1981 - First ALCM delivered to the 416th Bomb Wing, Griffiss.

14 September 1981 - Last SAC Thor booster departs Vandenberg for storage at Norton AFB, CA.

December 1982 - AIM-7 Sparrow, radar-guided, air-to-air missile with a high explosive warhead enters service. The versatile Sparrow has all-weather, all-altitude operational capability and can attack high performance aircraft and missiles from any direction. It is a widely deployed missile used by US and North Atlantic Treaty Organization forces.

1 July 1982 - The first GLCM wing, the 501 TMW at Green-

ham Common, UK, opens.

14 July 1982 - Last BOMARC launched from Vandenberg. A total of 26 BOMARC A and 31 BOMARC B missiles were launched from Vandenberg.

August 1982 - The first Titan II missile is called off alert at Davis-Monthan. The site had been off alert for modification since July and was permanently taken off alert as the first missile in Titan II phaseout.

2 October 1982 - President Reagan announces deployment of Missile-X, later designated Peacekeeper, with at least 36 to be deployed to refurbished Titan II or Minuteman silos. President Reagan also announces phaseout of Titan II.

November 1982 - President Reagan announces M-X (now designated Peacekeeper) basing to be at Warren in the "Dense Pack" basing mode.

1983 - Convair selected to develop the AGM-129 Advanced Cruise Missile (ACM).

30 June 1983 - The second GLCM wing, the 487 TMW at Comiso, Sicily, opens.

March 1983 - Defense Systems Acquisition Review Council approved the AGM-88, a high-speed anti-radiation missile, an air-to-surface tactical missile designed to seek and destroy enemy radar-equipped air defense systems, for production.

October 1983 - First AGM-65D accepted.

1984 - Development of the AGM-130 initiated as a product improvement to the GBU-15 guided glide bomb system. AGM-130 is a powered, air-to-surface missile designed for high- and low-altitude strikes at standoff ranges against a variety of targets.

1 August 1984 - The third GLCM wing, the 485 TMW at Florennes, Belgium, opens.

4 February 1985 - Gen Davis, CINCSAC, announces that future Minuteman and Peacekeeper crews would include all female as well as all male crews, a "gender specific" manning policy.

1 March 1985 - 15th Air Force (AF) requires missile squadron commanders and operations officers to perform alert.

1 April 1985 - The fourth GLCM wing, the 38 TMW at Wus-senheim, Germany,, opens.

3 January 1986 - First Minuteman III removed from the 400 SMS at Warren to be replaced by the new LGM-118A Peace-keeper missile.

25 March 1986 - First female crew members on alert in Min-uteman at Whiteman.

12 December 1986 - The fifth GLCM wing, the 303 TMW at Molesworth, UK, opens.



Hound Dog in Flight



GLCM Alert and Maintenance Area

June 1986 - Limited number of AGM-86B missiles converted to carry a high-explosive blast/fragmentation warhead and an internal GPS, designated as the AGM-86C Conventional Air Launched Cruise Missile (CALCM).

22 December 1986 - First flight of Peacekeeper on alert, 400 SMS, Warren.

5 May 1987 - Last Titan II removed from alert, 373 SMS, Little Rock.

18 August 1987 - Last Titan II Wing, the 308 SMW at Little Rock, deactivated.

27 August 1987 - The sixth and last GLCM wing, the 486 TMW at Woensdrecht, Netherlands, opens.

4 December 1987 - One piece blue alert uniform approved.

1988 - Operations Designator introduced for the Missile Badge to differentiate between operators and maintainers.

March 1988 - Crew members authorized wear of the leather jacket.

April 1989 - Joint Air-to-Surface Standoff Missile (JASSM) program begins,

11 April 1988 - Conversion of 400 SMS at Warren from Minuteman III to Peacekeeper complete.

23 July 1988 - First ACM delivered to the 410 BW, KI Sawyer AFB, MI.

1 April 1989 - The 303 TMW, the GLCM wing at Molesworth, UK, closes.

30 April 1989 - The 485 TMW the GLCM wing at Wusenheim, Germany, closes.

24 July 1990 - The Looking Glass ceases 24 hour airborne operations and starts ground alert.

22 August 1990 - The 38 TMW, the GLCM wing at Florennes, Belgium, closes.

9 September 1989 - The 486 TMW, the GLCM wing at Woensdrecht, Netherlands, closes.

21 September 1990 - Col Doug Livingston selected to assemble a group of GLCM veterans to form the 4468th Tactical Reconnaissance Group, tasked with launching BQM-74C drones as decoys during the Gulf War.

January 1991 - The Conventional ALCM (CALCM) becomes operational at the onset of Operation Desert Storm.

27 May 1991 - The 487 TMW, the GLCM wing at Comiso closes.

31 May 1991 - The 501 TMW at Greenham Common, UK, closes, ending the deployment of GLCM in Europe.

1 September 1991 - 20 AF activates at Vandenberg, with all ICBM wings reporting to the Numbered Air Force.

September 1991 - The ERCS mission ends.

28 September 1991 - President orders all SAC bombers, tankers, and Minuteman IIs from day-to-day alert.

31 May 1992 - SAC is deactivated, with ICBMs and bombers transferred to the new Air Combat Command (ACC). US Strategic Command (STRATCOM), a joint command responsible for all nuclear forces during wartime, replaces SAC at Omaha. Strategic Missile Wings are redesignated as Missile Wings (MW) and Strategic Missile Squadrons as Missile Squadrons (MS).

