

Association of Air Force Missileers AAFM Newsletter

"Victors in the Cold War"

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My Missile Has Wings...



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The Early Missiles - Snark, Navaho, Bomarc and Goose - by Col (Ret) Charlie

Simpson, AAFM Executive Director

As World War II ended, the Air Force, then still part of the Army, was deeply involved in research and development programs for missiles, both ballistic and aerodynamic, which we now call cruise missiles. A number of projects were based on the German V-1 cruise missile or buzz bomb and the V-2 ballistic missile, and the US manufactured and tested a number of American versions of both. During the late 1940s, the Air Force decided to concentrate primarily on airbreathing cruise missiles for tactical, strategic, air defense and decoy missions. Work continued on ballistic missiles, but cruise missiles would reach operational status before we switched gears and began work in earnest on the intermediate and intercontinental ballistic missile systems that would become the mainstay of nuclear deterrence.

Matador became operational in Europe and the Pacific and was replaced by the improved Mace. The AAFM newsletter has featured these systems several times in the past - and will again. This issue will concentrate on three systems that are less known to some - and well known to those of you who worked with them - the Snark, Navaho, Bomarc and Goose.

SM-62 Snark

The Snark started life with the Air Force's approval in 1946 of plans submitted by Northrop Aircraft Company for two jet powered missiles designated project MX-775 by the Army Air Force. The subsonic Snark (MX-775A) became SSM-A-3, or Northrop Model N-25, while the supersonic Boojum (MX-775B) was short-lived. The first version, model N-25, was powered by an Allison J-33 turbojet, the same engine used in the T-33 jet trainer, and was launched with rocket assist. It used radio guidance, controlled from a DB-45 aircraft, and could be recovered using skid-type landing gear and a drag chute. This version could carry a 7000 pound warhead up to 5,500 nautical

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General (Ret) Bernard Schriever, who was instrumental in the development of Air Force missile and space programs, and commanded the Western Development Division and ARDC/AFSC, died on 20 June 2005

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
- Encouraging Meetings and Reunions
- Keeping Missileers Informed
- Providing a Central Point of Contact for Missileers

Winged Missiles *Continued from Page 1)**Snark on Launcher*

miles. The Snark was initially designated the B-62, the “bomber” designations given to other Air Force tactical and strategic missiles in 1953, continuing the numbering used for manned bombers. These designations would later change - the Snark would become SM-62, or “Strategic Missile-62”, while the tactical missiles, like the B-61 Matador became the TM-61, or “Tactical Missile.”

The production missile, the Northrop model N-69, was five feet in diameter, originally 74 feet long but later shortened to 67 feet and had sharply-swept wings, with a span 42.5 feet. The missile was originally planned to have an Allison YJ-71-A-3 engine but Northrop decided in 1954 to use the Pratt and Whitney J-57, the same engine used by the early models of the B-52 and the KC-135. Two solid rocket boosters, initially with 105,000 pounds of thrust each but later upgraded to 130,000 pounds, were used to launch the 59,936 pound missile off its launcher rails. The solid rockets released after takeoff and the “pilotless bomber” climbed to a cruise altitude of 45,000 to 50,000 feet for a Mach .94 run to its target. The inertial guidance system, which replaced the earlier radio guidance, had a star-tracking device that checked the accuracy of the inertial system. When the Snark reached its target, it began a supersonic dive, with the warhead released from the missile. The airframe was expected to break into pieces as act as “decoys” to confuse enemy radar.

The Test Program

Initial testing involved the N-25 models and was conducted by the Northrop Field Test Crew, with the first test on 21 December 1950 at Holloman AFB, NM, with a dummy missile released from a track launcher. Northrop flew nine model N-25 tests at Holloman over the next few months, while working on the improved, larger model

N-69. Ten more Snarks were launched at Holloman in late 1951 and early 1952. After the test program moved to Cape Canaveral from Holloman, three dummy missiles were tested from the new zero-length launcher. Four radio-controlled N-25 launches followed in late 1952 and early 1953, with all four successful.

Testing began on the N-69 version in late 1952, but the program had numerous problems in the following test launches. The new J-71 engine was unreliable, there were quality control problems in the manufacturing process and new radio guidance equipment was delayed. The Northrop team tested a number of model N-69 missiles over the next few months and continued testing later versions through 1957, gathering lots of data and having some success with the missile. The company conducted the first military demonstration phase flight on 20 June. This failure was followed by a partial success two months later. In late 1957, three more Northrop tests succeeded with the last two being the first flights to Ascension Island. Northrop launched six more operational prototypes, with the last Northrop Field Test Crew launch an N-69E missile on 28 May 1958.

The 6555th Guided Missile Wing (GMW) at Patrick AFB was directed to develop blue suit launch capability well in advance of the Snark becoming an operational SAC system. The first model N-25 missile arrived at Patrick in May 1952, and the 6555th Guided Missile Squadron (GMS) activated a Snark cadre on 19 June 1952. Major Richard E. Eliason had eight officers and 48 airmen at Northrop’s plant for factory training by the end of June 1952. But blue suit test launches were still a long way in the future.

Two N-69Ds were launched by 6555GMW on 1 October and 20 November 20th 1957. On 27 June 1958,

(Continued on Page 3)*The “Flight Line” at Presque Isle AFB*

Winged Missiles *(Continued from Page 2)*

SAC's new 556th Strategic Missile Squadron (SMS), the unit designated to be the first strategic missile squadron, launched its first bird, an N-69E, under the supervision of the 6555GMS. The 6555GMW launched five more missiles in the last half of 1958, and the 556SMS had two more launches that year.

Five more missiles were launched in the last half of 1959, bringing the number of flights to 86 since the program's inception. Snark continued to display performance problems, with a review late that year concluding that, once airborne, the missile only had one chance in six of hitting the target area. Air Force Missile Test Center (AFMTC) recommended cancellation, but AF Headquarters decided to continue the R&D program at the rate of about one launch per month through 1960.

The number of test vehicles crashing in the ocean led to warnings about "Snark infested waters." In 1956, a Snark flew too far and refused its destruct command, and disappeared over Brazil (a Miami newspaper reported "They shot a Snark into the air, it fell to the earth they know not where."). The missing missile was found by a Brazilian farmer in 1983.

The Operational Units

The 556SMS was activated under the command of LtCol Richard W. Beck at Patrick on 15 December 1957. The 556SMS was assigned to SAC, but it started its on-the-job training under the direction of the 6555GMS in January 1958. Some of the 556SMS men participated in an "over-the-shoulder" training exercise with the Northrop Field Test Crew in March, and the squadron's first simulated launch training was conducted on April 4th.

The 556SMS crew training program was shortened dramatically after the Air Force decided to limit deployment to just one operational squadron. On 1 Janu-

ary 1959, SAC activated the 702nd Strategic Missile Wing (ICM-Snark) at Presque Isle AFB, ME, and it assigned the 556SMS to the 702SMW in April. Eighty SAC personnel were sent to AFMTC in the spring of 1959 for crew training, and the 556SMS participated in three production model launches before its planned departure for Maine. The 556SMS was inactivated on 15 July 1959 and absorbed into the 702SMW. 188 additional missilemen were trained under the 6555GMS supervision by the end of December 1959. The planned activation of the 702nd Missile Maintenance Squadron was also cancelled. This put the 702SMW in the unique position of having no assigned subordinate units. All operational and maintenance functions were handled by the deputy commander for missiles.

