

Skywriting



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Site Manager, Titan Missile Museum

FROM THE CHAIRMAN'S DESK

by Count Ferdinand von Galen



As the season changes from summer to fall the Foundation is also preparing to wind down one fiscal year and begin a new one on November 1. Looking back on the past year there are a number of noteworthy achievements to report. At the Pima Air & Space Museum we completed the Restoration Capital Improvements Project with the installation of the new wash pad and other improvements to the Restoration Hangar and equipment; we completed the installation of the perimeter fence along the eastern and southeastern boundaries of the museum; we acquired a Boeing 737 which should be ready to go on display this fall, as well as an English Electric Lightning and an F-18A retired Blue Angel, both of which are already on display; and we completed the restorations of the Avro Shackleton, the Hind-D Helicopter, and the P-39 Airacobra among others. At the Titan Missile Museum we commemorated the 50th Anniversary of the activation of Missile Site 571-7, now a National Historic Landmark, and we repaved the museum's access road and parking lot, thanks to a partnership with Pima County, the Freeport-McMoRan Copper and Gold Foundation, and American Legion Post 66.

We also spent a good portion of the year preparing for our next two capital improvement projects at PASM—the construction of new restrooms near Admissions in Hangar 1, and a new Operations Shop for facilities maintenance which will be located behind Restoration. The new restrooms will primarily serve the guests at our banquets and corporate events, as well as diners in Flight Grill, but will also be available for our daily visitors. The Operations Shop will allow us to consolidate facilities maintenance activities and equipment in one location set apart from visitors. Both of these projects are fully funded and should be complete in early 2014.

In 2014 we will also continue to work with Pima County to prepare for the next Bond Election. I previously reported to you that we were working on preparing two projects for the upcoming election—one

to build a 120,000 square foot Cold War Hangar and another project to build a new Space Gallery devoted to showcasing the University of Arizona's impressive achievements in space. However, Pima County has received more requests for bond funding than it can accommodate, and our two proposed projects have been combined into a single project called the Cold War Hangar and Theater. This project consists of our original Cold War Hangar proposal which will now include a 200-seat theater where we intend to show live broadcasts and images from current and future NASA missions and especially those with UA connections. At present we are being considered for \$10,000,000 in bond funding for this project to which we will have to contribute \$4,000,000 in matching funds. This is an ambitious project for the Foundation which will change the face of the Pima Air & Space Museum. On behalf of the Board of Trustees I want to thank all of you who took the County's bond project survey and indicated your support of this project. I also ask that you continue to support this project as we move forward.

Elsewhere in this newsletter, staff will tell you about new aircraft that went on display over the summer and new programs and events that they are planning at both museums. If you have not been out to visit our museums recently, I hope you will pay us a visit soon. With your support and the continued guidance of the Board of Trustees, together with the hard work and devotion of the staff and volunteers, I'm confident that our success will continue.

Thank you to all of our members who completed the Pima County Bond Project Survey. Your response rate was excellent! Our Cold War Hangar and Theater Project consistently finished in the top six of the proposed projects in our category and we're pleased with these results. This is just one tool that the Pima County Bond Advisory Committee will use to evaluate the proposed bond projects moving forward and the survey will likely be repeated as the list of projects is revised. We hope you'll continue to support this project by completing future surveys as well. Thank you for your support!

EXECUTIVE DIRECTOR'S NOTES

by Yvonne C. Morris

Nothing gives me more job satisfaction than watching excited children and young adults exploring our museums.



9th grader Frank Lautaire peers into the Avro Shackleton during the British Invasion.

Take Frank Lautaire, for example, now a 9th grader at Catalina High School in Tucson. Frank came out with his teacher to see the Avro Shackleton when it debuted at the British Invasion this past May. I first noticed Frank when he was sitting in the cockpit of the Shackleton. He was the first person confident enough to traverse the cramped walkway to the cockpit from the rear of the Shackleton where everyone was entering the aircraft.

I kept an eye on him because it was a warm day and not much air was circulating in the cockpit. But the heat didn't seem to bother Frank. In fact, he was relishing the experience—at least that's what the intent look on his face said to me as his fingers traced every gauge and switch within his reach. I moved on to greet other visitors and the next time I saw Frank he was looking into the cockpit from the underside forward hatch. He'd given up his seat in the cockpit to someone else, but he couldn't seem to tear himself away from the aircraft—that is until I asked him if he'd gotten into the cockpit of our British Electric Lightning yet. The last time I saw him, Frank was dashing off to the Lightning with his teacher in tow. I watched him go, buoyed by his enthusiasm and hopeful that we'd made a positive and lasting impression on him. Frank inspired me as much as I hope we inspired him—because that is our mission.

As a society we must inspire today's youth to become

the innovators of tomorrow. We must show them how important it is for them to engage with their communities and to become educated citizens. We must provide safe environments for children that foster play as well as learning. Not every child is going to become a rocket scientist or a pilot or an astronaut. But in the future, all of them can—and they will—make decisions that will affect their families, their communities and their nation. Each of them should—and can—have the ability to improve the world around them.

Museums today are playing an increasingly important role in the education and inspiration of today's youth. And we're taking this role seriously at our museums. Every aircraft we preserve, every family and educational program we implement, and every exhibit we put on display is another opportunity to capture the imagination of today's youth, another opportunity to inspire the innovators of tomorrow.

An exciting aspect of our mission is that we no longer have to limit ourselves to the physical confines of our museums. Technology is making it possible to reach students and youth around the world who may never be able to visit either museum. At the Titan Missile Museum we offer Skype and FaceTime tours. Later this fall at the Pima Air & Space Museum we will unveil our new website that will offer a virtual tour of the museum's hangars as well as videos of some of our most iconic aircraft. Both museums have Facebook pages and Pima recently established its own board on Pinterest. These are modest first steps for both of our museums, but they are the first steps on a path that we are committed to walk.



The Titan Missile Museum is extending its outreach with Skype and FaceTime tours.



Top Photo: Courtesy Disney Enterprises 2013.

Bottom: by John Saunders

Recently we had the opportunity to use our connection with popular culture to connect with our younger visitors. Through a partnership with Disney, we provided 200 Tucsonans a free sneak preview of Disney's new animated comedy adventure, *Planes*. As it turns out, the Pima Air & Space Museum has the real-life equivalent of 12 of the characters from the movie. From Dusty, the movie's humble crop duster hero, to Echo and Bravo, F-18s with the heart to match their speed, you can see all of their real-life counterparts at the museum. And to help our visitors do that, we created a scavenger hunt activity that features all 12 characters. (Be advised though, Dottie the forklift is very busy and not always on display!) Rumor has it we will repeat this activity at Santa's Landing.

And there's so much more going on at our museums. We completed the restoration of our Avro Shackleton as well as the Mi-24D Hind, a Cessna U-3, and our Bell P-39N Airacobra. We also finished the touch up on our new McDonnell Douglas/Boeing F-18A Hornet and put it on display. Our summer programs, Night Wings at Pima and Moonlight MADness at Titan, both had record attendance this summer. Night Wings attendance doubled over the three Saturday evening events to just under 3,000 visitors, and the July Moonlight MADness at Titan set a new single night attendance record of more than 450 visitors as we commemorated the 50th anniversary of the missile site's activation. We couldn't achieve this kind of success without the help of our loyal community volunteers from Raytheon, Pima Federal Credit Union, Davis-Monthan AFB, the Civil Air Patrol and the Southern Arizona Rocketry Association, to name a few.

On August 31 we partnered with the 309th Aircraft Maintenance and Regeneration Group (AMARG) and the 355th Fighter Wing to run the first ever Saturday tours of the "Boneyard." We're typically only able to offer these popular tours on weekdays during AMARG's regular duty hours. Colonel Robert Lepper, the 309th commander, frequently greets the AMARG

tour buses, and by doing so he discovered that Tucsonans don't often get to take these tours because they're not offered on the weekends. Working together with Col. Kevin Blanchard, the 355th Fighter Wing commander, and their security staffs, Col. Lepper made it possible for the museum to run four AMARG tours on that special Saturday. More than 200 people, 60% of whom were Tucsonans, took advantage of this unique opportunity to tour the world's largest military aircraft storage facility on a Saturday when it was closed.

Making these tours possible was not a routine matter. While AMARG's public outreach mission includes providing public tours of the facility, it must do so at no cost to the federal government. To open AMARG on a Saturday requires that the two security gates leading onto the base and then to AMARG be staffed with volunteers, in this case, airmen volunteers who gave up their Saturday on a holiday weekend. We're grateful to SrA Alexandra Sullivan and A1C Ronald Harkum for volunteering and we commend them for their community service in making these tours possible. We'd also like to thank our media sponsors, Cumulus Radio and the Arizona Daily Star. Without them we would not have been able to let Tucsonans know about this terrific opportunity.