1 January 1993 - The Association of Air Force Missilers (AAFM) becomes an official tax exempt, nonprofit Internal Revenue Service Code 501c(3) entity, and begins operation and enrolling members in this new organization for Air Force Missilers.

May 1993 - The Missile Competition is conducted at Vandenberg by Air Combat Command. The format was unchanged from earlier SAC competitions.

1 July 1993 - The ICBM force (20 AF, the three missile wings and other related units are transferred from ACC to Air Force Space Command (AFSPC), with headquarters at Peterson AFB, CO. The 4315 CCTS is transferred to Air Education and Training Command and becomes the 392nd Strategic Missile Training Squadron.

December 1993 - AAFM begins the Missile Heritage Grant Program, with the first grants to museums for missile displays.

1 April 1994 - The 381st Training Group (TG) takes over all Air Force missile training.

5 May 1994 - First Space and Missile Competition, Guardian Challenge, conducted at Vandenberg. The competition format changes, with a new electronic scoreboard, and with teams from the missile wings and space wings competing.

10 May 1994 - President Clinton directs missiles to be "off target."

23-26 May 1994 - AAFM conducts its first National Meeting in Colorado Springs, CO. Events include tours and briefings at AFSPC and local area tours.

4 July 1994 - 44 MW at Ellsworth closes.

7 June 1995 - 351 MW at Whiteman closes.

10 August 1995 - Last Minuteman II in the ICBM force removed.

21-25 October 1996 - AAFM conducts its second National Meeting in Santa Maria, CA. Events include tours and briefings at Vandenberg and the local area.

1 October 1997 - The three Missile Wings, become Space Wings (SW) - the 90 SW, 91 SW and 341 SW.

March 1998 - Operations personnel are issued leather flying jackets.



AAMRAM Loading

May 1998 - AAFM conducts its third National Meeting in Cocoa Beach, FL. Events include tours of the Shuttle launch complex and local attractions. Some members stay a few extra days to watch Senator John Glenn's Shuttle flight.

30 June 1998 - 321 MG at Grand Forks closes.

17-21 May 2000 - AAFM conducts its fourth National Meeting in Colorado Springs, CO. Events include tours and briefings at Peterson and Schriever AFBs and the local area.

1 October 1998 - Last flight of the Looking Glass command and control aircraft. The mission is assumed by US Navy aircraft.

September 2000 - Flight suits replace one piece blue alert uniform.

14 June 2001 - Maintenance personnel from the 90 SW at Warren emplace the inert missile in the new Minuteman Missile National Historic Site, near Wall, SD. The Site includes launch control facility D-01 and launch facility D-09, which will open to the public later in the year.

19 April 2002 - AFSPC becomes a separate command, with the new four star commander, Gen Lance Lord, one of the founders of AAFM, becoming the first career missileer four star. The "second hat" worn by previous AFSPC commanders is assumed by the commander of the new Northern Command, which assumes all the former Aerospace Defense Command functions along with new missions to ensure the defense of the US.

23-27 October 2002 - AAFM conducts its fifth National Meeting in Santa Maria, CA. Events include tours of Vandenberg and local area attractions.

2003 - Guardian Challenge 2003, the AFSPC Space and Missile Competition, is canceled due to the Gulf War.

May 2004 - The final Guardian Challenge at Vandenberg, with the competition becoming an "every two year" event, to be conducted at Peterson. Teams will no longer compete during the week of the competition, but will compete at home bases with scores posted at the gathering each two years. Some security and food service events are conducted at Peterson during the week of the competition gathering.

19-23 May 2004 - AAFM conducts its sixth National Meeting in Omaha, NE. Events include tours and briefings at Offutt and yours of local Omaha Attractions.

31 August 2004 - CMSgt (Ret) Michael Kenderes, an AAFM Board Member, inducted into the Air Force Enlisted Heritage Hall. Maj Gen (Ret) Tom Deppe, an AAFM member, and former enlisted member of the Air Force, is the only other missileer in the Hall.

19 September 2005 - Peacekeeper deactivated as 400 MS at Warren and squadron closes.

31 October 2005 - The new Space Badge replaces the Missile Badge with Operations Designator for operators. Maintainers badge is now called the Missile Maintenance Badge.

27 September - 1 October 2006 - AAFM conducts its seventh National Meeting in Cheyenne, WY. Events include tours of Warren and Cheyenne attractions.

30 September 2006 - missile crews begin three day alerts.

June 2008 - Missile crews return to 24 hour alerts

15 May 2008 - The 564 MS at Malmstrom closes, ending the era of the Sylvania-based Minuteman ground electronics system that was unique to this squadron and the wing at Grand Forks.

1 June 2008 - The 90 SW, 91 SW and 341 SW, are redesignated Missile Wings (MW).

6 June 2008 - The Missile Badge with Operations Designator returns, with a special ceremony at the Air Force Museum, during the Corona Air Force Four Stars Conference. Chief of Staff of the Air Force presents badges to officers from each missile unit.