The 702SMW placed its first missile on alert on 18 March 1960, and three more missiles were added to the wing's alert force within a few months. Despite those encouraging signs, the 702SMW was not declared "operational" until 28 February 1961.

The 702SMW was assigned to the 45th Air Division (AD) at Loring AFB, ME. Preparing for the wing's buildup at Presque Isle, the 556SMS commander, now Col Beck and many of his staff visited the base and Loring in February 1959. LtCol Harry W. Robb remained at Presque Isle as the acting commander and SAC Liaison Officer - he would become the wing's Deputy Commander for Support in July 1959. The shortage of facilities, especially married housing and dormitories, caused Col Beck to recommend changes to the planned size of the wing, especially in the launch crew area. A reduction in the Unit Manning Document by 250 people, to a total of 1250, would ease the problem of housing assigned personnel somewhat, but Col Beck asked for consideration of lease or purchase of trailers to provide immediate housing. The plan called for a reduction of the crew force to 36 crews with 11 men assigned to each, a number that would have "no reduction in reaction time for then wing." The wing was scheduled to have 32 crews and 30 missiles in place by the end of 1959, and the missiles were to have a one hour reaction time in normal conditions and fifteen minutes in periods of "international tension."

The 45AD history documents two practice Operational Readiness Inspections (ORI) for the 702SMW, in February and March 1961. The practice ORIs were conducted to provide an opportunity for future ORIs and provide training for the launch crews. The exercises were conducted in accordance with the wing operations order "Warbird."



702SMW Emblem

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Winged Missiles (Continued from Page 3)

In the first practice ORI, the wing had "...the full complement of 27 Snark missiles..." and achieved a rating of Excellent. The wing was required to simulate launching of 21 missiles - 18 were successful. Six missiles were on alert (called BB-4) at A hour. The exercise made it obvious that in order to launch six missiles within the specified time of execution hour plus 30, at least six and preferably seven or eight missiles must be in BB-4 alert, at least five launch crews must be available and each crew must be able to launch the nearest missile, rather than the one that was covering their sortie number. At the end of the exercise, the 45AD recommended to 8th Air Force (8AF) that the alert force be increased from four to six with four missiles required to launch by A plus 30 minutes and six missiles by A plus one hour.

The wing was rated Outstanding in the second practice ORI. In this exercise, the wing was required to generate and simulate launch of 21 missiles within 27 hours. Twenty missiles were simulated launched, with 19 effective. One missile was ineffective because the guidance platform failed during towing. Six missiles were out of commission for parts with spares not available from any source, so they were considered nonavailable for the exercise. Shortly after the second practice ORI, the 45AD was notified by 8AF that the wing and base would be closed in early 1962.

Disposition of the thirty Snark missiles at Presque Isle was carried out in July 1962. The weapons were stored at Carswell AFS, Texas, the booster rockets went to Indian Head, PA and the J-57 engines were delivered to Middleton, PA. The guidance systems and computers were disposed of through normal military channels. Hydraulic and electronic parts were removed and the hulks of the missiles crushed and sold as scrap metal. The mobile launchers were also sold.

Well before the 702SMW was activated, General Thomas S. Power, CINCSAC, expressed his concern about the system to General Curtis E. LeMay, the Air Force Vice Chief of Staff, with these words, "...the limited operational capability of this system adds little or nothing to the strategic offensive force and I believe that a reevaluation of this program is in order...either we should take necessary action to integrate the Snark into the strategic inventory with a capability compatible with our concept of operating or...take immediate action to cancel the program."

The Air Force decided to continue the limited program, but on 28 March 1956, President Kennedy declared the system "obsolete and of marginal military

value," and SAC inactivated the wing on 25 June 1961.

Many of the missileers were assigned to the new Atlas and Titan squadrons that were coming on line. One of my noncommissioned officers in the 569SMS at Mt Home AFB, ID, SSgt LeRoy Hudson, told me stories of the "tear-down" - wielding an axe to chop up pieces of the airframes on the decommissioned missiles. Some of the photographs that accompany this article show pieces of the missiles on the Snark "flightline."

Presque Isle AFB was redesignated Presque Isle Air National Guard Facility, but it was short lived. The base was soon retired and converted to a regional airport, technical college, housing area, and industrial park. It contains a small museum honoring the 702SMW. The life of the 702SMW, first intercontinental missile wing, was short but busy, but an important chapter in the development of our missile force.



Snark "pieces" during destruction

XSM-64 Navaho

While Northrop was designing, testing and deploying the Snark, North American Aviation was involved in a program of their own, the Navaho, designated the MX-770 by the Army Air Force. The concept evolved during the late 1940s from a rocket powered short to medium range missile to long range, aerodynamic, ramjet powered intercontinental cruise missile. Navaho was to be capable of carrying an atomic warhead 5,500 nautical miles at a speed of at least Mach 2.75 with sufficient accuracy to insure that at least 50 percent of all missiles struck within 1,500 feet of the target.

The concept was initially tested using thirteen turbojet powered X-10 test vehicles. The X-10 was 66 feet long, with a wing span of 28 feet and was powered by two Westinghouse XJ-40-WE-1 turbojet engines with afterburners, each developing up to 10,600 pounds of thrust. The X-10 weighed up to 42,000 pounds, and could

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Winged Missiles *(Continued from Page 4)**Navaho X-10 Test Vehicle*

fly 800 miles at Mach 2.08 and 50,000 feet. It used a retractable tricycle landing gear for recovery. The missile was guided by radio commands from the ground or from ET-33 aircraft along with an autopilot system. Thirteen were manufactured and the first was delivered to Edwards AFB, California for test flights in May 1953.

The next version was the G-26 missile, 58 feet long with a 29 foot wingspan. It was propelled by two Wright Aeronautical XRJ-47-W-5 ramjet engines, each producing 15,000 pounds of thrust. The missile was designed to fly at Mach 2.75 at an altitude of 50,000 to 80,000 feet. The missile weighed 65,000 pounds and used an inertial guidance system. The G-26 missile was launched on a booster rocket that had two XLR-83-NA-1 liquid rocket engines with a total thrust of 240,000 pounds. the booster was 76 feet long and weighed 25,000 pounds. It used liquid oxygen and kerosene as was designed to lift the G-26 to 43,000 feet and Mach 3.0 before it separated from the missile. Ten missiles, 13 boosters and five N-6 autonavigators made up the initial order.

The final version was to be the G-38 missile, the XSM-64A. The missile would be 87 feet long with a 40 foot wing span and weigh 120,500 pounds. It would have a range of 5,500 nautical miles, a ceiling of 71,000 feet and fly at Mach 3.25, and carry three separate warheads totaling up to 15,000 pounds. It would use the N-6B inertial navigation unit with autopilot, and be powered by two RJ-47 ramjets with 20,700 pounds of thrust each. The booster would be 90 feet long and have three Rocketdyne LR-83-NA-1 rocket engines with a total thrust of 405,000 pounds. As in the G-26 booster, the engines would burn liquid oxygen and kerosene. One concern about the new larger vehicle was the fact that it could not be transported in a C-133, and the C-5 was not

developed yet. While the Navaho was supposed to be a mobile system, the large size of the transporter erector with booster and missile would have required a three lane highway for movement, combined with a large convoy for the launch crew and security forces. The G-38 never made it into the production phase, since Navaho was canceled on 13 July 1957, when the Air Force decided to concentrate on ballistic missiles rather than aerodynamic systems like the Navaho.