These are just a few of the exciting activities happening at the Pima Air & Space Museum and the Titan Missile Museum. What's really remarkable, however, is the frequency with which exciting things are happening at our museums. Every week there is something new to celebrate. Whether it's new exhibits or new programs using Lego Robotics or our new two-day Imagine Rockets Workshop, I am excited by the exhibits and programs at both museums that continue to create new opportunities for our members and visitors to experience 100 years of aviation history. As always, thank you for your continued support. I hope you will stop by one of our great museums in the near future.

Yvonne C. Morris

COVER PHOTO:

Monsoon Sunset over the new F-18. Photo by John Saunders. Look for more photos like this later this fall on PASM's new website.

TITAN II AND THE END OF AN ERA

by Chuck Penson, *Titan Missile Museum Historian*

This past July the Titan Missile Museum commemorated the 50th anniversary of Titan II Missile Site 571-7's "first alert," that is, the first day on which the missile was ready to launch.

Titan II was unique among missile systems developed by the United States. It was this country's largest missile weapon system and its only heavy lift missile. "Heavy lift" means just what it says—that the missile could carry a heavy, high power nuclear weapon—in this case, a 6300-pound, 9-megaton thermonuclear bomb.

Titan II's singular capabilities made it a valuable and attractive weapon during the Cold War. No other missile—before or since—could do what Titan II could do. Titan II was designed as the original "bunker buster." It was designed to destroy deeply buried hardened targets like enemy command and control centers.

Given this kind of capability one would assume that Titan II was an indisputable asset with an unassailable mission. But such was not the case, and having recently commemorated its beginnings we thought it might be interesting to spend some time looking at the end of Titan II.

While Titan II was designed with a 10-year life expectancy, its future was in doubt almost from day one, and the primary reason was cost. Titan II's Achilles' heel was money. Liquid propellants deliver the most power per unit weight of any kind of fuel. That's why the Titan II could lift such a heavy payload. But that power comes at a cost. Liquid-propelled missiles are maintenance-intensive. They require lots of equipment to keep them ready to go, and that equipment takes a lot of people to keep it working. Further, liquid propellant is intrinsically more dangerous to handle than solid propellants.

The Air Force and the Office of the Secretary of Defense (OSD) saw Titan II as an interim solution until a more cost-effective missile could be deployed. The Strategic Air Command (SAC), under whose authority the missiles were operated, saw it differently. While Air Staff and OSD took a pragmatic view, SAC looked at the program in terms of strategic capabilities. The result was a 20-year tug-of-war over how long to keep Titan II in service.



Robert McNamara, Secretary of Defense, 1961-1968.

Secretary of Defense Robert McNamara was a former executive at Ford Motors and had a reputation for being good with numbers. By 1966, just three years after the missiles went online, McNamara had made the calculation that the smaller, cheaper solid-fuel Minuteman was the missile of the future and that no replacement Titan II missiles would be purchased after June of that year. The immediate effect

of OSD's decision was a scaling back of the number of test launches done over the life of the program. Test launches were vital in returning data regarding missile reliability and aging characteristics. But launches consume missiles and if replacements are not available eventually the supply runs out. So instead of six launches per year SAC throttled back in an effort to avoid a rate of attrition that would end the whole program sooner rather than later.



Test launches are vital but expensive - you get the data you want but lose the missile getting it.

Test launches are, of course, a double-edged sword. The ones that go well demonstrate how valuable the system is, but the ones that go poorly tend to strengthen the resolve of the critics. While the majority of Titan II's test launches were successful, there were

enough failures for OSD to worry about the overall viability of the program.

Noting that the Titan II program would essentially run out of spare missiles by 1971, OSD began planning for the retirement of the system beginning in FY 1971 (Jul. 1970–Jun. 1971). When SAC got the news they suggested that retiring the Titans would be seen by the Soviets as a lack of resolve. Moreover, SAC requested an upgrade of the missile that included fitting Titan II with the same multiple warheads being planned for the new generation of Minuteman. Air Staff denied the upgrade but suggested an extended phase-out that would keep the Titans on alert through 1975. This was, in part, to act as a counterbalance for the recently unveiled Soviet SS-9 (code-named Scarp) "city buster" missiles.



Typical checklist used by maintenance teams. "Stick to the checklist and everything's going to be fine. Improvisation and shortcuts can result in disaster."

Then, in 1969, the Nixon administration moved into the White House and brought with it a number of cost-cutting initiatives. Among them was the cancellation of the project to develop a replacement missile for Titan II. Without a new missile the Air Force had no choice but to extend the mission of Titan II. Still, OSD was determined to phase out the missiles and produced a plan to retire three squadrons of Titan IIs, one per year in 1971, 1973, and 1974. The fate of the remaining three squadrons was not specifically addressed, so presumably they would remain on alert. OSD went further by canceling all operational test launches after 1969. This, it argued, would eliminate the costs associated with test launches and stop the attrition of inventory. Data regarding missile readiness, reliability and aging would instead be gathered on the ground with "bench testing" in the silos under a program called the Reliability and Aging Surveillance Program (RASP).

At that point things settled into an uneasy stasis—until 1978.

It is important to understand that Titan II was an exceptionally reliable machine, and if one carefully followed

the checklists associated with maintenance activities, it was also quite safe. It is equally important to understand that all of the major accidents with Titan II could be traced back to human error and not any kind of malfunction of the missile itself.

Titan II was a complex and maintenance-intensive system with miles of wires and piping, and dozens of pumps, valves and motors fed by countless pieces of electrical equipment. Over the years there had been a number of minor mishaps with Titan II. Many of these involved electrical problems or mechanical breakdowns of the machinery in the silo equipment area required to keep the missile in a constant state of readiness. But there were major incidents as well. In 1966 a fire started by a welder killed 53 civilian contractors in a silo near Little Rock, AK in the worst accident (in terms of loss of life) in the history of Titan II. But what really kept people up at night long-term was the possibility of an accident involving the missile's propellant—two very dangerous and toxic chemicals that required extreme caution in handling. There was within the OSD and among the Air Staff a pervasive notion that Titan II was an accident waiting to happen.



A cloud of highly corrosive oxidizer vapor (orange) belches from the silo. The white cloud is steam that forms from the boiling that occurs when oxidizer and water are mixed.

Just after noon on Aug. 24, 1978 a propellant team was in the final stage of loading 13,500 gallons of oxidizer at a complex near the little town of Rock, KS. The last step in the process was to disconnect the large hose through which the oxidizer flowed into the missile. The checklist is clear that the process of disconnecting the hose should be done very slowly and all the while checking for leaks. The team chose to do it quickly. Under normal circumstances a valve

TITAN II AND THE END OF AN ERA: CONTINUED

by Chuck Penson, Titan Missile Museum Historian

in the piping closes automatically when the hose is disconnected, but in this case the valve had become jammed in the open position and when the team pulled the hose clear of the valve, oxidizer began to gush from the missile.

It is unnecessary to go too deeply into the details except to say that two people were killed, one was permanently disabled, two dozen others suffered varying degrees of injuries, the missile was damaged and the silo itself was damaged beyond repair—and all because the checklist was not followed.

Two years later, on Sep. 18, 1980, a propellant team began an operation to repressurize the Stage-II oxidizer tank at a missile complex near the town of Damascus, AK, just outside Little Rock. Repressurizing the tank was a relatively simple and straightforward task. The checklist for this operation called for the use of a special wrench to remove the pressure cap from the tank. The team had brought this wrench with them but had forgotten it in their truck. Instead of returning to their truck the team chose to use a non-approved socket wrench that was stored underground.

While in the process of removing the pressure cap, the socket—which weighed almost nine pounds—came loose from the handle of the wrench, rolled across the work platform and slipped through a gap between the platform and the missile. The socket fell about 80 feet before it ricocheted off the thrust mount and slammed into the missile. The socket impacted the missile with such force that it punctured the Stage-I fuel tank causing fuel to begin leaking from the missile.

There was no checklist anyone could use to recover from an accident like this. There was nothing that could be done to stop the flow of fuel from the missile. The team and crew evacuated the complex while SAC and engineers from the Martin Company tried to decide what to do. Eight hours later, while they were still thinking about it, the missile exploded in the silo.

The force of the blast tore off the 760 ton silo door and threw it 700 feet away into the nearby woods. Stage-II of the missile was ejected from the silo and exploded in the air just above it, launching the thermonuclear warhead into a ditch near the access road. It did not explode, which explains why Little Rock is still there today.