9-13 October 2008 - AAFM conducts its eighth National Meeting in Fairfax, VA. The meeting includes a tour of the Pentagon, the new Air Force Memorial and Gettysburg, and Gen Bernard Schriever's widow, singer Joni James, joins us for the banquet. The banquet features the Air Force Strolling Strings.

1 December 2009 - Air Force Global Strike Command (AFGSC) activates, led by Lt Gen Frank Klotz, with Minuteman missile force transferring from AFSPC, with B-52 and B-2 bombers transferring from ACC on 1 February 2010, to become the new Air Force nuclear command.

6-10 October 2010 - AAFM conducts its ninth National Meeting in Tucson, AZ. The meeting features a tour of the Titan II Museum in Green Valley, the Air Force "Boneyard" and Davis-Monthan's Air Operations Center.

November 2010 - AFGSC conducts the first AFGSC Challenge, the Bombing and Missile Competition. Teams compete at their home bases during the year and scores are posted during a three day event at Barksdale AFB, LA, with a return to the "old blue scoreboard" with noncommissioned officers posting magnetic numbers on the board at score postings.

June 2012 - ACM program ends with removal of last ACM from force.

October 2012 - AAFM conducts its tenth National Meeting in Great Falls, MT. The largest attendance in our history, over 700 people, takes part in events including a special commemoration of the 50th Anniversary of the 1962 Cuban Missile Crisis, at Launch Facility A-06. The 341 MW does an exceptional job of hosting our meeting. Officers and en-

The Missile Badge Monument

30 October 1959 - Gen Frederick Smith, Commander in Chief, United States Air Forces in Europe, unveiled an 18 foot marble obelisk with a ten foot Missileman Badge cast in aluminum from pieces of Matador flight tested missiles at Bitburg Air Base, Germany. A bronze plaque on the monument read:

**Dedicated to the Pioneer Missilemen of
the First USAF operational unit
First in NATO and Europe**

1st Pilotless Bomber Squadron -1954

1st Tactical Missile Squadron - 1956

585th Tactical Missile Group - 1956

Their weapon was the TM-61 Martin Matador



Air Force Chief of Staff Pins Missile Badges on Operators at the Return of the Badge at a Ceremony at the National Museum of the Air Force, June 2008

listed members who took part of the initial posturing of the first Minuteman missile to attain alert, as well as those who performed the first alert are in attendance.

January 2014 - Cheating scandal erupts at 341 MW when several crew members are discovered cheating on Emergency War Order exams.

21-14 January 2014 - Several AAFM Board Members and Executive Director spend three days at Vandenberg with the 381 TG.

7-14 February 2014 - AAFM Board Members gather in Colorado Springs for a day long meeting, including a briefing by the Commander, 20 AF.

13-17 October 2014 - AAFM conducts its eleventh National Meeting in Shreveport, LA. Events include tours of the 2nd Bomb Wing at Barksdale and Shreveport area attractions.

November 2017 - AAFM sponsors the competition dinner at the AFGSC Challenge, providing a Santa Maria Barbecue to the attendees on the 50th anniversary of the Missile Competition.

December 2018 - AAFM Missile Heritage Grants pass \$250,000, with grants going to 30 different museums.

12-16 October 2016 - AAFM conducts its twelfth National Meeting in Omaha, NE. Events include tour of the STRATCOM underground command center, Offutt and Omaha attractions.

26 September 2018 - Over 100 AAFM members meet in Rapid City, SD, for the preview opening of the new Visitors Center at the Minuteman Missile NHS.

9-14 October 2018 - AAFM conducts its thirteenth National Meeting in Cheyenne, WY. Events include tours of Warren, new Peacekeeper site museum Q-01 and local attractions.

1 January 2019 - Col (Ret) Jim Warner replace Col (Ret) Charlie Simpson as the Executive Director of AAFM.

4-5 October 2019 - AAFM conducts a day long Board of Directors meeting in Denver.

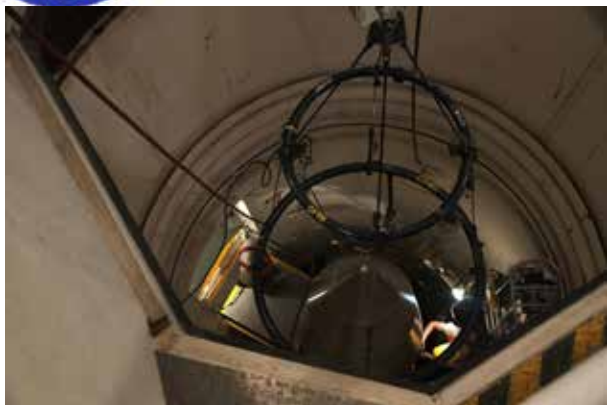
The monument stood at Bitburg until the base closed in the early 1990s. Your Executive Director had seen the monument on a visit to Bitburg in 1985. When the base closings were announced, the Association of Air Force Missileers, in letters to the Commander in Chief, US Air Forces in Europe and Commander in Chief, US Forces Europe, offered to fund moving the monument to an appropriate location at a remaining European base, suggesting Ramstein AB, Germany. By the time the letter got through channels at the two commands, it was found that someone had already moved the monument to an open field at the Wuscheim complex, but had removed the aluminum missile badge. The badge was never located. AAFM did provide Brig Gen Fred Vetter's personal two foot high replica to the National Museum of the Air Force a few years ago.