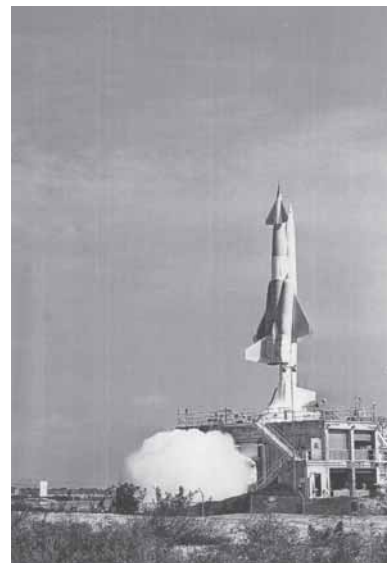
Flight Testing

The X-10 was initially tested at Edwards AFB, with a total of 15 flights between 1 October 1953 and 24 March 1955. The Edwards tests achieved several goals, including validation of the vehicle structure up to Mach 1.84, verifying that the autopilot could keep the vehicle stable and level at supersonic speeds and carry out ground-generated course and speed changes, development of the auto approach and landing system, successful testing of the telemetry system, initial testing of the fuel transfer system and testing of the glide brakes.

Twelve more X-10 flights were conducted at Cape Canaveral where there were fewer constraints on range and the ability to fly over the open ocean. The last six flights were X-10 missiles testing the N-6 guidance system. These flights achieved the first automatic landing at the Cape, the first turbojet flight to Mach 2, the first all inertial flight of an unmanned vehicle and the first all inertial flight from launch to impact.

The first flight of the G-26 missile and booster was on 6 November 1956. The vehicle began to pitch wildly after ten seconds and exploded at lift-off plus 26

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*Navaho launch*

Winged Missiles *(Continued from Page 5)*

seconds. The eleventh flight on 18 November 1958 was the final for the 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. The program was canceled shortly after the fourth G-26 flight, but the AF continued to fly the Navaho for special test programs, including the Research into Supersonic Environment (RISE) program.

Lessons Learned from Navaho

Although the canceled Navaho program was far from a success - even called the "Never-Go-Navaho" by many at the Cape, the lessons learned were applied to numerous followon programs, including inertial guidance systems, rocket propulsion, including gimballed engines and high speed aerodynamics. Technology from Navaho was beneficial in the Hound Dog, Nautilus submarine, Polaris, Jupiter, Thor, Atlas, X-15, XB-70 and a number of later aircraft programs worldwide.



Bomarc ready for launch

Bomarc IM-99

The Air Force looked not only at systems to deliver nuclear weapons to distant targets, but to other missions as well. A number of ideas were examined for air defense, or interceptor missiles - surface to air missiles (SAM) that could be used to destroy incoming enemy bombers. The Boeing Bomarc was first designated the XF-99, since it was an unmanned "fighter", then the IM-99, or "Interceptor Missile" and finally, under the new standardized Department of Defense designation system implemented in the June 1963, the CIM-10A.

The name Bomarc came from the partnership that developed the concept, the Boeing Airplane Company (BO) and the Michigan Aeronautical Research Center (MARC). Development began in 1950 as a replacement

for the Gapa (Ground to air pilotless aircraft) missile, a 35 mile range anti-aircraft missile development program that began in 1946 as project MX-606. Two versions of Bomarc were developed and deployed, CIM-10A and B. Then missiles were housed horizontally in semi-hardened coffins, and were raised to vertical. The missiles were launched by a rocket booster and then the ramjet engines powered the missile to the target. Missiles could be armed with a conventional or a 7 to 10 kiloton nuclear warhead. A Westinghouse ground guidance system integrated into the Air Defense Command Semi-Automatic Ground Environment (SAGE) network guided the missile to the vicinity of the target and the active homing radar system on the missile provided terminal guidance to the target aircraft for the final ten miles.

A total of 269 A models were produced and a total of 140 missiles were deployed in five locations. The missile was 47 feet long with a 18 foot wingspan, and weighed 15,500 pounds. It flew at speeds up to Mach 2.8 for a range of 250 miles and a ceiling of 60,000 feet. The booster engine was an Aerojet General LR-59-AJ-13 producing 35,000 pounds of thrust. The booster burned nitric acid and kerosene. The booster was fueled immediately before launch in about two minutes. The sustainer engines were two Marquardt RJ-43-MA-7 ramjets producing 11,500 pounds of thrust each.

The B model followed, with 570 produced and 242 deployed at eight sites, including two Royal Canadian Air Force units. The booster for the B model was a 50,000 pound thrust Thiokol XM-51 solid rocket motor, which meant that the missile could be launched immediately after it was erected. The two ramjets were slightly upgraded to 12,000 pounds of thrust each. The missile was 45 feet long and had a wingspan similar to the A. Its range was 440 miles and the ceiling up to 100,000 feet.

Test Flights

The first Bomarc A was launched at Cape Canaveral on 10 September 1952. Over the next eight years, 70 Bomarc missiles were launched at the Cape, with the last on 18 April 1960. In 1957, the Air Force combined the Air Proving Ground Command and the Air Force Armament Center to form the Air Proving Ground Center at Eglin AFB, FL. The Center built the highly-instrumented Eglin Gulf Test Range and, for the next few years, served as a major missile test center for weapons such as the Bomarc, with launches from Santa Rosa Island, near Fort Walton Beach. Training and combat evaluation launches for crews from the Bomarc units were conducted at Eglin. The combat evaluation missiles were

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Winged Missiles (Continued from Page 6)*Bomarc at Peterson AFB Museum*

removed from operational squadrons and transported to Eglin for test.

The first Bomarc B was launched in May 1959, but problems with the new propulsion system delayed the first fully successful flight until July 1960, when a supersonic Regulus II drone was intercepted.

Beginning on 25 August 1966, the Air Force Western Test Range began supporting the Navy with Bomarc target vehicles. A total of 26 Bomarc A and 31 Bomarc B missiles were launched from Vandenberg, with the last on 14 July 1982.

The Operational Bomarc

The squadron at McGuire AFB, NJ, was the first Bomarc A unit to attain operational status, on 19 September 1960. By December 1960, a total of 140 missiles at five squadrons were operational. On 1 June 1961, the first Bomarc B became operational at Kincheloe AFB, MI. By December 1963, 242 Bomarc B missiles were operational at eight units. Two units, at Suffolk County AFS, NY and Dow AFB, ME, were not upgraded to the B system and were shut down by December 1964. In 1970, the decision was made to close down the entire air defense missile system, and on 1 October 1972, the last missile at McGuire AFB was removed, ending the operational life of the system. Sites being planned at Camp Adair, OR, Charleston AFB, SC, Ethan Allen AFB, VT, Paine AFB, WA, Travis AFB, CA, Truax Field, WI and Vandenberg AFB were canceled. The table accompanying this article lists all the units involved with Bomarc, both USAF and Royal Canadian Air Force.