Incredibly, only one person was killed in the mishap. The silo was never rebuilt.



A close-up view at the silo ruins. Damaged beyond repair.

The explanation that these two accidents were caused by human error fell upon deaf ears. The Damascus event was the last straw. The accidents, combined with the ever-increasing cost of maintenance (more than a million dollars per year per missile) made arguing for their continuation a lost cause. On Sep. 24, 1981, the Reagan administration publicly announced that the Titan IIs would be retired.

The deactivation program, code named RIVIT CAP, began in Tucson on September 24, 1982. The process of removing all 52 missiles from the 3 Titan II wings took five years and was completed in Little Rock by Aug. 1987.

Titan II stood on alert for just over 24 years—14 years longer than it was originally designed to serve. It was a safe and reliable machine—as long as you gave it your undivided attention. As the nation's only rapid-response heavy-lift weapon system, Titan II offered strategic deterrent capabilities that remain unsurpassed even today. Titan II carried not only a weapon, it carried a message of national readiness, resolve and determination our enemies both feared and respected. The Titan II program worked.

FREEMPORT-MCMORAN COPPER & GOLD FOUNDATION GRANT



As we reported in the last issue of Skywriting, the Titan Missile Museum Access Road and parking lot received a much needed make over last November when the road that has provided the single point of access to the missile site and museum for fifty years was repaved. This project was made possible by a partnership between the museum, American Legion Post 66 and Pima County, and a grant from the Freeport-McMoRan Copper & Gold Foundation. Richard Ducote, Regional Community Development Manager for Freeport-McMoRan Copper & Gold, presented a check to Executive Director Yvonne Morris for \$17,000 in matching funds to contribute to this project. American Legion Post 66 and the museum each contributed \$8,500 to the project, and Pima County contributed the remaining funds, including enough funding to cover repaving the museum's parking lot as well. This project is a terrific example of the public-private partnerships that the Freeport-McMoRan Copper & Gold Foundation promotes through its grant program. The Titan Missile Museum is grateful for the Copper & Gold Foundation's support, as well as the support it received from Pima County and American Legion Post 66.

A COOL PLACE TO HAVE YOUR PICTURE TAKEN!

Rachael Cushman recently graduated from Park University with a Bachelor's Degree in Computer Science. She was looking for a different location for a graduation-photo shoot that was not only unique, but fit her personality and related to her degree plan. We're delighted that she thought the Titan Missile Museum fit the bill! Congratulations on obtaining your degree Rachael, and good luck. We know you will have a bright future!

Photo by Lorraine A. DarConte. www.lidarconte.com



COMMEMORATING THE 50TH ANNIVERSARY OF TITAN II MISSILE SITE 571-7'S FIRST ALERT

by Steve Caputo, Titan Missile Museum Site Manager

On July 13 the Titan Missile Museum commemorated the 50th anniversary of missile site 571-7's first alert during our Moonlight MADness event. A record 459 visitors attended the commemoration. Rather than the standard tour, visitors moved on their own between level 2 of the missile silo, the launch control center and the crew quarters, interacting with former Titan II personnel and museum docents along the way.

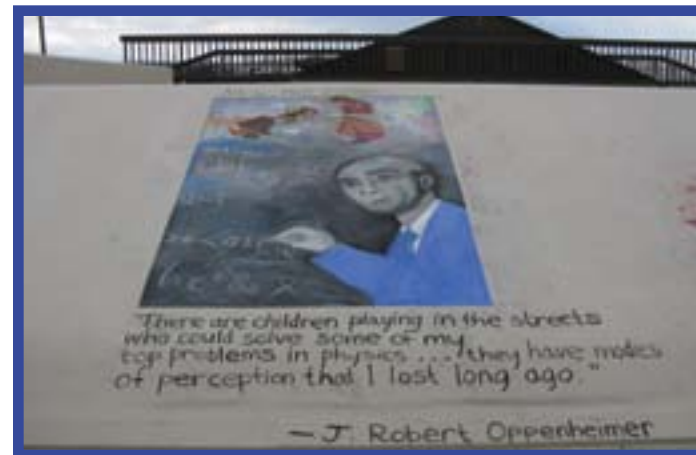
A number of community volunteers helped make this event a success. Raytheon distributed science-themed goodies to the kids and displayed a full-sized RIM-161 Standard Missile 3 (deployed on US AEGIS cruisers and destroyers to defend against short-to intermediate-range ballistic missile threats). A crew from Davis-Monthan AFB displayed a 50-caliber Gatling gun from an A-10 Warthog, the Green Valley Fire District brought a crew and a ladder truck, and the Southern Arizona Rocketry Association held classroom sessions for the kids young and old and also launched a number of model rockets.

Three professional chalk artists took over the leading edge of the missile site's massive silo closure door and created temporary works of chalk art that paid homage to the Atomic Age and the mission of the Titan II. The Flight Grill food truck provided a wide variety of tasty treats, and a number of our lucky visitors actually got to activate our Thunderbolt warning siren.

Thanks to the 30 museum docents and former Titan II personnel and all of the community volunteers for making this 50th anniversary commemoration a grand success.



Docent Marge Humphrey, a former Titan II Crew Commander, takes a rapt audience through the process of launching a Titan II.



Temporary chalk art installation by Matt Cotten.



Temporary chalk art installation by Greg Ewald.



Temporary chalk art installation by Jaime Tooley.



Kids enjoyed activities provided by the Southern Arizona Rocketry Association and explored the Green Valley Fire District's ladder truck.



PROCLAMATION

WHEREAS, July 15, 1963, was the day that Titan II Missile Site 571-7 (known today as the Titan Missile Museum and National Historic Landmark) became operational; and

WHEREAS, the Titan Missile Museum and National Historic Landmark is the only remaining Titan II site open to the public, allowing visitors a rare opportunity to learn about the much-feared prospects of the conduct of nuclear war and the efforts of the United States to deter it; and

WHEREAS, the Titan Missile Museum's mission is to preserve and interpret Titan II missile site 571-7 as a National Historic Landmark; and

WHEREAS, the museum is considered one of our community's gems, providing international recognition for our region and educational opportunities for our residents and school children; and

WHEREAS, it is important to recognize the role the Titan II missile system played in the peaceful conclusion of the Cold War and the impressive achievements and future goals of the museum and the Arizona Aerospace Foundation that operates it today.

NOW, THEREFORE, BE IT RESOLVED, that the Pima County Board of Supervisors hereby proclaim Monday, July 15, 2013, to be:

"A DAY OF HONOR COMMEMORATING THE 50th ANNIVERSARY OF TITAN II MISSILE SITE 571-7."



Pima County Director of Economic Development and Tourism Tom Moulton and Executive Director Yvonne Morris stand beneath the Pima County seal with the Proclamation awarded to the Titan Missile Museum commemorating the 50th Anniversary of Titan II Missile Site 571-7.

TITAN MISSILE MUSEUM - SPECIAL TOURS & PROGRAMS



Titan Missile Museum MAD Scientists

We are proud to have our very own team of MAD Scientists here at the Titan Missile Museum. Stop by our classroom on Tuesday mornings until 11am to see what interesting experiments and activities are taking place. You never know what important discoveries may take place in our laboratory. Our MAD Scientists are also available for school tours and at Moonlight MAD-ness.



Beyond The Blastdoor Tours

Get a deeper understanding of the Titan II by going to areas of the missile site normally closed to the public. This tour is offered the first and third Saturday of every month at 9:30am and is FREE to members. Reservations are required. For more information or to make reservations call 520 625-7736 or email info@titanmissilemuseum.org. This tour is not handicapped accessible.

School and Youth Group Tours

The Titan Missile Museum offers free tours to schools and civic/service-oriented youth groups. The tours are accompanied by a classroom session with the museum's MAD Scientists (education docents). Reservations are required and can be made by emailing info@titanmissilemuseum.org or calling 520 625-7736.



Top-to-Bottom Tours

This tour is nearly five hours long and takes you through all eight levels of the underground silo. The tour is limited to six people so reservations are required. For more information or to make a reservation call 520 625-7736 or email info@titanmissilemuseum.org. This tour is not handicapped accessible.