The Bitburg Missile Badge Monument, with a TAC Missileer



The 20th Air Force Page



Two maintainers from the 90th Missile Maintenance Squadron (MMXS) prep the reentry system of a Minuteman III for removal from a launch facility in the FE WarrEN Air B, WY, missile complex. Airmen completed jobs in pairs, utilizing the two-man concept to ensure tasks were completed correctly and securely. The 90th MMXS maintains 150 Minuteman IIIs spread throughout three states and 9,600 square miles. (USAF photo by SrAmn Brandon Valle)

Minuteman III to GBSD: A Brief Discussion on ICBM Sustainment and the Transition to America's Future Strategic Deterrent - By Capt Daniel J. Sharp, 20 AF Chief of Future Operations and Programs

For over five decades, the Minuteman III (MMIII) weapon system has provided the President of the United States an unmatched nuclear deterrent. As the only land-based nuclear weapon system in America's arsenal, MMIII has served as the cornerstone of US strategic power; not only assuring friends and allies, but also - in conjunction with the operators, maintainers and defenders charged with its employment - providing a combat capability that must be taken into consideration as part of any adversary's decision making process. Although MMIII has continued to operate exceptionally well, a new system leveraging the technological advancements of today is necessary to deter, dissuade and defeat the threats of tomorrow. However, as Ground Based Strategic Deterrent (GBSD) is still in the relatively early stages of the acquisition process (first alert projected in FY27 or early FY28), sustainment efforts must be taken to ensure MMIII is able to operate effectively until GBSD's full operational deployment in FY36. This article will briefly touch on a few of those sustainment efforts - Launch Control Center Block Upgrade (LCCBU), Transporter Erector Replacement Program (TERP), and Payload Transporter Replacement (PTR) - before shifting focus to the notional process by which GBSD will be activated at an ICBM wing. The LCCBU program will fully replace four Launch Control Center (LCC) components: the Journal Memory Loader (JML), Floppy Disk Drive (FDD), Weapon System Control Element Printer and Oxygen Regeneration Unit (ORU).

Most notably, this upgrade will remove all 3.5" floppy disks from use in the LCC. The move to solid state media eliminates concerns with the longevity and reliability of the current floppy disk inventory. LCCBU is expected to field between FY21 and FY22.

The PTR and TERP programs aim to provide a new, more advanced payload transporter and transporter erector for use at the wings. These upgrades resolve not only compatibility and mobility issues, but also employ key nuclear surety delay/denial features. PTR and TERP are expected to field in FY21.

The GBSD deployment concept will draw from historical Intercontinental Ballistic Missile (ICBM) Site Activation Task Force (SATAF) models. When fifty Peacekeeper missiles were deployed to FE Warren AFB, WY in the 1980s, the SATAF consisted of well over 300 personnel overseeing 3,000 engineers, technicians, and craftsmen. Deployment of the GBSD weapon system will be significantly larger, spanning six states and four wings with over 500 separate construction sites. A substantial amount of organically grown military and contractor support will be required at both Air Force Global Strike Command (AFGSC) and individual wings. AFGSC will appoint a GS-15 to be the headquarters SATAF Lead. A Colonel and civilian deputy will head a lead program integration office (PIO) at each of the three operational ICBM wings. PIOs and their staffs will coordinate with the SATAF Lead to ensure facilities, support agreements, access, supply, shipment, receipts, support equipment, training, schedule de-confliction, sell-off and buy-back processes, quality assurance, etc., for MMIII to GBSD transitions are in place at the unit.

All of that being said, it is obvious the transition period to GBSD at the wing will require a temporary surge in traditional (operators, defenders and maintainers) billets to enable the simulations operation/deactivation of MMIII and the operationalization of GBSD. However, because GBSD is an advanced system, it will also require the addition of entirely new disciplines and competencies including the inte-



An unarmed Minuteman III intercontinental ballistic missile launches during an operational test at Vandenberg AFB, CA. A team of Air Force Global Strike Command Airmen assigned to the 341st Missile Wing at Malmstrom AFB, MT, launched the Minuteman III equipped with a single test reentry vehicle. (USAF photo by A1C Daniel Brosam)

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gration of cyber defense teams and expanded munitions and maintenance personnel qualifications. This new “missile operations team” will be integral in further shaping the GBSD training, operations, maintenance and support concepts.

The continued sustainment of the MMIII weapon system along with the deployment of GBSD are key components of the broader national deterrent capability. Although deployment will likely vary and evolve over its full course, the ongoing investment in the MMIII weapon system, coupled with leveraged experience from the Peacekeeper deployment, provide a good balance as the gap between the current and future nuclear deterrent is bridged.

Capt Daniel J. Sharp is the Chief of Future Operations and Programs for 20th Air Force. In this position, he serves as a key integrator of program and operational requirements between AFGSC/A5 and the missile wings.