Goose SM-73

All of the other "winged missiles" in this article were designed to carry weapons, either to attack distant targets or to destroy enemy aircraft. The final missile to be reviewed had a different mission. Fairchild Aircraft

Bomarc A Units

Dow AFB, ME	30th ADMS
Suffolk AFB, NY	6th ADMS
McGuire AFB, NJ	46th ADMS
Otis AFB, MA	26th ADMS
Langley AFB, VA	22nd ADMS

Bomarc B Units

McGuire AFB, NJ	46th ADMS
Otis AFB, MA	26th ADMS
Langley AFB, VA	22nd ADMS
Niagara Falls, NY	35th ADMS
Kinchloe AFB, MI	37th ADMS
Duluth IAP, MN	74th ADMS

Royal Canadian AF Units

North Bay, Ontario	446 SAM Sqdn
La Macaza, Quebec	447 SAM Sqdn

*ADMS - Air Defense Missile Squadron
SAM Sqdn - Surface to Air Missile Squadron*

*Goose at Museum in Maryland*

Corporation designed and developed a ground launched jet powered missile that was designed to confuse the enemy by looking like an incoming bomber on enemy radar. The decoy was initially designed to simulate incoming B-36, B-47, B-52 and B-58 bombers. The Air Force assigned project MX-2223 in July 1954. The missile was first designated the B-73 and initially called the Bull Goose, the name was changed to just Goose in May 1958.

The delta winged missile was made mostly of nonmetallic composites. Radar reflectors in the fuselage and wing-tip pods would augment the radar return for realistic simulation of the larger bombers. The Goose had a range of 5,500 miles at Mach .85, so it was not a suitable decoy for the supersonic B-58. It was powered by a Fairchild YJ-83-R-3 or a General Electric J-85-GE-3 turbojet with 2,450 pounds of thrust and was launched using a Thiokol solid rocket booster with 50,000 pounds,

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Winged Missiles *(Continued from Page 7)*

that burned for three seconds. The missile was 34 feet long with a wingspan of 24 feet and weighted 7,700 pounds. Guidance was an autopilot stabilization system using low drift rate integrating rate gyro. The Goose carried no weapons, but could carry radar reflectors and electronic countermeasures equipment.

Test Program

The first flight of an XSM-73 prototype occurred in June 1957. The missile was initially tested using the rocket sled at Holloman AFB in before the test flights at the Atlantic Missile Range in June 1957. There were fifteen test flights, with problems encountered with the composite wings, the booster and the J-83 engine.

Deployment

SAC planned to have 10 Goose squadrons and buy a total of 2328 missiles and 53 for testing. The missiles would be deployed in hardened shelters and half the force could be launched within one hour and all within two hours. The problems encountered in flight testing, the inability to simulate a B-52 and funding constraints caused cancelation of the program in December 1958.

Do You Want to Learn More?

During the research for this issue, I used a lot of reference books, web pages and document collections. Our AAFM library has an extensive collection of documents, thanks to members who send articles, publications, photos and newspaper articles. Jimmie Warren, Ron Plante and Tim Tyler have sent documents and photos that were especially useful.

To read more about any of these systems, look for these publications:

The Development of SAC, 1946-1981, Office of the Historian, SAC

From Snark to SRAM, Office of the Historian, SAC

The Navaho Missile Project and Nuclear Weapons of the US, both by James N. Gibson, Schiffer Publishing
Ballistic Missiles, Jacob Neufeld, Office of Air Force History

US Bombers, B-1 to B70, Lloyd S. Jones, Aero Publishers

History of the 45th Air Division, several separate monthly reviews

North Americann Aircraft Retiree News

A History of USAF Ballistic Missiles, Ernest G. Schwiebert, Frederic A. Praeger, Publisher

The internet has a lot about these systems. Mark Wade's **Encyclopedia Astronautica**, astronautix.com

(including detailed launch lists), designation-systems.net, strategic-air-command.com, boeing.com, spaceline.org, patrick.af.mil/heritage, and fas.org/nuke/guide/usa are sites that had information on all the systems. Add www. to all these addresses) Some others:

Bomarc, midnightociety.com/web/abandoned/Bomarc/bomarc.html, geocities.com/CapeCanaveral/8947/project.html and radomes.org/museum/bomarc.html.

Snark, robsv.com/cape/c1lv.html, w3.uwyo.edu/~jimkirksnark.html, geocities.com/usaf463/SNARK.html, widefind.com/s/snark_missile.html and globalsecurity.org/wmd/agency/702mw.htm

Navaho, aeroconsystems.com/Navaho.htm.

Goose, globalsecurity.org/wmd/systems/sm-73.htm and coldwar.org/museum/photo_gallery.html

Snark Stories - *Two newspaper articles about the Snark provided by Jimmie Warren, who was part of the crew that launched the Snark that "graduated"*

Snark First Intercontinental Missile to "Graduate" at the Cape - *reprinted from the Cocoa Tribune, Tuesday, December 6, 1960.*

The world's first intercontinental missile Monday became the longest-range weapon ever to "graduate" from Cape Canaveral launch site of the Air Force Missile Test Center (AFMTC).

The USAF's SM-62 Snark, in Monday's flight completed a final series of launches from the Cape with the double objectives of development testing and crew proficiency. No research or "confidence" firings are to be conducted from the missile's operational site at Presque Isle AFB, Maine.

Monday's launch at the Atlantic Missile Range, programmed for a 5,000 mile trip to the vicinity of Ascension Island in the South Atlantic, was carried out by a SAC crew of the 702SMW, Presque Isle AFB. Technical assistance was provided by the Norair Division of the Northrop Corporation, prime contractor for the missile.

LtCol R. D. McKee, chief of the SM-62 section of the Wright Air Development Division's Patrick Field Test Office, pointed out that Snark was declared operational on September 1, 1959. "However, research and development was continued, in order to further refine and develop the weapon while combat crews were simultaneously becoming proficient in the use of the missile."

Snark launchings were conducted from the Cape as early as August 29, 1952, although the first firings were merely "dynamic dummies" intended to check out the

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Snark (Continued from Page 8)

Intercontinental Snark "Graduates" This Snark, after more than eight years of testing, was "graduated" after a final test at Cape Canaveral Monday in which the missile covered 5,000 miles. The Snark is a winged missile that travels at a rate of around 600 miles an hour.

launching procedure. Scale model firings began in November of that year, and the first full-size Snark was launched on August 6, 1953.

The first all-Air Force crew launch was conducted on October 1, 1957, by the AFMTC's 6555th Guided Missile Squadron. Snark performed the first 5000-mile flight on the Atlantic Missile Range on October 31, 1957.

Monday's crew consisted of eight men assigned to the strategic missile wing: Capt Douglas W. Carmichael, 33, Orange, CA; MSgt John E. Mathis, 40, Millport, AL; TSgt Paul M. Meck, 30, Borger, TX; SSgt Delbert L. Holstein, 25, Carmel, WV; A1C Clarence P. Crimm, 26, Canton, MI; A1C Yale M. Schiffman, 23, Boston, MA; A1C Jimmie L. Warren, 22, Warsaw, IN; and A2Callen T. Gage, 22, Pine Bluff, AR.