CALENDAR OF EVENTS

OCTOBER 2013

- October 5**
9:30am
Beyond the Blastdoor Tour
- October 8**
2:00pm
Director's Tour
- October 9**
8:00am
Titan Top-to-Bottom Tour
- October 15**
2:00pm
Crew Tour
- October 16**
8:00am
Titan Top-to-Bottom Tour
- October 18**
8:00am
Titan Top-to-Bottom Tour
- October 19**
9:30am
Beyond the Blastdoor Tour
- October 22**
2:00pm
Crew Tour
- October 23**
2:00pm
Titan Top-to-Bottom Tour
- October 29**
2:00pm
Crew Tour

NOVEMBER 2013

- November 2**
9:30am
Beyond the Blastdoor Tour
- November 5**
2:00pm
Crew Tour
- November 6**
8:00am
Titan Top-to-Bottom Tour

November 12

2:00pm
Director's Tour

November 13

8:00am
Titan Top-to-Bottom Tour

November 15

8:00am
Titan Top-to-Bottom Tour

November 16

9:30am
Beyond the Blastdoor Tour

November 19

2:00pm
Crew Tour

November 20

8:00am
Titan Top-to-Bottom Tour

November 26

2:00pm
Crew Tour

DECEMBER 2013

December 3

8:00am
Titan Top-to-Bottom Tour

December 7

9:30am
Beyond the Blastdoor Tour

December 10

2:00pm
Director's Tour

December 11

8:00am
Titan Top-to-Bottom Tour

December 17

2:00pm
Crew Tour

December 18

8:00am
Titan Top-to-Bottom Tour

December 20

8:00am
Titan Top-to-Bottom Tour

December 21

9:30am
Beyond the Blastdoor Tour

JANUARY 2014

January 4

9:30am
Beyond the Blastdoor Tour

January 7

2:00pm
Crew Tour

January 14

2:00pm
Director's Tour

January 18

9:30am
Beyond the Blastdoor Tour

January 21

2:00pm
Crew Tour

January 28

2:00pm
Crew Tour

FEBRUARY 2014

February 1

9:30am
Beyond the Blastdoor Tour

February 4

2:00pm
Crew Tour

February 11

2:00pm
Director's Tour

February 15

9:30am
Beyond the Blastdoor Tour

February 18

2:00pm
Crew Tour

February 25

2:00pm
Crew Tour

MARCH 2014

March 1

9:30am
Beyond the Blastdoor Tour

March 4

2:00pm
Crew Tour

March 11

2:00pm
Director's Tour

March 15

9:30am
Beyond the Blastdoor Tour

March 18

2:00pm
Crew Tour

March 25

2:00pm
Crew Tour

Reservations required for all listed tours. Call (520) 625-7736 or email: info@titanmissilemuseum.org All tours FREE to members except the Top-to-Bottom Tour.

Daily Tours:
Docent-led Walking Tours offered daily starting at 9:00am.

Museum Hours:
8:45am-5:00pm daily (last tour at 4:00pm)

Open every day except Thanksgiving and Christmas.

Check Titan's website in Nov. for other Top-to-Bottom Tour dates or email info@titanmissilemuseum.org

AIRCRAFT RECENTLY PLACED ON DISPLAY



McDonnell Douglas/Boeing F/A-18A Hornet



Bell P-39N Airacobra



Mil Mi-24D Hind



Avro Shackleton

CURRENTLY IN RESTORATION



General Motors FM-2 Wildcat



Stinson L-5 Sentinel

CURRENTLY IN RESTORATION CONT.



Cessna U-3

RECENT ACQUISITION



Fouga Magister

The Fouga Magister CM-170 jet trainer was originally designed in 1948 and manufactured in France as the world's first large-production advanced jet fighter training aircraft. The Fouga Magister went on to fly with numerous air forces throughout the world and was still serving on active duty as late as 2007, and with various demonstration teams as late as 2010. The Fouga served in combat and in many different training roles with more than two dozen different air forces and navies. However, it was made famous by the French Air Force demonstration team, the Patrouille de France, and was used by the demonstration teams of other nations as well: the Irish Air Corps Silver Swallows, Belgium's Red Devils, Brazil's Esquadilha da Fumaça, and Israel's Aerobatic Demo Team. The Fouga Magister is the equivalent of the USAF's T-37 "Tweet" and served in the same primary pilot training role. Nearly 1,000 Magisters were built and are a common sight today at airshows and in private hands at many local airports. The Fouga recently donated to the museum came from Mr. Michael Leverington of Phoenix, AZ and had served with the French Air Force for decades before being sold on the private market. This superb example of an excellent and notable airplane will help us tell the stories of other nations' pilot training efforts.

THE BILL KENNEDY, JR. PHOTOGRAPHY COLLECTION

by Andrew Boehly, Archivist



Bill Kennedy in the cockpit of a World Airways Boeing 707 en route from Yokota Air Base, Japan to Saigon, Vietnam, Mar. 17, 1969

Last year we received the Bill Kennedy, Jr. Photograph Collection. Comprised of photographs taken by both Kennedy and his father, William Kennedy, Sr., from the 1930s through to the late 1990s, the collection reflects Kennedy's passion for flying and his long and varied career in aviation.

Kennedy was introduced to flying as a child by his airline pilot father. Later he became a Boeing B-17 Flying Fortress pilot with the 91st Bomb Group flying out of Bassingbourn, England during World War II.

After World War II Kennedy went on to fly Douglas DC-4s for Transocean Airlines, the same airline that his father and mother worked for. Occasionally he flew the Teterboro Airport to Brussels route with his father as copilot and his mother as a flight attendant. Transocean also had a contract to refurbish Air Force Douglas C-54 Skymasters at the time, and Kennedy flew them to Frankfurt, Germany during the Berlin Airlift. On two occasions he flew C-54 flights into Berlin due to the lack of rested USAF aircrews.

Kennedy also served as a pilot and the Director of Operations for the Spanish charter airline TASSA. With TASSA he flew all around Europe and the Middle East, flying DC-3s, DC-6s and Beech Model 18s.

As a pilot with World Airways, Kennedy flew into many different air bases and airports in Vietnam, flying supplies and servicemen between the US and Vietnam during the Vietnam War. He also worked for Trans Mediterranean Airways, Japanese Airlines, Casino Royale, and Overseas National Airways. Additionally, Kennedy flew recreationally and attended air shows and fly-ins, and he was always snapping photographs. Whether from the cockpit of an aircraft or while standing on a tarmac, Kennedy took advantage of the opportunity to photograph a large percentage of the aircraft types flying during his interesting life.



An Aeroflot Tupolev Tu-104 at Brussels, Belgium, July 4, 1969



Bill Kennedy and a Piper Cherokee at Tucson International Airport.



A Lockheed C-141 Starlifter and Martin B-57 Canberra at Yokota Air Base, Japan, Feb. 13, 1970



A British European Airways Armstrong Whitworth AW.650 Argosy at London, England, May 21, 1969



Bill Kennedy and his wife Janie in the cockpit of a Beechcraft Model 18 en route from Malaga, Spain to Sidi Ifni, Morocco, Aug. 16, 1963



Bill Kennedy and Ran Reid in the cockpit of a Transocean Airlines Douglas DC-4 en route from Guam to Saipan, Aug. 1948



A Piper PA-18 on skis at Merrill Field, Alaska, Feb. 27, 1973



E. D. Weiner's North American P-51 D Mustang at the Reno Air Races in 1969.



A TASSA Douglas DC-7 at Gander, Newfoundland, Mar. 1963

BRITISH INVASION



On May 18 we celebrated the 60th anniversary of our newly restored Avro Shackleton marine patrol plane along with all things British. We had classic United Kingdom Triumph motorcycles and other wheels on the grounds. Guests were able to “gather reconnaissance” in the Shackleton’s belly and climb into the English Electric Lightning cockpit.



Frank Lautaire explored the Shackleton from nose to tail.



Count Ferdinand von Galen with his finely restored Humber Super Snipe Staff Car, 1940.



The AZRATPack (Arizona Riders Association of Triumph) joined us for the day.

HOT RODS AND HOT PLANES



On a sunny September Sunday morning the Tucson Street Rodders Association took a joy ride out to the Pima Air & Space Museum and shared their souped up “rides” with our members and paying customers including photography buffs.

About Street Rods: As the 1950s rolled into the ‘60s, teens (and professionals such as Ed “Big Daddy” Roth) customized inexpensive and limited-performance cars so that they bore little resemblance to assembly-line productions. They became fantastic and futuristic revved-up creations, distinctly American, including such statements as the addition of the iconic “Rat Fink” character of Ed Roth on the cars. (Rat Fink was a counter-culture nod to Mickey Mouse. One story goes that Rat Fink’s appearance on a t-shirt typically yielded a student being expelled from school and thereby enabling that student to work on customizing his car.) Special thanks to the TSRA for their generosity and friendliness.