Jeremie Barrett, lead firefighter captain, and SrA LeJarrell Evans, firefighter, from the 90th Civil Engineering Squadron, stand on top of the wind turbine nacelle on FE Warren AFB, WY. After completing the training portion of the 3M Capital Safety Wing Turbine Climb Safety and Tower Rescue certification, the firemen were able to climb the approximately 240 stair wind turbine. (Courtesy Photo)

Wind Turbines in the Missile Fields

- By Lt Col Michael L. Toomer, 20 AF Deputy Staff Judge Advocate

I am sure many of you, after reading the headline and byline, are wondering why a JAG (Staff Judge Advocate) is writing in your newsletter and what’s the big deal with wind turbines in the missile fields. Those are both good questions that I will attempt to answer. First, a JAG, really? While encroachment management is not typically in the legal office job jar, at the Numbered Air Force (NAF) it isn’t in anyone’s job jar. The issue of wind turbine encroachment in the missile fields landed in our office because a developer had a question about placement of one of the hundreds of turbines in the wind farm development. The question was whether he could place the tower just outside the 1200 foot radial restricted easement, which would allow the blades to cross the boundary, or did he have to place the tower so that the blades were outside the boundary of the restricted easement. The question having to do with property rights, specifically the Air Force’s easement rights, it ended up in our office. After several months of inquiry into wind turbine development in



Capt Vicente Vasquez, 54th Helicopter Squadron UH-1N Iroquois pilot, flies near Minot AFB, ND. The 54 HS frequently works with 91st Security Forces Group defenders to provide quick response security for missile alert facilities. (US Air Force photo by SrA Jonathan McElderry)

the missile fields, it was determined that the development posed a significant problem for Intercontinental Ballistic Missile (ICBM) operations and, since the encroachment was present in all three missile fields, the NAF should stay engaged. Also, because the solutions to the encroachment problem involve, in large part, property rights and other legal issues, the NAF legal office has continued to be heavily involved. Hence, the JAG is writing to you about the issue.

So what’s the problem with wind turbines in the missile fields? The short answer is they impede security operations. The wind turbines going up these days range from 350 to over 700 feet in height, just to the top of the tower. When a development is put in, it can have hundreds of wind turbines in relatively close proximity to each other. The location, numbers and proximity of the wind turbines in the missile fields has the potential to hinder air and ground security operations.

What is 20th Air Force (20 AF) doing to address the growing problem? We are working hard on four lines of effort - national, state, local and industry. We have proposed some changes to national laws and legislation to address the situation, namely to provide us notice when wind turbine development is within certain proximity to our facilities. We are also working with State governments to ensure we have notice of the developments and establishing setbacks from



Members of the 54 HS fly near a missile alert facility near Minot AFB, ND. (US Air Force photo by SrA Jonathan McElderry)

our facilities. We are also working with local communities, namely planning boards, to get the message out about the problem and finding solutions that work for all parties. Finally, we are working to engage the wind energy industry to inform them of the problem and, again, working to find solutions that ensure our ability to provide the necessary security while also limiting the impact to their operations. In the end, we are trying to find a balance between being a good neighbor and ensuring we can effectively conduct this vitally important national mission.

Lt Col Michael Toomer is the 20 AF Deputy Staff Judge Advocate. In this role he is responsible for providing advice to the 20 AF commander and staff on a wide range of legal issues, but concentrates on Operational Law issues.

Changing of the Board

Every now and then, one of our Board Members finds a need to resign from their position due to career changes, family, health, or just plain over commitment. This summer we had two resignations: Col (Ret) Pat Fornes and CMSgt (Ret) Mark Salyards both notified us that other commitments prevented them from giving AAFM the time needed to effectively serve on the Board. The President accepted both of their resignations with deep regret. Our nominating committee immediately went to work to find candidates to fill these slots and the board approved CMSgt (Ret) Shane Finders and Col (Ret) Jock Dodson as new members of the Board. They will complete the terms of the members they replaced which both go through 2024. Please welcome our new board members

CMSgt (Ret) Shane Finders served more than 26 years as a missile maintenance technician (Minuteman III and Peacekeeper) with assignments at the 90th Maintenance Group (MXG), 20th Air Force, 576th Flight Test Squadron, 381st Training Group, both the Air Force Space Command (AFSPC) and Air Force Global Strike Command (AFGSC) Inspector General (IG), and 91 MXG. He currently works as a contractor supporting AFGSC/A5I defining requirements for the fielding of the new Ground Based Strategic Deterrent.

Col (Ret) Bernard "Jock" Dodson spend 28 years as a missile operator (Minuteman II and Peacekeeper), with assignments at the 44th Strategic Missile Wing and the 90th Missile Wing. Jock held numerous staff positions at Headquarters (Hq) AFSPC as a member of the IG and XP, Hq Air Education and Training Command in the Command Action Group, US Central Command, HQ AFGSC as the Deputy Director of Plans, Programs and Requirements and Deputy IG. Jock currently works for a defense contractor in business development.

The communications systems of today have changed the lifestyle somewhat for those of us who served, or now serve, as Air Force Missileers. In the days before cell phones, pagers and other means of instant communications, we were sometimes timed close to home or close to our place of duty. During my 30 years of active duty, most of us lived with the "six ring alert." It applied to all of us who served in Strategic Air Command (SAC), but we weren't alone in living with this tether.

Basically, it meant that we had to be able to respond to a phone call to our home phone - all land lines in those days, at either our place of residence or some other location we provided. It applied any time we were in an advanced state of readiness, real or exercise. If the SAC Inspector General arrived no-notice for an Operational Readiness Inspection (ORI), we were first notified by a Pyramid Alert Recall - the series of phone calls initiated by the Wing Command Post and continued down the chain of command. If we weren't on six ring alert before the ORI started, we probably were now, until the inspection was over.

