

442 MAINTENANCE SQUADRON



MISSION

LINEAGE

442 Maintenance Squadron, Troop Carrier, Medium constituted, 10 May 1949

Activated in the Reserve, 27 Jun 1949

Redesignated 442 Maintenance Squadron, 1 Mar 1950

Ordered to Active Service, 10 Mar 1951

Inactivated, 12 Mar 1951

Activated in the Reserve, 15 Jun 1952

Redesignated 442 Field Maintenance Squadron, 8 Nov 1954

Inactivated, 14 Apr 1959

442 Consolidated Aircraft Maintenance Squadron constituted, 5 Dec 1958

Activated in the Reserve, 14 Apr 1959

Ordered to Active Service, 1 Oct 1961

Relieved from Active Duty, 27 Aug 1962

Discontinued, and inactivated, 17 Jan 1963

Activated in the Reserve, 1 Jul 1976

442 Field Maintenance Squadron and 442 Consolidated Aircraft Maintenance Squadron consolidated, 22 Oct 1984. Consolidated unit designated 442 Consolidated Aircraft Maintenance Squadron.

Redesignated 442 Maintenance Squadron, 1 Feb 1992

STATIONS

Fairfax Fld, KS, 27 Jun 1949

NAS Olathe, KS, 27 May 1950-12 Mar 1951

NAS Olathe, KS, 15 Jun 1952

Grandview (later, Richards-Gebaur) AFB, MO, 3 Apr 1955-17 Jan 1963

Richards-Gebaur AFB, MO, 1 Jul 1976

Whiteman AFB, MO, 1 Apr 1984

ASSIGNMENTS

442 Maintenance and Supply Group, 27 Jun 1949-12 Mar 1951

442 Maintenance and Supply Group, 15 Jun 1952

442 Troop Carrier Wing, 14 Apr 1959-17 Jan 1963

442 Tactical Airlift Wing, 1 Jul 1976

442 Tactical Fighter Group, 1 Oct 1982

442 Tactical Fighter (later, 442 Fighter) Wing, 1 Feb 1984

442 Logistics Group, 1 Aug 1992

442 Maintenance Group

COMMANDERS

Maj Christina Manning, 7 Nov 2010

HONORS

Service Streamers

Campaign Streamers

Armed Forces Expeditionary Streamers

Decorations

Air Force Outstanding Unit Awards

1 Jun 1987-31 Jul 1988

1 Nov 1989-31 Oct 1991

1 Oct 1997-31 Aug 1999

EMBLEM



On a disc parted per fess enarched Azure and Gules, a plate Silver Gray, charged with a gunstone encircled by an annulet within seven gunstones in orle Sable, between two stylized wings elevated to chief Argent, detailed of the fourth and flanking a grenade Proper, enflamed Or. In base, a wrench fesswise of the third, all within a narrow border Yellow. Attached above the disc, a Blue scroll edged with a narrow Yellow border and inscribed "EXCELLENCE IN ALL WE DO" in Yellow letters. Attached below the disc, a Blue scroll edged with a narrow Yellow border and inscribed "442D MAINTENANCE SQ" in Yellow letters. **SIGNIFICANCE:** Ultramarine blue and Air Force yellow are the Air Force colors. Blue alludes to the sky, the primary theater of Air Force operations. Yellow refers to the sun and the excellence required of Air Force personnel. The arched background indicates land base maintenance and air operations. The winged Gatling gun in the middle associates the unit with its wing and the wing's fighter mission. The grenade in chief signifies the weapon systems the unit maintains. The wrench in base shows the foundation of all maintenance operations. (Approved, 11 Mar 2003)

MOTTO

OPERATIONS

442 Consolidated Aircraft Maintenance Squadron mission is to accomplish organizational and field level maintenance for 24 unit assigned aircraft. In addition, the 442 CAMS also accomplished C-130 fuel cell rework as a central repair facility for all AFRES assigned C-130 a and other C-130 modification as dictated by command priorities. At the present time, the 442 CAMS is also supporting a Depot Field Team which is performing aircraft modification on all AFRES assigned aircraft.