The Snark program has made a number of significant contributions to the overall US missile and space state of the art. Among the "bonus" benefits of the program are the following:

1. Snark employs the first 24-hour stellar-supervised inertial guidance system. The great accuracy of the Snark is provided by the star-tracking system, which constantly supervises the missile's inertial guidance system.
2. Problems of high-frequency acoustics that occur during blast-off were first solved with Snark. These solutions, involving the development of design criteria, have contributed to producing electronic components for ballistic missile and space programs.
3. Special equipment developed for the AF by Northrop to overcome the problems of electromagnetic noise in-

terference is now being used in other missile programs. 4. Development of automatic checkout equipment contributing to the rapid reaction time of the Snark has been applied to the Navy's Polaris fleet ballistic missile programmed to other specialized uses by the Af, Army and Navy.

5. "Zero" launch techniques developed for the Snark have provided useful in launch stability control of other large weapons.

6. Activation of the first operational intercontinental missile site at Presque Isle AFB for the Snark provided valuable know-how of substantial assistance to other missile programs.

7. The first successful airborne digital computer, developed for the Snark, has been directly beneficial to applications of airborne digital computers to other weapon systems.

8. Training manuals, procedures and job specialties developed for the Snark program have helped the development of corresponding manuals, procedures and specialties for other weapon systems. Fourteen AF specialties for the Snark are also applicable to the Atlas and Titan programs.



Sea Serpent Launch Crew

Memories Recalled-Last Retreat at Presque Isle AFB Closes Our Chapter of Nuclear Age

- by Dean Rhodes. Reprinted from the Presque Isle News, 26 June 1961.

Presque Isle AFB - The 702SMW (Snark) to become inactive, held the last retreat at Presque Isle AFB Friday - and the nation continued on its journey through the nuclear age.

The retreat was held at 4:45 PM in front of the
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Snark (Continued from Page 9)

Down Came the Colors - The 702SMW held the last official retreat at Presque Isle AFB Friday. Three members of a flag detail are shown after bringing the flag down at 4:45 PM, before base headquarters. Sunday will be the last operational day of the wing. The Snark unit and the base are being deactivated.

(NEWS photo by Rhodes).

base headquarters as sun broke through a covering of dark clouds. The 702SMW commander, Col Roger A. Stevenson, extended honors to two sergeants who were retiring, each after more than 20 years of service. MSgt (Major) Homer A. Smith and TSgt James D. McRae. Three air police brought the flag down. The retreat flight commander was Capt Sam Cox.

A personal message from the 8AF commander, Gen Sweeney, to Col Stevenson was made known: "25 June marks the last operational day for the 702SMW. It has been more than 12 months since the wing placed the first Snark in alert status. In this period of time, the capability of the wing to maintain missiles in alert status and to generate follow-on missiles for launch grew continuously. Many difficult problems were solved. During this year, the wing made a worthwhile contribution to the power of the Strategic Air Command. In addition, the officers and airmen of the wing gained expert knowledge of missile operations which is certain to be invaluable in their future assignments."

The fact that the Snark missile was out of date before the wing was organized two years ago symbolized in part the speed at which the techniques of waging war are being developed, and the speed of such developments is in itself a good indication of how far the nation has traveled since Pearl Harbor, Normandy, VJ Day and Korea.

Presque Isle AFB, through the men who served here, had a lineage that indirectly went to the first American regiment of 1784 and coursed through the country's Indian campaigns and wars. But the Presque Isle AFB of

1959-61 was no more of the time of 1945, or even of that of 1951, than it was of the time of Gen Winfield Scott. Things had changed fast by the coming of the Snark - itself dated upon arrival.

In March, the Department of Defense officially realized that Presque Isle AFB of 1959-61 was as much a part of the past as the French Foreign Legion. The base would close and the 702SMW become inactive.

The men who served in the 702SMW were described as of "higher caliber" than military men on base had been previously. As a group, the members of the 702SMW appeared different from members of the 23rd Fighter Interceptor Wing who were at the base when this reporter was assigned there in 1951. The missilemen had more involved training, it was reported, and they didn't know as many interesting stories to tell of the war on Okinawa and over Berlin and Tokyo as did the 23rd Fighter people.

"Stand up, gentlemen, the Third is passing by. We always passed in review with fixed bayonets."

This is a piece of conversation from the past, 1951, a ghost. The speaker is a 350 pound sergeant at the base NCO club, having a few beers and telling his companions about the time when he served in the Third Infantry Regiment. The Third stemmed from the First American Regiment, itself formed to protect the nation after demobilization of the Revolutionary Army.

One account of the Third reads... "On April 28, 1847, the Third Infantry, leading the army under Gen Winfield Scott, on the march from Vera Cruz to Mexico city, came in sight of the enemy strongly posted on the heights of Cerro Gordo ... It was carried by a brilliant charge of which Gen Scott made special mention ... In 1922 the Third Infantry sought permission from the War Department to always "Pass in Review" with bayonets fixed in commemoration of that charge..."

The request was granted. The big sergeant, on the verge of retirement, liked to talk about the colorful tradition.

The nucleus of the 23FIW had been Chennault's Flying Tigers. The wing pilots flew the F-86 jet and called themselves Tigers. The 23FIW commander was Col Charles H. McDonald, who had shot down many Japanese aircraft in a P-38 called the Putt Putt Maru. Before the age of 25 McDonald was a colonel. His hair was almost white at 34.

In the fall of 1951 here you could see shoulder insignia of the China-Burma-India Theater and of North Africa and other foreign places. Those who had ODs

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(olive drab uniforms) wore them. There were survivors of Bataan and a former bombardier who had been over Germany approximately 100 times before he was 19. They all had stories to tell.

An elderly buck sergeant used to drink and play cards with his mother in the barracks, even though she was 2,000 miles away. He had a few sayings: "Payday tomorrow, officers at 10, meatheads at 11 ... they back you in on a freight car at 4, you wave bye bye at 5 from the boat." And the one covered most occasions: "I'm not ready for 'em to pat my face with a spade yet."

The scene here in 1951 was romance, glamour, illusion, compounded by the interesting stories you were told, and this is inaccurate, as much so as were the interesting stories, because it is told you through a veil just as the interesting stories were me through a veil. The members of the 23FIW had already forgotten some of the frustration and tension and struggle of their lives - elements of reality which continued for men of the 702SMW and which will be around for missilemen to come, but probably in more and more complicated forms as the world changes

Still, I am sure that members of the 702SMW must have had some illusions and that future military men will have some illusions, too.

Bomarc Fuses and Me - by *LCdr (Ret) Hank Bender, MbrNo SA018, Covington, LA*

In the early 1950s, I landed a civilian job to serve as a Project Engineer for a firm then known as Radiation Inc., now a division of The Harris Corporation. My job was to lend support to Diamond Ordnance Fuse Laboratories (DOFL) testing of their proximity fuses on the Bomarc and Redstone Missiles being tested at the Cape. The fuses were originally designed by a division of the National Bureau of Standards (NBS) late in WWII and served the Navy well in places like Okinawa late in that war. I arrived in Melbourne, FL, then a little hick town southwest of the Cape, late in 1953 eager to assume my duties but learned that I needed a "fuse clearance" to start work. I did odd jobs for six months before I received the clearance. During that time my existing DOD Secret clearance enabled me to learn something about the Bomarc and its three guidance systems; actually four if you considered the fuse to be the fourth. At last the clearance arrived and I began to travel around the country for training on the Safety and Arming Device (S&A) and the fuse itself. On commercial airlines, I carried in my briefcase, explosive components for the S&A devices and one or

two of my .45 automatics. Those were the "good old days" before hijackers or terrorists.