SPECIAL THANKS - DAVIS-MONTHAN AIR FORCE BASE PERSONNEL

RECENT HAPPENINGS



WORLD-RECORD-BREAKING TEEN RYAN CAMPBELL VISITS PASM

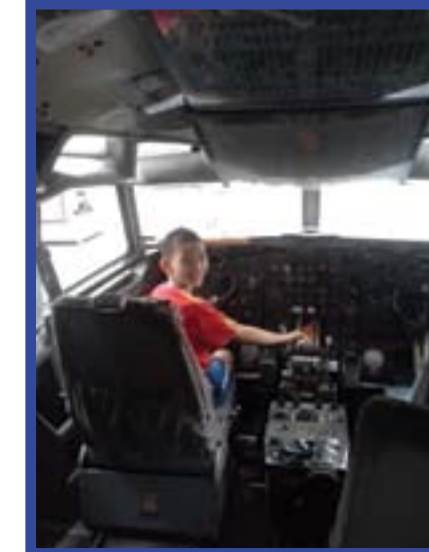
When Ryan Campbell designed his flight plan to see the world, he added the Pima Air & Space Museum as a "must-see" stop-over.

On July 15 Campbell stopped by the museum for a visit on his 70-day journey around the world. Just 19 years old, Ryan became the youngest pilot to circumnavigate the globe solo when he touched down in Australia on Sept. 7.

(To learn more about his story please visit: www.teenworldflight.com)

2 DAYS OF DRIVING TO SEE PASM

Vigor Wong had a business trip from his homeland China to Seattle. While in the U.S. his dream was to visit Pima Air & Space Museum. So after his business meeting, with his ten-year old son Victor, he drove two days to Tucson. They spent one wonderful day here and then drove two days back to Seattle and flew home. They plan on coming back with a group of students!



In August we were fortunate to have Air Force personnel volunteer their time at the Pima Air & Space Museum. Over 20 individuals from the Vehicle Maintenance Flight of the 355th Logistics Readiness Squadron from Davis-Monthan Air Force Base helped spread 40 tons of decomposed gravel to level out our tram loading area. They also cleared nearly 5 acres of weeds between Hangars 3 & 4.

THANK YOU TSgt. Michael Finney and all the Vehicle Maintenance Flight personnel who volunteered their time.

LT John Whitehouse

MSgt Harold Evans and his 3 children

TSgt Michael Finney

TSgt Glen Daker

SSgt Benjamin Richie

SSgt Adam Ritchie

SSgt Corey Strohmeier

SSgt Daniel Leblanc

SrA Charles Robertson

SrA David Fortune

SrA DeShawn Coney

SrA John Schneider

A1C Erin Nush and her husband

A1C Kurt Hatch

A1C Michael Smith

A1C Jose Torralba

TSgt Steven Fornander

SrA Duncan Wild

FOUNDATION WISH LIST

VISITOR SERVICES

Durable Plastic Wagons

Wheelchairs

Filing Cabinets

EDUCATION

Plastic Storage Bins with Lids

Children's Books on Aviation & Aerospace

OPs AND RESTORATION

Gently Used Gator / Utility Vehicle

Portable Generator

Golf Carts

PASM EDUCATION PROGRAMS, TOURS AND EVENTS

by Mina Stafford, Curator of Education

SPECIAL THANKS

Mars, Inc. recently donated mini Twix candy bars and sticks of Wrigley's Extra chewing gum so that we could make these fabulously delicious planes to celebrate National Aviation Day. **THANK YOU MARS, INC.**



LEGOS ROBOTICS



In Jan. of 2014 there will be a small but exciting change to the Soarin' Saturdays schedule. We will begin offering a Lego Mindstorm NXT Robotics activity as part of our Soarin' Saturdays program on the 4th Saturday of every month at 1:00pm. Young Flyers Fun, previously scheduled for this time slot, will move to the 4th Wednesday of every month at 10:00am. We're excited to add Lego Mindstorm NXT Robotics to our Soarin' Saturdays roster. This activity will provide an opportunity for children age 7 and up (with their families) to embark on an adventurous challenge to program LEGO robots to complete a series of fun and interesting tasks. Don't worry, though. No prior experience with computer programming or robots is needed! So mark this change on your calendar. On Wed., Jan. 22, the Young Flyers will begin meeting on the 4th Wed. of every month at 10:00am, and on Sat., Jan. 25, we will have our first Lego Mindstorm NXT Robotics activity. If you are interested in learning more about either of these programs please contact Mina Stafford at 520 618-4819 or mstafford@pimaair.org.

IMAGINE ROCKETS TWO-DAY WORKSHOP



We will hold our first Imagine Rockets 2-Day Workshop on Mon., Dec. 30 and Tue., Dec. 31. If you have ever been to an Imagine Rockets program you know how exciting rocket science and physics can be. During this two-day program we will be taking it further and building large-scale stomp rockets, water rockets and solid-rocket-fuel model rockets. This program is for children age 10 and up and will take place in the Dorothy Finley Space Gallery classroom with excursions to the area behind Hangar 4 for rocket launching. The cost of the program is \$40 for members and \$50 for non-members, with a \$10 discount if your registration is complete before Dec. 2. This fee includes all rockets supplies and lunch both days. Contact Mina Stafford at 520 618-4819 or mstafford@pimaair.org for more information or to register.

SCHOOL TOURS AT PASM

Teachers and parents, remember that school and service-oriented youth group tours are free at the Pima Air & Space Museum. School groups visiting the museum experience engaging interactive exhibits with friendly docents, many of whom flew the aircraft on display. During the last school year, our docents brought history alive for close to 3,500 students who visited the museum with school groups from all over Tucson and as far away as New Mexico. We're looking forward to another successful school season when even more school groups will visit the museum. If your school needs help with transportation expenses, we have a limited number of transportation scholarships available. Contact Mina Stafford at 520 618-4819 or mstafford@pimaair.org for more information.

NIGHT WINGS 2013



The Saturday evening Night Wings program at the Pima Air & Space Museum really took flight over the summer this year. Almost 3,000 people came out to the museum over the three Saturday evenings to take advantage of the cooler evening temperatures and to enjoy the extra activities. From the Disney movie *Planes* scavenger hunt, to fun with Lego Robotics and the Physics Factory, Night Wings had a little something for everyone. The museum could not offer this

program to so many people without our sponsors and community volunteers. On behalf of our visitors, we'd like to thank the K12 Virtual Academy for sponsoring Night Wings, and the wonderful staff and volunteers from the Pima Air & Space Museum, Flight Grill, the Civil Air Patrol, Davis-Monthan AFB, Pima Federal Credit Union, Physics Factory and Raytheon Missile Systems. We're very grateful, as are our visitors, for all of their help!



SOARIN' SATURDAYS

by Mina Stafford, Curator of Education

Model Airplane Make 'N Take

1:00pm—1st Saturday of the month

Enjoy model building with the Sonoran Desert Model Builders. For children 5 years old and older and their adult companions, this program is designed to introduce students to the hobby of model building and the math and historical research used to build accurate scale models. Each student will build a Snap-Tite airplane they can take home with them and see models made by expert builders.



Imagine Rockets

1:00pm—2nd Saturday of the month

Learn about the science behind rocketry. For children 8 years old and older and their adult companions, this program is designed to introduce students to the principles of rocket science through demonstrations and hands-on rocket-building and testing activities. During this program participants get to build and test experiments that demonstrate basic rocketry principles. Our



rocket expert will lead you through Newton's laws of physics and show you how physics and chemistry are used in rocket science. Everyone gets to take home the experiments they build as well as test the Mighty Missile Launcher and the Mighty Seltzer Rocket, kits that are available for purchase in our Museum Store.

How Things Fly

1:00pm—3rd Saturday of the month

Experience the fun and excitement of flight. For children 8 years old and older and their adult companions, in this program students will build and test aviation experiments that demonstrate the power of air pressure, aircraft stability, and lift. All students get to take home the experiments they build.



Young Flyers Fun

1:00pm—4th Saturday of the month through 2013

10:00am—4th Wednesday of the month beginning 2014

For children ages 4-7 years old and their adult companions, this program is designed to introduce children to the world of aviation and aerospace through gallery activities and tours, story books, demonstrations and hands-on craft projects that can be taken home. A different topic will be featured each month. Contact Mina Stafford at mstafford@pimaair.org or (520)618-4819 to make reservations.



Lego Robotics

1:00pm—4th Saturday of the month beginning in 2014

For children 8 years old and older and their adult companions, this program is designed to introduce children to the basics of robotics and programming. During the program participants will program their robot to follow a path, collect a sample and return to base. There is limited space available in each class. Reservations are required. Contact Mina Stafford at mstafford@pimaair.org or (520)618-4819 to make reservations.