The six ring response policy also applied when we were on standby for alert as operators, or awaiting dispatch or on-call as a maintenance team member. It applied to other folks on the base, too, since many support activities also required a quick response in case of an emergency, weather situation or other event. Think snow plow drivers, plumbers and electricians, for example. No matter what you did, there was always the possibility you could be placed on six ring alert.

For the senior leadership in a wing, the tether was even shorter and more prevalent. The Wing Commander, Vice Wing Commander, Deputy Commanders for Operations, Maintenance and Resources, the Security Forces, Hospital and Base Commanders and some others all lived with the status seven days a week, 24 hours a day. Before cell phones, we had those big Motorola radios (we called them bricks) that we carried with us all the time. Many of us also had a direct line telephone next to the bed at home for immediate contact with the Wing Command Post. When we left the house every morning, we told the command post we were mobile. When we got to the office, we called the command post and told them we were there. When we got home, we called again, and turned off and charged the battery on the radio. For many of us, the phone rang often at night, any time a significant event occurred that required notifying a key leader.

If you saw "Gathering of Eagles," the 1962 movie about SAC ORIs, you may remember Rock Hudson walking out to his patio with his red telephone on a very long cord. I remember hearing the audience in Boise, ID, where I saw the film, laugh at that scene. For those of us in SAC, it was not a laughing matter.

Letters to AAFM

Address letters to AAFM, Box 652, Johnstown, CO 80534, or send by e-mail to aafmmail@afmissileers.info Letters may be edited, content/meaning will not be changed.

Thanks, Trucks and Col Lilley - I want to thank Charlie Simpson for the superb job he has done for all Missileers, and kudos to Jim Warner for taking over from Charlie. In "And The Trucks We Rode In On," Jim Barnard wrote a wonderful article with one error, he misspelled Col. Earl A Lilley's name. I was Col Lilley's squadron section commander, my first commissioned assignment. Col Lilley was one of those early Missileer senior officers that already had careers in the rated force, in his case as a pilot. He was one of the best senior officers that I had contact with in my 20 year career. Col. Lilley passed away on 31 August 2018 in Emmett Idaho. Jim Barnard's account of Col Lilley removing a vehicle tire is a fine example of the man he was. He had a kind word for everyone and way to get the job done in a crazy hectic environment with a direct professional firmness. Col. Lilley went on to become the 341st Strategic Missile Wing Deputy Commander for Maintenance, and when we were without a Vice Wing Commander for a period of time, he often filled this position on a temporary basis. In fact he attended my wedding in the base chapel in his blues with "the brick" in his hand as he had the call that day. One of his last acts before retirement was to influence the Wing Commander to promote me to be his Wing headquarters Squadron Section Commander. Col. Lilley got me off in the right direction as an officer with the idea that you can take on any task if you put your mind to it. *Lt Col (Ret) Ken Woods, AAFM Mbr No A2720, Blaine, WA.*

Indiana Mace - We at the Indiana Military Museum in Vincennes, IN, were selected to receive a 2018 grant to refurbish our TM-76B (CGM-13B) Mace. It has been completed and is back on display as the main "Gate guard" of the museum. As Aviation Manager and a TAC Missileer, I wish to express our heartfelt gratitude for your grant. *Frank Roales, Indiana Air Museum.*

See the article and photo to the right.

Huntsville Hound Dog - A belated thanks to AAFM for the grant for signage for our AGM-28A Hound Dog missile which is on display at our Aviation Challenge Camp. Our local Air Force Association chapter also helped us by funding repainting and repair of the missile. *Edward C. Stewart II, Director of Exhibits and Curation, Space and Rocket Center, Huntsville, AL.*



Huntsville Hound Dog

"Miss L" Refurb Complete

After standing as the welcoming gate guard to the Indiana Military Museum in Vincennes IN, for the past eight years in the constantly changing Indiana weather "Miss L" our TM-76B Mace missile, was in need of a refurbishment. Armed with a generous grant from the Association of Air Force Missileers "Miss L" was removed from her mount at the museum's entrance in mid-June to be brought back to prime display status. Four TAC Missileers Frank Roales, Max Butler, Larry Johnston and Jerry Brenner put in many hours assisted by museum personnel and Dave's Wrecker Service to remove her from the mount, place her on a trailer to be taken from display and placed in a outdoor restoration area for a refurb. Due to having to work around the schedules of everyone involved and the weather, after almost three months she was completed and reinstalled as the first thing visitors see before they even enter the museum grounds.



Indiana Military Museum Mace

Cuban Missile Crisis and the Avon Park Air Force Range

Michael Binder (AAFM MbrNo SA025), Technical Advisor at the Air Force Declassification Office, is seeking information regarding missiles deployed to Avon Park Air Force Range in October 1962 during the Cuban Missile Crisis.

Michael believes that given the closeness to Cuba there were two possibilities: Matador/Mace and Pershing I. If Matador (airframes returned from OCONUS) or Mace, these could have been mounted on mobile launchers, with the necessary AF personnel to prepare and launch them coming from the nearby 4504th Combat Crew Training Wing (Tactical Missile) at Orlando AFB. If Pershing I, Martin personnel from their Orlando facility could have done the prep and launch work, much as Boeing personnel manned the early Minuteman facilities at Vandenberg AFB in 1962.