2002--On any given day, a number of A-10s can be found in the 442nd Fighter Wing's 5-Bay Hangar. However, one of the A-10s there now is very unique. It has become, after much mental and physical effort, a source of great pride for many wing members. At first glance, aircraft number 118 does not appear to be different than the other "patients" in the hangar. Various panels are temporarily removed, wiring is exposed in its wings, and a handful of maintenance airmen sweat and fuss over it wanting to get everything just right. Anyone working on this aircraft has particularly good reason to sweat and fuss, though. That's because they are making wing history. Just before the September unit training assembly, 118's old wings (each measuring roughly 20 feet in length and weighing about 1,500 pounds) were gingerly hoisted away from the plane's body and were replaced with wings from the A-10 maintenance depot at Hill AFB, Utah. Changing A-10 wings had never been attempted by the 442nd at wing level, as such work is usually done at the depot level. But with enthusiasm, cooperation and ingenuity, wing members were confident they could pull it off. "This is the most exciting thing in my Air Force career and I've been in 22 years," said Master Sgt. Richard O'Connor, 442nd Logistics Group quality assurance inspector. "This is the biggest task that we as mechanics have ever attempted. We had a lot of people who had doubts, but we said, 'Let us at it. We're ready to do it.'" "This has never been done here and you never envision doing something like this," said Master Sgt. Bill Muth, 442nd Repair and Reclamation shop maintenance Hight chief. "But it was like a challenge. We said, 'Can we do it?' and everyone was like, 'Yeah, just get us the wings.'" "We brainstormed and put some ideas together," Muth said. "We had several meetings and conference calls, and basically talked about what we needed to do this. We had inputs from structural people and from quality assurance. We were tapping everybody's brains. We had engineers giving us some words of wisdom. Corrosion and painting people were involved. "We needed special tools and we did a lot of research, especially from quality assurance and my side of the house," Muth said. "We had torque wrenches specifically made with adapters for tightening and getting off bolts. There was some creative thinking done regarding adapting tools and we got good support from the machine shop. We got good support from the 509th (Maintenance Squadron). They loaned us trailers that supported the weight of the (old) wings while they were being moved. Ego was never (an issue). We looked in the technical orders and found that we'd need certain slings, dollies and hoists. We decided we had everything and we said, 'Let's do it.'" "Their efforts culminate a maintenance battle that began, according to O'Connor, in 1994 when 118 made a "gear-up" landing, which caused a small crack in the left wing. While sheet metal specialists were able to repair that damage, the fracture eventually reappeared and exceeded the size authorized for repair at wing level. However, Muth said there was concern about a one-time flight to Hill. After discussions with some of the A-10 depot staff, "we sat down and made our plan of attack. We did our research and we asked ourselves if we could get the parts and the tools." With affirmative answers, this first-time mission took off. According to O'Connor, the new wings are good for

roughly 1,500 flying hours (about 4 -5 years). Muth noted that even though the new wings have been attached, much work and ingenious thinking remains to be done before 118 is air worthy. "The majority of the work is 'follow-on maintenance'," he said. "It's a big, major task. There's electrical wiring to be reworked. There's the stripping of the original wings and adapting that stuff (to the new wings). There's work to be done with electronic countermeasures. The integrity of the wing (has to be maintained). You're taking a wing that's been sitting in depot and you have to ask yourself what kind of shape is it in." The uniqueness of this effort has forced Muth and other maintenance veterans to use equipment that is, at the same time, familiar and unfamiliar. "Each base has some standardized equipment for A-10s, but this is the first time we've used some of it. You think you'll probably never use some of the different wing slings and cables that are required for lifting the wings. But we did use them. Not only did we pull the left wing off," Muth said, "but we had to take the right wing also. So there were some weight and balance concerns." "A lot of us have sweated and got nicks and cuts, but everybody has stressed safety. If anybody has concerns, they say it. There's no 'shade-tree mechanic' work going on, even though we are creative." "I couldn't have asked for a better crew chief," Muth said, referring to Master Sgt. Tony Tripp. "We're further ahead (time-wise) than what we thought we would be. I'm a little surprised, with all the checks we have to do. It's quicker to take something apart rather than to put it together. Tripp always says, 'Let's see how many parts are left on the table when we're all done.' It's kind of a joke." It is no joke, however, that this effort has saved much time for the wing. Muth noted that if 118 had been sent to the A-10 we've used some of it. You think you'll probably never use some of the different wing slings and cables that are required for lifting the wings. But we did use them. Not only did we pull the left wing off," Muth said, "but we had to take the right wing also. So there were some weight and balance concerns." "A lot of us have sweated and got nicks and cuts, but everybody has stressed safety. If anybody has concerns, they say it. There's no 'shade-tree mechanic' work going on, even though we are creative." depot, the wing would probably receive it back around June of 2003. "Now we're sitting in early September," he said, "with a good chance of flying in October." Until that first flight, however, Muth knows the work is not done. "We'll have an FCF (functional check flight) where the pilot will take it up and perform all the checks. None of us can say we're done until the FCF is done." Although the moment of truth, in the form of the first flight, has yet to come, confidence and camaraderie is high. "The biggest factor in all this," Muth said, "was that everyone involved saw it as a challenge and they welcomed the chance. It pushed everybody." "This is truly a first," O'Connor said. "These guys have 20 or so years working on these planes and our expertise is our most valuable tool. (Tech. Sgt.) Jim Gum (442nd Repair and Reclamation shop), (Staff Sgt.) Paul Rambo (442nd Aerospace Ground Equipment), (Master Sgt.) Wilson Lieske (509th AGE). We've got a lot of people with smiles on their faces. It's so cool to watch."