CALENDAR OF EVENTS

OCTOBER 2013

October 5

1:00pm

Model Airplane Make 'N Take

October 12

1:00pm

Imagine Rockets

October 19

1:00pm

How Things Fly

October 19

10:00am

Volunteer Presentation Series

October 25

5:00-9:00pm

Night of Fright

October 26

1:00pm

Young Flyers Fun

NOVEMBER 2013

November 2

1:00pm

Model Airplane Make 'N Take

November 9

1:00pm

Imagine Rockets

November 16

9:00am-4:00pm

Wings and Wheels -

Military Vehicle Show

-and-

10:00am

Volunteer Presentation Series

- and -

1:00pm

How Things Fly

November 23

1:00pm

Young Flyers Fun

DECEMBER 2013

December 7

1:00pm

Model Airplane Make 'N Take

December 14

8:30am

Santa Landing

-and-

1:00pm

Imagine Rockets

December 21

10:00am

Volunteer Presentation Series

-and-

1:00pm

How Things Fly

December 28

1:00pm

Young Flyers Fun

December 30 & 31

10:00am-3:00pm

Imagine Rockets Two Day

Workshop

JANUARY 2014

January 4

1:00pm

Model Airplane Make 'N Take

January 11

1:00pm

Imagine Rockets

January 18

1:00pm

How Things Fly

January 22

10:00am

Young Flyers Fun

January 25

1:00pm

Lego Robotics

FEBRUARY 2014

February 1

1:00pm

Model Airplane Make 'N Take

February 8

Great Paper Airplane Fly-Off

-and-

1:00pm

Imagine Rockets

February 14

6:00pm

Love is in the Air

Valentines Dinner

February 15

1:00pm

How Things Fly

February 22

1:00pm

Lego Robotics

February 26

10:00am

Young Flyers Fun

MARCH 2014

March 1

1:00pm

Model Airplane Make 'N Take

March 8

Great Paper Airplane Fly-Off

-and-

1:00pm

Imagine Rockets

March 15

1:00pm

How Things Fly

March 22

1:00pm

Lego Robotics

March 26

10:00am

Young Flyers Fun

All listed events FREE to members. Reservations Required - Call (520) 574-0462

NEW VOLUNTEER ORIENTATION

9:30am
Second Saturday of the month starting in the Admissions Area.

MUSEUM HOURS

9:00am-5:00pm daily. Last admittance at 4:00pm. Open every day except for Thanksgiving and Christmas.

TOURS:

Docent-led Walking Tours:
Daily 10:15am and 1:00pm

Tram Tour:
Daily 10:00am, 11:30am and 1:30pm and 3:00pm

"Boneyard"/AMARG Tour:

Monday-Friday, excluding Federal Holidays. Call 520 574-0462 for current times.

For information on all tours, please contact Visitor Services at (520) 574-0462 or visit www.pimaair.org



Night of Fright!

ADULTS 13 & OLDER \$10 **KIDS 12 & UNDER FREE**

PIMA AIR & SPACE MUSEUM

BRING YOUR TRICK-OR-TREATER IN COSTUME AND ENJOY GAMES, PLANES, PONY RIDES, PRIZES AND MORE!

MEMBERS FREE!

FRIDAY, OCT. 25TH ~ 5-9PM
6000 E. VALENCIA RD. - TUCSON, AZ - PIMAAIR.ORG - 574.0462

FLIGHT GRILL FOOD TRUCK ON SITE. FREE SCOOP OF ICE CREAM WITH ANY REGULAR PRICED ENTREE IN THE RESTAURANT!

PIMA AIR & SPACE MUSEUM
IS PROUD TO PRESENT

★ WINGS AND WHEELS ★

MILITARY VEHICLE SHOW

— SATURDAY, NOVEMBER 16, 2013 ★ 9 - 5 PM —

EXCLUDED WITH ADMISSION - MEMBERS ALWAYS FREE

COME SEE HISTORIC MILITARY JEEPS, TRUCKS AND MOTORCYCLES ON DISPLAY BENEATH THE WINGS OF OUR HISTORIC AIRCRAFT



6000 E. VALENCIA RD. - TUCSON, AZ - PIMAAIR.ORG - 574.0462

FOLD A PLANE. • FEB. 8, 2014
FLY INTO HISTORY!

PIMA AIR & SPACE MUSEUM



Explore the science of aviation. Then join the Great Paper Airplane Fly-off as a class, a class representative, or as an individual. Great prizes. Free museum admission for four with each entry. Registration required between Nov. 15 and Feb. 4. Teaching materials available from: mstaaffordpimaair.org.




THE GREAT PAPER AIRPLANE PROJECT
www.greatpaperairplane.org

MARS

LOVE IS IN THE AIR
Valentine's Day Dinner

Fri. Feb. 14, 2014
\$110 a couple (inclusive) prefixed menu
LIVE music



PIMA AIR & SPACE MUSEUM

Reservations open January 2, 2014 online at www.pimaair.org or by calling (520) 618-4848. Space is limited.

SAVE THE DATE



TWENTY-FOURTH ARIZONA AVIATION HALL OF FAME INDUCTION CEREMONY & DINNER

APRIL 5, 2014
PIMA AIR & SPACE MUSEUM
"FLIGHT CENTRAL HANGAR"
- INVITATIONS TO FOLLOW -

Santa is Cleared for Landing!

Arriving by Helicopter

Sat., Dec. 14th

Museum opens at 8:30am
Santa lands at 10:45am

- Holiday arts and crafts for kids!
- Bring your camera to capture your visit with Santa!
- Flight Grill offering breakfast buffet
- Visit pimaair.org for more information

Regular Daily Admission Adults \$15.50
Pima County Residents \$12.25
Kids 7-12 \$9; Kids under 6 & Members **FREE**

PIMA AIR & SPACE MUSEUM I-10 to Exit 267 - 6000 E. Valencia Rd., Tucson - (520) 574-0462 - pimaair.org



MAKE YOUR HOLIDAY PARTY SOAR!

by Mark Velbeck, General Sales Manager

At the Pima Air & Space Museum, you can make your holiday party soar! Eliminate the stress of hosting your party by letting our staff take care of everything for you.

We'll cater to your every whim by working with you on the planning, preparation and clean-up of your holiday gathering. We are now booking holiday parties and luncheons with many dates still available.

Enjoy over 20,000 square feet of event space under the wings of beautiful aircraft. The Museum's facilities are ideally situated for special events with opportunities for guests to view a vast array of aircraft from all corners of the world.

We have excellent in-house catering provided by our Flight Grill chefs who will customize a menu and will work closely with you to ensure that your chosen menu is prepared exactly as you wish.

This Holiday season, relax, make sure your seat backs and tray tables are in their full upright position, your seat belt is correctly fastened, and all portable electronic devices are turned off.

Prepare to take-off to the best holiday party destination... Pima Air & Space Museum!



NEW WEBSITE COMING FOR THE PIMA AIR & SPACE MUSEUM!

Keep your eyes open this fall for the launch of Pima Air & Space Museum's new website (including new pages for the Arizona Aerospace Foundation and Arizona Aviation Hall of Fame). Truly a team effort with enormous input from staff, the Marketing Committee and a talented local web-design team (CS Designs), the goal of this total overhaul is to capture the growing Internet-connected travelers' market and inform locals of all our wonderful events and programs. We're

especially excited about our new video spokesperson, Dick Rutan, aviation enthusiast and self-proclaimed adventurer, known for his daring Voyager non-stop, unrefueled circumnavigation of the globe in 1986. We also hope to provide online shopping, seamless membership renewals and address-change updates with the click of a mouse. But don't worry--we'll all still be available back in Hangar #2 to assist you!

SOCIAL MEDIA



The Pima Air & Space Museum and the Titan Missile Museum both have Facebook pages! Each is a forum for our fans to talk about their recent visits, share photos and receive updates on the latest Museum events. If you haven't already, be sure to become a fan of both our museums.

Also, Pima Air & Space Museum recently started a Pinterest page - be sure to visit to view all the wonderful images from the museum.

BOGO - THE OFFICIAL PIMA AIR & SPACE MUSEUM BOOK



From now until Dec. 24, 2013, members can buy two Pima Air & Space Museum Books, compiled by our Curator James Stemm, for the price of one (of the same style). Buy one softcover version at \$29.95 (with no sales tax because we're a not-for-profit) and receive one softcover FREE. Or buy one hardcover version at \$39.95 and get one hardcover FREE! Even the Limited Special Edition gift sets are available BOGO while supplies last! They make great gift ideas for aviation aficionados, docents and Pima Air & Space Museum fans. (The membership discount does not apply to this special offer.)