A portion of my training was at Navy Ordnance Test Station (NOTS), China Lake, where I got to witness flights of the Terrier Missile. On one of these flights, the missile turned back and started heading for the radar that was supposed to be guiding it. You can only imagine how fast people ran getting away from that radar. Sheer pandemonium and terror. During my NOTS training, I also got to meet Pancho Barnes, who operated a shelter for lonely aviators in the High Desert. When a lonely aviator would enter the establishment, just for a beer of course, Pancho would greet him with "What do you want to talk about - flyin' or (female companionship)?" Pancho and her girls were experts on both subjects and could communicate with the lonely aviator, most of whom were test pilots stationed at Edwards AFB. During the early part of the last century, Pancho was one of the great woman aviators, and I felt it a privilege to meet her.

After about six months of training, I began arming Bomarc and Redstone missiles at the Cape in preparation for their flight tests. While in the Navy I had many job codes but when I retired from the Navy, my specialty code was Engineering Duty Only, Ordnance. In some ways this is a great specialty. When far away from explosives, everybody and his brother tells you how to do your job, but when you are near explosives, everyone seems to disappear and you get to do your job your way. I did my job for a few missiles and then went on to a better job at Cal Tech's Jet Propulsion Laboratory in Pasadena where I was the only Ordnance Engineer for several missiles that the lab was developing. I later went on to be the Cognigent Engineer for the about one quarter of the lab's major project at that time - the Sergeant Missile.

Now let's shift to much later. Barbara and I are on our second trip to Russia, then under Communism and engaged in the Cold War, on a tour of Russian battlefields and War Museums. Barbara is the only woman on the tour of just eight persons, all except us professional writers. Russia has some real War Museums. The only ones that can possibly compare with them in this country are at West Point and at Fort Benning. One was closed, so our great tourguide, who had real clout, got it opened just for us and got us a retired Russian Army colonel to serve as our guide. During the tour I was amazed to see a SCR 584 radar in the museum thinking that all of those were serving as gap fillers during the then Cold War. Then to my amazement, I spotted some WWII and Korea coding machines. I called Barbara away from the tour to

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Bomarc Fuses *(Continued from Page 11)*

explain their workings to her. To my further amazement I then spotted a NBS proximity fuse. Our colonel guide explained that the fuses had been delivered in 1944 to the Russian Army which used them to wipe out was left of the tactical Lufwaffe.

So I had a couple of questions – first, if we furnished the Russians proximity fuses in the 40s, why did I have to wait six months for a “fuse clearance” in the 50s? Second, was there some motive other than national security that resulted in the creation of the “fuse clearance”? At this late date, I would be glad to hear from a person who can provide partial or complete answers to these questions. I suspect that I know the answers but would appreciate someone confirming those answers.

Joint Space Operations Center opens at Vandenberg - *by 1Lt Lucas Ritter,*

30SW Public Affairs, Vandenberg AFB, CA (AFPN)

Joint warfighters worldwide will soon reap the benefits from the Joint Space Operations Center, which opened here May 18. “This (center) really is the culmination of a number of years of evolutionary thinking about space power and its applications,” said MGen Michael A. Hamel, 14AF commander. “We now understand how deeply space assets are embedded within all military forces. This center provides global space coordinating authority for those assets.”

Joint-space assets now will be controlled by a single entity for the first time. The center will be responsible for coordinating and delivering joint-space effects, officials said. The center integrates various joint-space capabilities and focuses them to improve warfighting capabilities. It provides shared situational awareness to commanders and troops on the ground. It will direct, plan and respond to theater commander and user needs and requirements.

The center will fall under the joint functional component commander for space and global strike, as delegated by US Strategic Command officials. This responsibility is further delegated to the Joint Space Operations commander who, at this time, is also the 14AF commander. “We want to be able to deliver the right capabilities and effects when they are needed and where they are needed before the theater commander asks for them; that is how we will measure success,” General Hamel said.

At this time, the center is controlled mostly by Airmen, but that will likely change. Other branches of the military will begin staffing the center to provide true

joint operations and give those in the field a common site picture of all space assets. “Space assets are inherently joint and are not just an Air Force capability,” said Gen Lance W. Lord, commander of AFSPC. “We have said that we cannot operate successfully without space in our military today. What we have witnessed here codifies that space has become an equal partner with land, sea and air forces.”

Peacekeeper Soon History - *by Cynthia*

Di Pasquale, AF News Service

The last Peacekeeper will be dismantled this summer, closing a three-year deactivation process that is part of a larger scaling down of the country’s nuclear arsenal, according to the USAF general in charge of those missiles. A pact between the US and Russia committed each country to reducing its strategic nuclear warheads by nearly two-thirds, to between 1,700 and 2,200, by 31 Dec 2012. “Our first big installment in the ICBM business, in terms of helping the overall strategic force get down to those levels, is deactivation of the Peacekeeper missiles,” MGen Frank Klotz, commander, 20AF.

Removal of the 50 Peacekeepers deployed at Warren AFB, WY, began in October 2002 and will end by mid-September of this year. A three-year schedule had 17 missiles taken out of service each of the first two years and 16 in the third year, Klotz explained. Because of the way the missiles are placed in a silo, disassembly can take more than a week at the launch site, plus several additional days to package parts for storage. Once all of the Peacekeepers have been deactivated, it would be a “Herculean task, at best,” to bring them back into service because skills for maintaining and operating the system are perishable, Klotz said. Although Peacekeeper are being dismantled, most rockets will be made available to the Rocket Systems Launch Program, which provides cost-reimbursable launch vehicle support and space launch capabilities to all military services. In addition, Mark-21 nuclear warheads from some Peacekeepers will be placed on several Minuteman IIIs remaining in service, diversifying that collection, Klotz said.

The 500-strong Minuteman III fleet is undergoing a 10-stage, multibillion-dollar modernization effort. Initiatives include replacing the missiles’ guidance systems and propulsion system rocket engines; improving rapid execution and combat targeting; adding environmental control systems; and enhancing reentry vehicle safety features. AFSPC is looking at ways to improve safety and security at missile facilities at Warren AFB, Minot AFB, ND, and Malmstrom AFB, MT. The com-

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mand already is further fortifying launch control facilities and developing a capability to more quickly close up a launch site when performing maintenance, according to the general. Officials also would like to deploy a remote visual assessment system to monitor launch locations from the control stations. "This may come as surprise to some folks, but our launch facilities where the missiles are located are unmanned facilities," Klotz explained. "And we have above-ground sensors and below-ground sensors which will detect any movement around the launch facility. And if there is any movement it will set off an alarm in which security forces will physically respond to find out what [the cause was]." The sensors are extremely sensitive and are often set off by tumbleweed or small animals, although protesters have managed to make their way onto the missile fields as well, he said. "We would like to have a remote visual system so that we know when we have an alarm what the cause of the alarm was," the general continued. "Not so much to preclude the need to send the security forces out to check it out, but so that we have situation awareness, so ... if it is a serious incident, we can start immediately to respond with even larger forces to it, and also so that the men and women who drive up on that site are not surprised by what they see out there." The technical challenge for fielding this unfunded priority is getting a communications signal from the missile launch sites to the launch control facilities, Klotz said.