If you have any information regarding this event please share with us at AAFM@AFMissileers.org and Michael at michael.s.binder4.civ@mail.mil.

Note that the Breckenridge, CO address for AAFM is no longer used.

Annual dues are free for active duty enlisted and still \$20 per year (\$5 for active duty officers and students), \$50 for three years (\$14 for active duty officers and students) and \$300 for a lifetime membership. Life membership donations can be made in up to 12 monthly installments. Dues can be paid by mail with a check or on our web page using PayPal. No other credit card options are offered. Our benefits and programs:

- Quarterly newsletter featuring articles and stories by members, official news releases and other information, at the end of March, June, September and December. For those who prefer the print, mailed copy, the mailings follow the release of the electronic version by about three weeks.

- Email updates to every missileer on our contact list. Keep AAFM advised of email address changes.

- AAFM's web page, at afmissileers.org, featuring information about all of AAFM's programs, "Warble Tone" with the latest news about missileers, meetings, books and much more, including "Taps for Missileers." Greg Ogletree's collection of missile patches, the entire newsletter library and the on-line museum are included.

- Member Directory every three years, available free electronically and for \$10, a mailed print copy. Interim updates.

- National Meetings every two years, always near a base with a missile-related mission.

- Occasional local area meetings at locations around the country.

- Missile Heritage Grants to museums, donated in memory of members who have passed away, to museums for missile and missile-related displays. AAFM has donated over a quarter million dollars to date to museums for displays.

- Participation in Air Force events, including the Bomb and Missile Competitions.

- A large library of publications, videos and CDs about missile history and missile programs.

- A Donations/Store area with a wide variety of logo items, lapel pins and badges, CDs and DVDs, models, books and much more. A link is on our web page.

New Members since 1 July 2019 - Miles Fringer, Ben Guenther, Mike Taylor. New Life Member Wendell Haworth

Taps for Missileers

Col (Ret) William A. Albro, an AAFM Life Member, served in Minuteman in the 91 SMW and 1 STRAD, and in GLCM in the 485 TMW and lived in Tacoma, WA.

Lt Col (R) Roland (Tony) Anthony, an AAFM Member, served in Titan II in the 308 SMW, in Minuteman in the 341 SMW, and in 1 STRAD and SAC Hq, and lived in Niceville, FL

Lt Col (Ret) David B. Bates, an AAFM Member, served in Minuteman in the 455/91 SMW and at 15 AF, and lived in Dallas, TX.

Lt Col (Ret) Paul Curtis served as a missile crew member in the 341 SMW, 1977-1982, before becoming a B-1 pilot, and lived in Garden Ridge, TX.

Rod Gaither served in Minuteman in the 341 SMW and lived in Great Falls, MT.

Former Capt Sidney M. (Marty) Kears served in Minuteman in the 321 SMW, and lived in Inman, SC.

Dan Lawrence, an AAFM Member, joined recently and lived in Rantour, IL.

CMSgt (Ret) Danny G. Pitkin served in Minuteman in the 455/91 SMW, 351 SMW, 321 SMW, SAC and Ogden and lived in Gulfport, MS.

Kevin D. Welsh, an AAFM Member, served in Titan II in the 390 SMW and lived in Carson City, NV.

Col (Ret) Edward P. Westwood, an AAFM Life Member, served in Minuteman in the 90 SMW, 91 SMW and 351 SMW, in Titan II, in the 3901 SMES, at SAC, and 1 STRAD, and lived in Santa Maria, CA.

SMSgt (Ret) John J. Yuhas, an AAFM founding member, served in in Matador in the 1st Guided Missile Squadron and other units, and lived in Delaware, OH.

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

Available for Members

2018 Membership Directory - 90 pages with information on current, past and deceased members. Free electronically or \$10 for a mailed copy. Email aafm@afmissileers.org or send a check to

AAFM, PO Box PO Box 652, Johnstown, CO 80534.

AAFM Email List - addresses for all members with email, email aafm@afmissileers.org for a copy.

Dues Status - check the address block on your mailed copy of the newsletter - the number above your name (919 means dues expire in September 2019) or email aafm@afmissileers.org if you receive the electronic newsletter.

Donate to AAFM Missile Heritage and Enlisted Recognition Funds


Use the Form Below for Mail or go On-line to afmissileers.org

Lapel Pins



Missile Badge - Silver, 1 1/4 inch, Indicate quantity of each - Basic Badge _____ Basic with Ops Designator _____
 Senior Badge _____ Senior with Ops Designator _____ Master Badge _____ Master with Ops Designator _____
 Space Badge - Silver, 1 1/4 inch, - Basic _____ Senior _____ Master _____
 Other Lapel Pins - Indicate quantity for each AAFM - _____ SAC - _____ Cuban Crisis - _____
 Minuteman II Alerts - 100 - _____ 200 - _____ Master Technician - _____
 Any Two Pins - \$10. Any 6 pins - \$25. Any 15 Pins, \$50. Total Amount for Lapel Pins \$ _____

Full Size Reproduction Missile and Combat Crew Badges Finish, styles and sizes - NS Non-shiny, CF chrome finish, FS full size, SS, smaller size for shirt outer wear. Mark quantity below. Not all versions available

Basic, No Ops Designator - NS FS _____ SS _____ Senior, No Ops Designator - NS FS _____ SS _____
 Master, No Ops Designator - NS FS _____ SS _____ Basic, Ops Designator - NS FS _____ CF SS _____
 Master, Ops Designator - CF SS _____ Combat Crew Badge NS FS _____ 
 \$10 each - Total Amount for Badges Ordered \$ _____

Official Chrome Finish badges, any of the six in either full size or shirt size available by special order, prices vary.