NEW MERCHANDISE AT PASM MUSEUM STORE



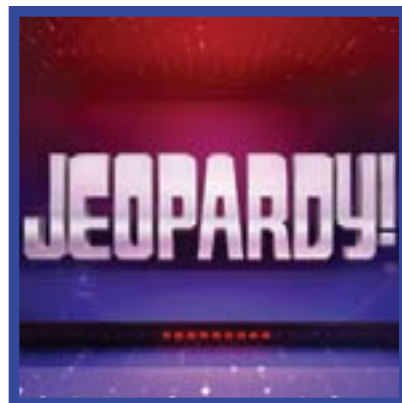
Be sure to stop in at the Pima Air & Space Museum Store and check out our new merchandise including Disney *Planes* toys & books, the new and much-touted WWII Monopoly game, desk clocks, vintage SR-71 clocks, aviation art, and clever new signs. As always, members receive a 10% discount in the Museum Store. Plan to do some of your holiday shopping at the Pima Air & Space Museum!

ON AIR

Look and listen for the AAF museums on the following programs this fall. (Exact on-air dates were not available at the time of this printing. We'll send a member email if and when we are notified.)

JEOPARDY

Yes, Alex Trebek will be seeking the questions to the answers found at the Pima Air & Space Museum and the Titan Missile Museum (a film crew shot at both our museums). According to www.jeopardy.com, in Southern Arizona check your local listings for "America's Favorite Quiz Show" on KGUN-TV at 4:30pm.



TEEN KIDS NEWS

"Teen Kids News" is an Emmy-award-winning TV news show "by kids and for kids" that can be viewed without commercials:

- in Tucson/Sierra Vista every Saturday morning at 9:30am on Fox 11, KMSB,
- in 12,000 middle and high schools (reaching 4.5 million students—25% of teens—and thousands of their educators) combined with a "Fox News Channel in the Classroom" current event update, and
- in conjunction with the U.S. Government on the American Forces Network (previously the Armed Services Network) reaching 2 million viewers at 1,000 locations in 175 countries and on all the Navy ships at sea every Saturday.

Seasoned Teen Kids News interviewer Nicole Weiss spoke with Mina Stafford, Curator of Education, regarding the Great Paper Airplane Project and how to fold a paper airplane, and with Scott Marchand, Director of Collections & Restoration, on "Freedom One*," the SR-71 Blackbird, the B-52 that was modified to drop the X-15 and the Starr Bumble Bee. At Titan, Executive Director and former Titan II Crew Commander Yvonne Morris and Historian Chuck Penson answered the teen's questions. In addition, Nicole interviewed the Chocolate Pilot, Col. USAF (Ret.) Gail S. Halvorsen, who dropped candy to children during



the Soviet Blockade overcome by the Berlin Airlift. (Read about this heartwarming, historic international collaboration in the children's book "Mercedes and the Chocolate Pilot," by Margot Theis Raven, or the "adult" book, "The Berlin Candy Bomber," by Col. Halvorsen, both available at the Pima Museum Store. You can meet Col. Halvorsen as he will be handing out candy to children after they sit on Santa's lap when Santa lands at the Pima Air & Space Museum on Dec. 14, 2013. For more information see page 28 of this newsletter.)



"Freedom One" is the VC-137B that in January 1981 carried 52 Americans held hostage in Iran for 444 days and in March 1991 carried 20 former Persian War POWs back to the U.S.

WHO WANTS TO BE A MILLIONAIRE

"Who Wants to be a Millionaire, Cedric Style" researched its facts with Chuck Penson, the Historian at the Titan Missile Museum. Will it be the million-dollar question?



UNITED AIRLINES



In case you did not fly United Airlines in September, please enjoy this link to their inflight magazine, "Hemispheres," and the article on "Atomic Tourism," specifically featuring our Titan Missile Museum, the Pima Air & Space Museum and the "Boneyard"/AMARG tour. After finishing the article, click on

the right arrow for two more pages to see our "piggybacked" 1/4 page ad too. <http://www.ink-live.com/auth/d94365f23a665b666325a315ad5d82a1>. (†See special quick-access reading instructions below.)

"Hemispheres" is the world's largest in-flight magazine and is carried on all 175,000 United Airlines' monthly flights. They are the #1 air carrier into some of Tucson's largest feeder markets: Los Angeles, Denver, Chicago and San Francisco.

†Instructions for accessing the "Hemispheres" article quickly: Click through the newsstand's green-covered magazine to the September issue, click on the lower right hand corner to open the magazine, and then type in 87 for the page number. After four full pages the article is continued on page 110, so type that in the little grey box on top.

ALASKA AIRLINES

Alaska Airlines has asked the Titan Missile Museum's permission to offer Titan as a tempting reason to fly on Alaska Air's newest non-stop flight from Portland (beginning Nov.). You'll have to fly to Portland, however, to hear the radio spots as they won't be airing in the Tucson market.

ROCKERS WITH A HEART



Also of note: Titan Missile Museum was named the July 2013 recipient of the KLPX and KFMA's "Rockers With a Heart" charity effort that included multiple free public-service announcements during the month mentioning Titan's 50 years of operations, free banner ads on their websites and the radio spotlight on Yvonne Morris, AAF Executive Director & Past Titan Commander, and Chuck Penson, Historian, during "Lifestyle Tucson," a half-hour public-affairs program that airs on KLPX and KFMA.

Our thanks go out to these media outlets. Plus thanks to the team members (staff and volunteers) at both sites who dedicated many hours with producers, writers and photographers to spread our message.

MANY THANKS TO OUR NEW VOLUNTEER "STREET TEAM"

This summer we partnered with the Tucson Reid Park Zoo and provided an activity for their Summer Safari Nights. With help from our Volunteer "Street Team" we were able to have a presence at five of their evening events. Thank you Pima Air & Space Museum volunteers, for once again getting the word out about the museum. And thanks to the Reid Park Zoo for letting us be a part of their fun evenings.



PASM DOCENT TEACHES YOUTH ABOUT WWII

Bud Daniels, a volunteer at the Pima Air & Space Museum for many years, continues to bring WWII history to life for school groups visiting the museum. Bud is one of many PASM docents who have real-life experience with the aircraft on display at the museum.



VOLUNTEERS HELP WITH FIRST-EVER SATURDAY AMARG TOURS

Our first-ever Saturday AMARG tours were such a huge success that we're going to do it again. Stay tuned for the details. Thanks to the docents and Air Force personnel who made these tours possible and to our terrific media sponsors.



Our Volunteer "Street Team" was at it again this past summer at the Home Show where they helped hundreds of kids of all ages build their own Snap-Tite model airplanes. Be sure to check them out at the next Home & Garden Show this Jan. 25-27, 2014 at the Tucson Convention Center.



THANK YOU - VOLUNTEERS

Our large corps of volunteers at both the Pima Air & Space Museum and the Titan Missile Museum help out in almost every department at both museums, interacting with our

200,000 annual visitors, or working behind the scenes in collections, restoration and on committees. Listed are volunteers with 250+ hours through August 2013.

250+ Hours

Richard Myers
Claudia Bator
Gordon Bailey
Doug Jenkins
Chris Cormier
Stephen Klafter
Howard Rosenberg
Sally Hall
Buster Cormier
Jim Zimmerman
Len Voermans
Dick Norris
Robert Balck
Harold Reddick, Jr.
Clarence Niebow
Larry Knaff
George Moak
James Abbey
Eric Vimmerstedt
Robert Bassett
Jack Briggs
Marsha Kwolek
Tom Campbell
James Devine
Lorne Hawkins
Dean Fundingsland
Tom Ploski
Tom Cantrell
Cliff West
Jim Hemenway
Diana Clark
James Evans
Virginia Swartz
Robert Walsh
Larry Macon
Richard Hart
Susan Flemming
Clinton Swartz
Lewis Hawkins
Philip Lacovara
Lloyd Sandmann

500+ Hours

Ed Ackerman
Siebo Friesenborg
Catherine Kestler
Kirby Dominguez
Paul Woodford
Bill Sproull
Mike Berk
Jim Bergstrom
Tom Gorman
Terry Eichenseer
Bill Scott
Dennis Anderson
John Kaminski
Floyd Dickerson

750+ Hours

Christina Bentley
Andy Stephenson
John Gieb
James Haueter
Larry Clark
Damon Blair
Jack Battaglia
Bernadette Bauer
Richard Rogers
Gerald Geise
Charles Winkerwerder
Joyce Petska
Lee Besse
Steve Slocum
Mike Noreen
Fred Denson
Donald Kohls
Tom Collins
Karl Krumel
Joseph Petska
Richrd Carter

1,000+ Hours

Bob Berger
Edward Duthweiler
Jim Hartigan
Rod Farley

1,000+ Hours Cont.