Son of Stump- by LtCol Stephen Ray, Commander, 532TRS, Vandenberg AFB, CA

History of old and a winning spirit is being rekindled with nothing more than a stump of wood. Yes, I said a stump of wood. Although now we call it Guardian Challenge instead of Olympic Arena, the basis is still the same. A winning spirit and team work have always been driving factors to be the best. I was amazed as I was clicking through the AAFM website when I came upon a July 1995 back issue. What caught my eye was the third installment on page 6 of a new series on Missile Personalities. Titled "Origin of The Stump." I learned we have a celebrity among us here at Vandenberg AFB. Little known to most, Gen (Ret) Eucalyptus T. Stump has a son, Amn Eucalyptus D. Stump, who is currently in technical training in the 532TRS and serving a six year enlistment. A chip from the 'ol block, Amn Stump is cut from the same grove of trees near Airfield Road and adorned with a similar set of brass handles. He is the 'splitting' image of his father. His father was "procured by six missile maintenance meam members (MMT)", but



Airman Stump

son was "procured" by a prior facilities maintenance team member (FMT), now officer, Capt Frank M. Adams. While General Stump was an Olympic Arena hero leading Whiteman AFB to more wins than any other missile wing, Amn Stump has a slightly different mission. LtCol Stephen Ray, commander of the 532TRS, recruited Amn Stump specifically to bring back the winning spirit Whiteman AFB possessed. With natural abilities to 'fuel a fire', build team work and drive a winning spirit, his first official function was to swear in former missile combat crew member and brand new missile maintenance officer Maj James Wakefield. Maj Wakefield stood proudly on Amn Stump as he loudly recited his maintenance officer oath. It was amazing how a stump of wood could instill pride and tradition spanning back to the days of old, rekindling a winning spirit and team work. Looking forward into the future we see a promising career for Amn Stump. Following closely in his father's footsteps, he is not only an asset, but well on his way of becoming an icon for the Workhorses of the 532TRS.

MM National Historic Site

The former 44SMW LCF and LF, near Wall, SD is accepting reservations for tours for this summer. Tours will be conducted Mon-Fri, two tours per day, limited to six persons each, from Memorial Day to Labor Day. Call 605-433-5552 to make reservations.

Artifacts for the AF Museum?

Durng my visit to the National Museum of the AF at Wright Pat, we discussed the new Missile Hall and plans for displays. They need uniforms, tools, patches and other items related to our business - we will have details on how to provide them soon.

Coming in September - Memorable Alerts - Send in your story now

A Word from the Association

Museum Grants - we will mail out applications to museums in July - if you work with a museum, make sure they get their grant request to us by 15 October. Angela Sharkey of Titusville, FL is working on the restoration of the Titan I at Titusville High School - if you have Titan expertise, she could use your help, especially in advice on treating corrosion and preserving the missile. Her e-mail is asharkey@cfl.rr.com. We will consider a grant request for this project later this year.

Cold War Medal - log on to www.petitiononline.com/pfcmongo/petitionntml/ to support the effort.

Tie-tack Missile Badges - Am working to get pins in each of the six versions we now wear, along with the new space cadre badge. Two manufacturers make gold and silver badges, starting at about \$50 for the basic silver badge. Contact Landstrom's Jewelers, 620 St Joe, PO Box 1220, Rapid City, SD 57709, 800-843-0069 or Crisalli Jewelry, PO Box 7277, Northridge, CA 91327, 818-368-6230, www.crisalli.com

Last Titan - The last Titan was launched from the Cape recently - there are stories on the AF and AFSPC web sites. There is still one more Titan launch, scheduled for Vandenberg in July.

Titan II Logos - George Currie operates www.titan-II.com. and offers a lot of Titan logo items with a variety of wing, AF and Titan symbols.

ALCM Patch - Bill Love, e-mail roundels@aol.com, is looking for a clear photo of the AGM 109 Test Team patch, a red and blue "AGM-109" with a lightning bolt across it.

551SMS Reunion - In April, I spoke at the second gathering of the Lincoln Atlas folks, using our new Power Point presentation, History of Land based Missiles. The group dedicated a memorial bench at the museum during their meeting. I also met with some of the staff of the National Museum of the Air Force (the new name) and toured the Missile Hall - which has a Titan I and II and a Jupiter in place, and more coming.

Letters to the Association

Address your letters to AAFM, Box 5693, Breckenridge, CO 80424, or send by e-mail to aafm@afmissileers.org. Letters may be edited to fit - content/meaning will not be changed.

AMMS Alumni - Tom Clinard, who maintained the AMMS Alumni website, passed away. At Tom's request I developed a new website dedicated to those who worked on Hound Dog and Quail, with an extensive listing of alumni members. The new website is <http://www.ammsalumni.org>. *Ronald J Sortor, South Branch, MI*

Junior ROTC Award - I'm an AAFM member and AFJROTC instructor. Most JROTC instructors I know, both officer and NCO, who are former missileers (all are retirees) are not AAFM members and were surprised to find out there was an organization. I encourage AAFM members to contact their local high school if there is an AFJROTC unit, get to know them and offer assistance. There are about 750 units nation wide and overseas, growing to a 945 maximum in the next few years. AFJROTC cadets earn national level awards from the several military associations. I recommend that AAFM establish an award. (AFA provides a medal/ribbon award annually for about \$10,000; Tuskegee Airmen Inc. provides a ribbon only award annually for about \$2000.) If the board of directors believes this to be a worthy project for AAFM, I would be glad to staff the proposal through Hq AFJROTC. I didn't support the change to the new Space/Missile badge. I've worn a "pocket rocket" since 1974 and just too conservative in my old age, I guess. However, in my role as an AFJROTC instructor, I need to present the best and most up-to-date Air Force image to my cadets. Can JROTC instructors wear the new badge as we are all retired. Specifically, are they going to "grandfather" those of us who are already wearing the missile badge and will the senior and master levels translate directly? *Don Keltner, MbrNo L256, Sugarland, TX*

Don is working with AFJROTC on the possibility of an AAFM award - we will keep you advised. We still don't have details on wear of the new Space Cadre

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Badge, and will make it available as soon as we do.