Challenge Coins AAFM - \$10 each _____ 3 for \$25 _____ 3901 SMES Mission Complete \$10 each _____



Missile Competition Coins - Any 3 for \$15.
 Guardian Challenge Coins (AF Space Command Competitions) 2006 _____ 2008 _____
 Global Strike Challenge (AF Global Strike Command Comp) 2010 _____ 2011 _____
 2012 (Cuban Missile Crisis) _____ 2014 _____
 25th Anniversary of AAFM _____ Total Amount for Coins \$ _____
 Indicate Quantity for each

Patches



AAFM - 2 for \$10 _____ 5 for \$25 _____ Subterranean Sentinels - \$10 each _____ 3 for \$25 _____
 Cuban Missile Crisis 2012 Commemorative - \$10 _____ 3 for \$25 _____
 Reproduction Patches - Made for reunions and donated to AAFM - \$10 each
 341 MIMS _____ 321 OSS _____ 6555 ATW _____ SAC with Stripe _____ 50 Years Deterrence _____

AAFM CD and DVD Collections - for research and historical use only - CDs include Photos, Tech Orders, articles, publications, other data, DVDs are Collections of films and videos from various sources, including documentaries that AAFM advised on. \$10 for each CD or DVD set - Indicate Quantities.

CD sets - AAFM and Historical Data _____ Early and Airlaunched Missiles _____ Atlas D, E, F _____
 Titan I and II _____ Minuteman I, II and III _____ Competitions and Peacekeeper _____ GLCM _____
 Matador and Mace _____ All Eight CD sets - \$50 - _____
 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 _____ All 8 DVD sets - \$50 _____
 SAC Memorial DVD - Dedication at Dayton _____ AAFM 2012 National Meeting at Malmstrom _____
 The Groobers Missile Music CD _____ Total Amount for CDs/DVDs \$ _____

Publications - Greg Ogletree's "History of the Missile Badge" - \$10 _____ Bill McKee's Cartoon Book, "Missile Business" - \$10 _____ AAFM Poetry Collection - \$15 _____
 AAFM 2012 Book "Missileers and the Cuban Missile Crisis" - \$15 _____

Prints - Signed/numbered Print "Countdown - 5,4,3,2,1" - \$15 each - Quantity _____
 Randy Mayse signed print for Malmstrom 25th Anniversary - TE on site - \$25 each Quantity _____
 Cuban Missile Crisis Painting of Malmstrom's A-06- \$15 each - Quantity _____
 Joe Andrew's painting, "The Guardians" - \$10 each Quantity _____ Total Amount for Publications \$ _____
 AAFM Golf Cap, \$15 Each Quantity _____ Total \$ _____ AAFM Brief Case, \$15 each Quantity _____ Total\$ _____

Bob Wyckoff's Collection of Poems - plus AAFM's "We are Missileers"

All Poems printed on Photo Paper for Framing - \$15 _____

Minuteman I, II and III 14 inch Desk Models - in white or real colors. Delivery time about four months - call AAFM for price, details and to order or go to our web page. Limited number of MMIII in current real colors - \$175.

Order and Pay on-line at the Donations/Store area on our web page, afmissileers.org with a credit card. Books and Special Collectibles (pins, patches, prints, and more) also shown there. Or complete the form and send your payment (checks only) to Association of Air Force Missileers, PO Box 652, Johnstown, CO 80534. Shipping included - Note that the minimum order amount is \$10 due to increased cost of shipping.

Order Information

Name _____

Address _____

City, State, Zip _____

Total Amount of Order _____

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 _____	E-Mail _____
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Address _____	Phone _____
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City _____	State _____	Zip _____	Rank/Grade _____
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Signature _____	Active Duty _____ Retired _____ Discharged/Separated _____ Guard/Reserve _____ Civilian _____
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Awarded Missile Badge - Yes _____ No _____

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

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

Specialties - Operations _____ Maintenance _____ Munitions _____ Comm _____ Facility Mgr _____ Safety _____ Civil Eng _____ Support _____
Research/Devel/Test _____ Instrumentation _____ Security _____ Contractor _____ () Other _____
Missile Competition Participant _____ Years _____ Commander -Sqdn _____ Group _____ Wing _____ Other _____

Association of Air Force Missileers
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Reunions and Meetings

390th SMW Memorial Association - 23-27 September 2020 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 2020 National Meeting - October 2020 in the Salt Lake City/Ogden, UT area, with exact dates and hotel arrangements in the final stages. Details and registration information to be announced soon - watch the Warble Tone part at afmissileers.org and the @AFMissileers Facebook page.

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.

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.

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