Randy Hoffman
Ed Bowers
Donald Cassidy
Art Blue
Michael Lennon
Allen Shanahan
Jerry Carl
Stephen Austin
Gerald Kohls
James Hoffmann
Kyle Rossi
Terry Lingrel
John Eichelberg
Tom Walton
Bob Kurneta
Bob Gaines
David Steuck
Bob Spackman
Rey Johnson
Felice Rolfes
Gary Thomas
Lynne Severe
Buz Hudacky
Keith Connolly
Jeremy Rogers
Marian Walsh
Wesley Frost
James Lewelling
Hans Oppe
Larry Fieland
Jacquie Thomas
Bill Preble
Harold Wermes
Bruce Saunders
Ken Leland
Pete Herrman
Ken Crombie
Herbert Wolfe
James Simonds
Don Severe
James Seidel
Robert Robuck
Jack Briggs

1,000+ Hours Cont.

Al Ranee
Hayward Sumner
Paul Kuras
Steve Holt
Roger Misgen
George Felton
Dave Hinkelman
Charles Schulz
Dana Lorenz
Wesley Whitman
John Newton
John Mcgee
Tom McDonnell

2,000+ Hours

Tom Schart
Martin Anderson
John Miller
James Smith
Margie Humphrey
Tim Mltman
Allen Phillips
Joseph Seibold
Neil Helgath
Carter Harrison
Pam Asbury-Smith
Vern Spohn
Leon Tracy
Bob Weber
Thomas Bard
John Edris
George Moore
Druce DeWald
William Carpenter
Philip Place
Bill Smith
Royal Heemeier
Howie Cosyns
Richard Sharp
Dennis Crowley
John Sprenkle
Chuck Morris
Robert Flemming

2,000+ Hours Cont.

Earl McDonald
Fred Faust
Rex Eaton
Harvey Diesner
Bill Whalen
Dwight Mears
Ralph Laner
William Stickel
Al Frizelle
Bob Hewett

3,000+ Hours

Paul Thom
Glenn Carlson
Wayne Butler
Kenneth Hollett
Clifton Sonberg
Lathan Varnado
Ron Swanson
Dennis Mart
Bud Daniel
Robert Lovell
Sheldon Coudray
Dale Sprotbery
Bob Darcangelo
Tom Workinger
Gerry Quilling
Richard Beaubien
David Jester
Dennis Deatherage
Dick Casey
Richard Flam
Kenneth Brandt
Steve Taylor
Frank King
James Schultz
Bill Williams
Norman Goetz
Chuck Mitchell
Bob Ratledge
Thomas Rehm
Dennis Hull

4,000+ Hours

Wesley Whitman
Ron Kovar
Robert Harvey
Harry Wells

4,000+ Hours Cont.

George Matais
H.F. McFadden
Bob Brubaker
Ed Sanford
Dave Scoles
Robert Helmers
Frederick Kemp
Ben Fisher, Jr.
Len Defendorf
Peter Lasho
Mike Mcauliffe
Jack Matteo
Jerry McCafferty
Patricia Johnson
Samuel Densler

5,000+ Hours

Chuck Smith
James Stone
Tom Howard
Fred Hudson
Tom Geoghegan
Joseph Pacholec
Brad White
Earl Larsen
Chet Harvey
Vincent Ferrari
Larry Kistler
Bill Minor
Martin Keimon
Ted Schmidt

6,000+ Hours

George Birch
Ricahrd Peterson
Edwin Grant, Jr.
Christopher Lefteroff
Edwin Dore
Donald Snover

7,000+ Hours

John Moffitt
Chuck Perger
Richard Lockhart
Rick Felker
Charles Osborn
Pat Donovan

8,000 and above

Henry Dudley
8,293
Mary Ellen Conrado
8,514
Ed Cullen
9,076
Von Kimbrell
9,291
Thomas Bohan
10,266
Frank Davidson
10,624
Don Campbell
11,347
George Kircher
14,029
Bill McGuire
23,981

In Memoriam

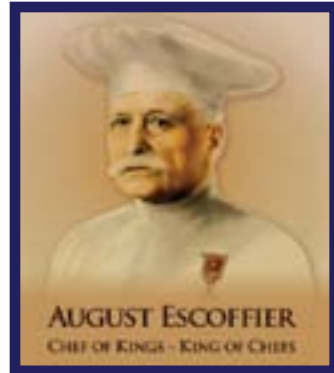
We would like to offer our sincere condolences to the families and friends of our recently departed Museum volunteers:

Buzz Bertolino

James "Pat" Parker

FLIGHT GRILL - COOKING UP THE PAST

by Cole Potwardowski, *Flight Grill*



Like the historic planes exhibited throughout the museum hangars, Georges-Auguste Escoffier lived in the past but his legacy is far from extinct.

Martin C. Coy, general manager and head chef of Flight Grill at the Pima Air & Space Museum, owes something of his culinary passion to Escoffier.

“He helped me understand the foundation of French cooking, which is the basis of all cooking,” Coy said.

Escoffier pioneered French cuisine and its five mother sauces. The last Kaiser Wilhelm II nicknamed him ‘The Emperor of Chefs’ in 1913.

Escoffier was born October 28, 1846 in Villeneuve-Loubet, France and apprenticed at his uncle’s restaurant before becoming an army cook in 1870. At the Hotel National in Lucerne, he met César Ritz in 1885.

Ritz, still a famous name in the hotel business, formed a partnership with Escoffier and appointed him head chef at the Savoy Hotel in London in 1890. A decade later, the duo briefly operated the Hôtel Ritz in Paris and then the Carlton in London. Escoffier remained there until he retired in 1920.

During Escoffier’s tenure at the Carlton he published “Le Guide Culinaire” in 1903, which became the bible of cookbooks in the French culinary world. With more than 900 pages, the book holds hundreds of recipes including ones for the five mother sauces: béchamel, espagnole, velouté, hollandaise and tomato sauce.

The sauces are staples of haute cuisine, or “high cooking,” and can be cooked to a variety of tastes per the chef’s discretion. Coy, for instance, prefers a Maltese sauce made from hollandaise sauce and freshly squeezed orange juice or a cabernet demi-glace served over a simple New York steak at Flight Grill’s evening banquets.

But codifying French cuisine was only the beginning of Escoffier’s contributions to the culinary world. His talent for organization and exactness led to the devel-

opment of the brigade system, which allowed food to be brought to tables sequentially, or service à la russe.

Coy cited Escoffier’s impact on an organized kitchen on his own usage of the brigade system during Flight Grill’s peak season.

“Everybody has a responsibility in their stations,” Coy said. “I have servers who take the order. I have an expo station who assembles the foods, a broiler who cooks hotdogs and meats, someone doing salads and someone else working the flat top.”

The brigade system is also utilized after normal museum hours for plated dinners.

“It’s the same principle,” Coy said. “One cook or one chef can do it all, but in the environment we have, we have one person in charge of crudité or salads and that’s all they have to worry about.”

A plated three-course meal for 200 people in Flight Central calls for 600 plates and at least two days of food preparation. The brigade system ensures that Coy and his team keep ingredients mise en place (literally “put in place”) and ready to cook.

“Years ago, imagine trying to feed 200 people with just two cooks,” Coy said.

Evening banquets are also a time for Coy and his crew to adhere to professional chef attire. The servers sport black dress clothes and silver ties while the cooks don double-breasted jackets.

Chef attire dates as far back as the early 19th century. Nowadays, artistic expression has influenced the uniform, like wearing chili pepper pants or green chef jackets. But Escoffier and his predecessor Marie-Antoine Carême primarily established the white chef coat as a symbol of sanitation.

Although it’s unlikely you’ll see a chef with an 18-inch toque at the Pima Air & Space Museum, the foundations of French cuisine are hard to miss. Thanks to Escoffier, Flight Grill’s customers not only get a taste of great food—but a taste of history.



390TH MEMORIAL MUSEUM



The 390th Memorial Museum is nearing completion of its renovation. They will again be open to the public this Fall. Please see their website for updates at www.390th.org





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2014 Annual Meeting of the Membership

SAVE THE DATE

Tuesday, March 25, 2014

Pima Air & Space Museum

4:00 - 5:00 p.m. Reception — 5:00 - 6:00 p.m. Annual Meeting