Greenham History - Col (Ret) Sigmund Alexander has put together a rather good 31 page booklet of SAC era Greenham Common photos, many from my website. He has sent a copy and I am most impressed. A copy or a CD ROM can be bought from him. Contact him at sigmund.alexander@worldnet.att.net. *Jonathan Sayres, MbrNo L359, Berkshire, UK*

Col Russ Thresher - It is with great sorrow that I read that Col Russ Thresher had passed on. I had the privilege to serve under him at Vandenberg when he lead 1STRAD Logistics. As one of his senior NCOs I spent quite a few hours in his office. Col Russ was indeed and "Officer and a Gentleman" even if he did graduate from Annapolis. The USS Thresher (SSN 593) was named in honor of his father. God Bless you Col. Russ. *Clifford Dobbins, MbrNoA0844, Rosamond, CA*

Snoopy - As we move Snoopy into the restoration phase, we received this note from the AMMS Association; "You can solicit help for your project from the AMMS members. Have them make checks payable to The Airborne Missile Maintenance Squadrons Inc., and in the memo section write Hound Dog Restoration (to ensure funds go to your restoration and not general AMMS projects. Checks can be mailed to 2218 SW 52nd Lane, Cape Coral, Florida 33914. Gil Carpenter Pres. AMMS Assoc Inc." While we have invested personal funds on the preliminaries, it is time for some heavy duty investment. We are prepared to continue gathering our own funds but do you think that any of the "Big Stick" guys would be amenable to assisting in this worthwhile project? I will keep you informed as to the progress once Snoopy and the parts are gathered together. *Homer Warner, MbrNo A2350, 3705 S George Mason Dr #1009S, Falls Church, VA 22041*

We reported on the Snoopy restoration in September 2004 and will provide the folks involved a grant application this year. If you would like to contribute personally to the Snoopy Hound Dog project, contact Homer Warner or AAFM

Looking for Missileers

Member Jack Nicklas is looking for his former crew commander, Sammie Pringle. Contact Jack at jack.g.nicklas@boeing.com

Archie Cumbee is looking for David Harris, a missile officer in the mid-80's. Prior to that, he was enlisted and he served in Germany in 1971-72 in Det. 22, 601 TCW. He was then a wideband radio maintenance type (TRC-97). He in his 50's and is a native of Louisiana. Contact Archie at acumbee@nc.rr.com

Cuban Missile Crisis Book

Washington Post reporter Michael Dobbs is writing a book on the October 1962 Cuban Missile Crisis. He would like to talk to memberd involved in missile operations, maintenance and support during that time. Contact him at msdobbs@gmail.com or 202-334-6039.

Taps for Missileers

SMSgt Julian Beard, an AAFM member, served in Thor in the 672SMS, Atlas in the 389SMW, Minuteman in the 321SMW, 1STRAD and the 394SMS, and in SRAM in the 68MMS and lived in Goldsboro, NC

Wade K. Brown, who served in Mace at Bitburg, lived in Alta Vista, TX

Tom Clinard, a veteran of airborne missile systems who maintained the AMMS Association web site

Maj (Ret) Richard W. Densmore, served in missile maintenance at 90SMW, 3901SMES and 91SMW. and participated in first missile competition, Curtain Raiser, and resided in Virginia Beach, VA

Art LaCroix, who was mayor of Rapid City in the 1970s and 80s and known to many missileers.

CMSgt (Ret) John Phillips, an AAFM member, served in Minuteman in the 90SMW and 341SMW, in Atlas in the 389SMW and at 15AF, and lived in Great Falls, MT

General (Ret) Bernard Schriever, who was the key AF leader responsible for development of intercontinental missiles and space vehicles, headed the Western Development Division and later ARDC/AFSC, and lived in Washington, DC

Col (Ret) Russell Thresher, an AAFM member, served in Matador in the 1TMS, Atlas in the 389SMW and was commander of the crew that launched the first operational Atlas, in Minuteman in the 321SMW, in 1STRAD, 394SMS, 4AD, SAC and Space Systems Division and lived in Punta Gorda, FL

MSgt (Ret) Robert G. Vedrin, served in Titan II in the 390SMW, Minuteman in the 44SMW, in the 395SMS and at TRW and Northrop Grumman, lived in Santa Maria, CA

Peterson Museum Progress - by BGen

(Ret) Ron Gray, MbrNo L0018, Colorado Springs.

Work on our Minuteman LCC enclosure was delayed for about 3 months because the 21SW (BGen Dick Webber having the major role) was very generous with fall-out money for the museum, funding a complete refurbishment of the City Hangar environmental control system. Needless to say, that produced a tremendous amount of activity in the hangar that was not compatible with our exhibit building.

The enclosure is finished to include lighting so our LCC now has equipment in place and lights. It has been cleaned and arranged properly, including a DMCCC chair and radio set group to further fill out the LCC equipment set. The exhibit walls around the 1000 sqft area allocated to the ICBM exhibit are ready to begin placing diagrams, photos and maps on the walls for each weapon system, Atlas through Peacekeeper. Display cases for the uniform exhibit are in work. Backlit display boxes hang on the outside of the LCC enclosure for a timeline from the 1950s through the 1990s on the threat and the weapon systems that met that threat chronologically. Finally, I am working with AFSPC to obtain a Titan II Mark 6 RV and MMII Mark 11 RV.

We're working to acquire a Peacekeeper Missile Procedures Trainer from the schoolhouse at Vandenberg, since PK training is shutdown and the trainer will be disassembled in FY06. I doubt that it will be operational but will have power on and lights. I have also discussed the availability of a MMII trainer with our new museum director (former Titan II and Minuteman III crewmember). I convinced her that it would really complement our MMIII and Peacekeeper LCCs to have the Deuce system represented. We have plans for a Missile Plaza with a MMIII and a Peacekeeper on display. My old Titan II bones would love to put a big liquid fueler in there with them but that's a stretch right now.



Reunions

Association of Air Force Missileers - 27 Sept - 1 Oct 2006 - plan now to attend our seventh National Meeting at the Little America Hotel in Cheyenne, with great tours at Warren AFB. Registration forms will be available beginning with the September 2005 newsletter. Several unit reunions will be part of our meeting - yours can be too. Some are firm and some are in planning. The 556SMS (Plattsburgh Atlas) will be there, contact Mel Driskill at e-mail dgser@earthlink.net or Bruce Raligh at braleigh@wideopenwest.com. The 548SMS (Forbes Atlas) will also join us, contact Don Peoples at njpeeps@att.net.

GLCM Reunion Picnic, 13 August 2005, 1130-1600, Eagle Park, Peterson AFB, RSVP by 9 July to Bob Peterson, 719-591-1011, bob.peterson@lmco.com, Mike Jennings, 719-554-5676, michael.jennings.ctr@afspc.af.mil or Maj Corvin Connolly, 719-554-7787, corvin.connolly@afspc.af.mil. Donation of \$5 per adult requested, children 12 and under free, bring a side dish such as beans, potato salad, etc., or dessert. Hamburgers, hot dogs, condiments, drinks provided.

381SMW (McConnell Titan II), Larry Kugler is working to organize this unit to join us or meet elsewhere, e-mail lkug531@mac.com

308SMW - Jacksonville, AR, 6-9 October 2005, contact William Leslie, 7097 Bellefontaine Rd, Huber Height, OH 45424, Email william.leslie2@wpafb.af.mil, phone 937-255-2783

Possible 579SMS (Walker Atlas) - contact Fred Mortimer, email fmortimer@tampabay.rr.com, Phone 727-734-3487, 1610 Amberglenn Drive, Dunedin, FL 34698

Possible 576SMS/FLTS Reunion (Vandenberg), contact Edwin R. Floyd at 512-447-2201 or edntex@hotmail.com.

Strategic Air Command Reunion - 24-27 May 2006, Tucson, AZ, contact Toby Romero, 4918 E Cooper St, Tucson, AZ 85711-3620, 520-327-2224, e-mail jtrome25@excite.com

"ICBM Gang" Reunion, 30 Jan-2 Feb, Cocoa Beach area, for those involved in ICBM test and development, contact pwaite1@cfl.rr.com.

Reunion Notices should be to AAFM as early as possible for the newsletter, web page and e-mail updates.

**Join us in Cheyenne in 2006
Details in September**