2006 Tucked away in the southwest corner of the 442nd Fighter Wing's five-bay hangar, Airmen from the 442nd Maintenance Squadron's aircraft metals technology and structural maintenance shops toil to ensure the wing's A-10s keep their "beautiful" shape and structural integrity. With "attention to detail" more of a daily commandment than a trite phrase to be inserted in an enlisted performance report, these troops are an important reason why 442nd aircraft can be counted as the best maintained, and best looking, A-10s in the Air Force. Senior Master Sgt. Mark Mock, 442nd MXS, Fabrication Flight chief, has responsibility over the two shops and he knows exactly the kind of efforts expended by the reservists in both of them. "A lot of people have said our jets look nice," Sergeant Mock said. What they don't realize is there a lot of things that go into making them that way."

He feels the aircraft put off a professional image that is a reflection of those that maintain them. It's an image that comes from that attention to detail and he offers something seemingly insignificant as a case in point from the structures shop. "(They) paint screws," Sergeant Mock said. "After the screws are put a holder, they paint the heads of them so that when the screws are installed on our planes, the screw heads are gray and not silver.

They look a lot nicer." The same thing is done for any other part the shop sends out to be placed on the aircraft. When the 442nd deploys elsewhere with another A-10 unit, as it recently did in Afghanistan, it's something their counterparts in other wings have been heard to marvel about. The structural maintenance shop handles anything on the aircraft made of metal, fiberglass or composite material. Panels, covers, a variety of tubing and other materials both integral and incidental to the aircraft structure make up the world of the structures shop.

"Whether the aircraft takes a bird strike, a ding or just normal wear-and-tear, they take care of it," Sergeant Mock said about the "Structures Shop." Seventeen Structures troops, Air Reserve Technicians and traditional reservists, fill the ranks of the shop and are led by Master Sgt. Brian Bass, an ART. According to Sergeant Mock, the Structures troops are a mechanically-inclined group, able to look at a component, visualize how to take it apart and then put it back together again. After completing a 16-week technical school, new shop members are trained to face a daunting list of tasks required of each of them to be fully qualified in their career field. The aircraft metals technology shop, known among the maintainers as M-Tech, focuses on the air frame repairing aircraft components when they break, often manufacturing items such as brackets and bushings, which are no longer available from other sources.

On the unit training assembly weekend, Air Reserve Technician Master Sgt. Larry Randolph keeps the M-Tech machinery and troops working and, during the week, he is assisted by Tech. Sgt. Calvin Carter, another ART. Replacing damaged fasteners, repairing threaded inserts, welding certain engine parts and even manufacturing or repairing maintenance support equipment, such as the myriad stands all 442nd maintainers use, are standard fare for these metals technologists. The reservists also manufacture special tools and other maintenance aids specific to the A-10.

A project currently occupying MTech is the creation of a fixture for replacing canopies on A-10s. "The canopy fixture is built so that when you pull the canopy you can then change the glass," Sergeant Carter said. "It holds the back bow at the right angle ... 81 degrees and 30 minutes ... for there to be an accurate seal (to keep the aircraft pressurized)." M-Tech's "toolbox" includes special equipment such as the plasma cutter, which cuts through some metals like butter; TIG and

MIG – Tungsten Inert Gas and Metallic Inert Gas – welders, each designed to weld metals and leave minimal impurities, a must for aircraft; machine lathes, where tolerances are measured with a micrometer; and a variety of other specialty tools needed to work on the wing's A-10s.

Besides having a good head for algebra and trigonometry and also attending a lengthy technical school, the metals technicians need to be able to read machine drawings and quickly visualize how things are supposed to fit together. "Being a visionary is very important," Sergeant Carter said. "It's important to be able to look at a drawing and then at a blank piece of metal and have a vision of a finished product ... to be able to see the end."

When Air Force reservists from the 442nd Fighter Wing arrived home from a four-month deployment to Afghanistan in September, they were given timeoff to recuperate and adjust to life back home. The Air Force calls this time-off period "reconstitution." The same is true for the wing's A-10 Thunderbolt II attack aircraft. Before they can be put back in a regular rotation of flying, the planes must be reconstituted after spending time in the combat zone. "The deployment does put wear and tear on an airplane," said Tech. Sgt. Randy Magnuson, an A-10 crew chief whose job is to make sure A-10, number 201, receives the required maintenance it needs and is ready to fly in combat.

His name is painted on the nose of the aircraft, which, in his mind, is like putting his signature on number 201 every day. The first thing crew chiefs do when their aircraft return from a combat deployment is inspect every facet of the jet and clean out four-months worth of dirt and grime that Sergeant Magnuson calls "desert residue." He pointed to the floor underneath the pilot's ejection seat, where beige, powdery dust had accumulated in the corners and recesses of the aircraft frame. This is common to planes coming back from Afghanistan where the wind blows constantly, filling cracks and crevices with the dust carried through the air. "It's a matter of unit pride," Sergeant Magnuson said. "We keep our planes neat and clean and in show-room condition." Besides pride, there are two other reasons to be concerned about the "health" of the wing's A-10s.

"It's a limited resource," Sergeant Magnuson said. The company that built the A-10 is no longer in existence so replacement planes aren't exactly rolling off the assembly line. "They're relatively old," he said. "So you have to work hard to extend the service lives." The other factor is the human being sitting in the seat flying the airplane, the Sergeant said. "No matter what we do, we're always cognizant that there's a human life, a pilot, who's going to take this thing up in the air." The job of keeping track of the health and well-being of the wing's 26 A-10s falls Above, Tech. Sgt. Randy Magnuson, an A-10 crew chief, checks the accelerometers of an A-10 Thunderbolt II following a night combat sortie in support of Operation Enduring Freedom at Bagram Airfield, Afghanistan, in July 2006. Sergeant Magnuson deployed to Bagram during the summer. All of the wing's aircraft used in Afghanistan were thoroughly inspected upon their return to Whiteman for maintenance problems, which may have developed during the deployment.

"There are 76 parts installed on every aircraft that have a different frequency of when they have to be replaced, as well as 57 special, time-sensitive inspections," Sergeant Turner said. If you do the math, that's 1,976 parts and 1,482 separate inspections the plans and scheduling office must keep track of – even while the airplanes are deployed to a combat zone. The job of reconstituting the wing's A-10s began even before the planes left in May, according to Sergeant Turner. "We monitored, on a daily basis, what was going on maintenance-wise in Afghanistan,"

she said.

The NCOs use a computer program called the Integrated Maintenance Data System to track repairs, inspections and flying hours to the wing's airplanes no matter where they might be. "By keeping track of the aircraft in Afghanistan we maintain the integrity of our maintenance plan," Sergeant Goodhart said. She and Sergeant Turner maintain a detailed plan to predict maintenance activities three months into the future and forecast some maintenance activities that occur every 13 years. "We specialize in preventative maintenance," Sergeant Goodhart said. "The more we prevent the less we have to fix. "We prevent a tire from going bald so something bad doesn't happen during landing," she said. "We prevent an ejection seat actuator from going bad so if (the pilot) has to use it, it will work." The six A-10s deployed to Afghanistan flew more than 3,912 hours, the equivalent of one airplane flying non-stop for five-and-a half months.

"We flew more hours in four months than the entire 442nd fleet flies in one year," Sergeant Goodhart said. When the planes arrived back at Whiteman, crew chiefs and other maintenance specialists pored over the planes for a week before they were allowed back into circulation for home-station training missions, according to Sergeant Turner. Sergeant Magnuson spent three days inspecting A-10 number 201. "We want to get back here and find those spots where the desert has eaten away the O-rings and replace them," he said. The rings, made of rubber, seal connectors to hydraulic lines so the fluid inside doesn't leak. Every 400 hours of flight time, an A-10 is torn apart for a "phase inspection" where the aircraft are closely inspected for defects, worn parts and fluid leaks. Normally it takes a 442nd A-10 18 months to fly that amount of time. During the 120-day deployment to Afghanistan, two of the wing's planes required two phase inspections.

Sergeant Magnuson's plane, number 201, is currently undergoing another phase inspection. After 201's new grey paint job, which makes it look like it just rolled off the factory floor, Citizen Airmen of the 442nd Maintenance Group are examining every square inch of the plane to keep the 26-year-old jet ready for the next time it may have to deploy.

DEPARTMENT OF THE AIR FORCE UNIT HISTORIES

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Sources

Air Force Historical Research Agency. U.S. Air Force. Maxwell AFB, AL.

The Institute of Heraldry. U.S. Army. Fort Belvoir, VA.

Air Force News. Air Force Public Affairs Agency.