



CONTRAILS



Volume 11 Issue 4

“Information for and about our Volunteers”

Winter 2008

FROM THE EXECUTIVE DIRECTOR

Yvonne Morris

Hello Everyone.

Okay, I know what some of you are thinking. “I thought she said she wasn’t interested in applying for the job as the permanent Executive Director of the Arizona Aerospace Foundation.” Yet,



here I am, speaking to you as the permanent Executive Director. Well, what can I say, except that I saw a job that needs doing and I’ve decided to do it.

Seriously, in these economic times, the Board of Trustees and I agree that it will be better for the Foundation to have someone at the helm who is already familiar with the way our museums operate. Going forward, there are challenges that we face at both museums. The only thing we know for sure about the tourist economy upon which we depend is that we haven’t yet felt the full impact of the economic troubles that exist today.

But there is one other thing that we know for sure. And that is that we will meet these challenges and emerge on the other side as a stronger organization. Our staff and volunteers are too talented and too dedicated to allow any other outcome.

I want to thank you all for your support and dedication. This is a time of transition for the Foundation, and I’m proud that I will lead you through it. All of you are doing a fantastic job, and I’m extremely proud to know and work with all of you.

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Good Morning



THE FOUNDATION CORNER

By: *Mina Stafford*



Items Applicable to both TMM & PASM

Happy Holidays from the Arizona Aerospace Foundation! Thank you all for all of your wonderful work during the Thanksgiving weekend. All of our visitors appreciated you being there. We are looking forward to a positive tourist season. And the volunteers are the ones who make our museum so much better than all the rest.

Please mark your calendars and tell your friends that the Arizona Aerospace Foundation is once again hosting the pilots and crew from the SR-71 program. They will be here February 21st and 22nd. They will be holding panel discussions where visitors and volunteers are welcome to ask them questions about the plane and their missions. If anyone is interested in helping with this event please contact Mina Stafford at 618-4819.

The Foundation has hired a new HR Manager, Jennifer Cortum. She comes to us from the Brewster Center and has great idea about how to improve not only the staff working environment but also the volunteers and how we work together. She is still working on getting to know everyone so please come by and see her.

Volunteer Presentation Series

December 20th – Chuck Mitchell and Lt. Mark Harting “The F-16 vs the MIG-29”

January 17th – Charles “Norm” Stevens, Author of “An Innocent at Polebrook” and a WWII Bombardier in the 8th Air Force

February 21st – Col. Richard Graham and the other presenters at the SR-71 Symposium panel discussions

March 21st – Rick Felker - AmEmb Phnom Penh-Air Attaché Duty in the Khmer Republic, 1973-

74

April 18th – Tom Howard – Adventures in Missouri

May 16th – John Tippetts author of “Hearts of Courage” The story of his parent’s survival after a plane crash in Alaska.

Please contact Mina Stafford at 618-4819 if you need more information. Remember volunteers, visitors, members and guests are welcome to attend. And if you would like to do a presentation or know of someone who could give a presentation in the Fall of 2009 we are currently looking for speakers.

Volunteer Field Trips

We are planning a Volunteer Field Trip to the Arizona Wing of the Commemorative Air Force at Falcon Field in Mesa, AZ on Friday, January 30, 2009. More details about times and costs will be forthcoming.

Looking a little further ahead, we would like to attend the 51st Annual Cactus Fly-In in Casa Grande, AZ on Friday, March 6, 2009. This should be fun since they will have antique planes actually flying there.

If you have ideas for future field trip or would like to help organize them please let Mina Stafford know at 618-4819.

AFF Calendar

December 13th – New Volunteer Orientation
9:30am Stitt Auditorium

December 20th – Volunteer Presentation Series
10:00am Stitt Auditorium

December 25th – Christmas Both Museums and
Admin Closed

January 1st – New Years Day – Museums Open;
No AMARG; Admin Closed

January 10th - New Volunteer Orientation 9:30am
Stitt Auditorium

January 17th - Volunteer Presentation Series
10:00am Stitt Auditorium

January 19th - Martin Luther King Jr. Day -
Museums Open; No AMARG;
Admin Closed

January 30th - Volunteer Field Trip to Falcon
Field

February 14th - New Volunteer Orientation
9:30am Stitt Auditorium

February 16th - President's Day - Museums
Open; No AMARG; Admin
Closed

February 21st and 22nd - SR-71 Symposium at
PASM

TMM DIRECTOR'S CORNER

By Yvonne Morris



Greetings from Down Under—down under at the Titan Missile Museum, that is.

VOLUNTEERS OF THE MONTH

September: Bob Darcangelo

October: Len Defendorf

November: Owen Hefner

MILESTONES

The following Titan Volunteers reached significant milestones in this reporting period.

Maggie Austin	250
Richard Beaubien	2000
Bill Beauvais	1500
George Birch	3000
Ken Crombie	750
Bill Crossley	1000
Norm Goetz	1000
Bud Gregory	500
Marge Humphrey	750
John McGee	500
Steve Taylor	1000

Congratulations to all of you, and thanks!

WELCOME NEW VOLUNTEERS

Please welcome Sherman Smith to the volunteer ranks at the Titan Missile Museum. Sherman is a former Missile Facilities Technician in the Titan II system and we're excited to have him on board. Welcome Sherman!

VISITOR NUMBERS

August:	3006 Visitors (3% increase)
September:	3039 Visitors (5 decrease)
October:	3264 Visitors (0% change)

Visitor Count for Fiscal Year 2008: 51,731 (a little over 3% decrease from last year)

WHITE ELEPHANT PARADE

It's November, so it must be time to report on the Country Fair White Elephant Parade. This year's theme was "Doing for community, then and now." Once again, the White Elephant Parade Float Committee turned out an excellent float that showcased the mission of the Titan II to protect the peace "then", and the mission of the Titan Missile Museum to educate the community "now". Inspired by their intrepid leader, Len Defendorf, committee members constructed a float complete with a rotating carousel and flying rockets. It goes without saying that this float was a real crowd pleaser. Thanks to Len and the following members of

the parade committee for once again representing Titan in a truly stellar fashion: Jim McMillan, Cliff Sonberg, Norm Goetz, Sam Densler, Dave Weeks, Lathan Varnado, Kitty Sprout, Rey Johnson, Bob Flemming and Maggie Austin. Great job everyone!



SCIENCE MATH AND TECHNOLOGY FUNFEST

What do the Titan MAD Scientists, 6,000 school children, and 1800 rubber-band powered space shuttles have in common? It must be the Sixth Annual Math, Science and Technology Funfest! This annual event presents hands-on science workshops and displays to students from all over southern Arizona. This is the third year that the Titan MAD Scientists have participated, and this year they reached more than 6,000 students at the 3-day event early in November. This year, the event culminated with the mass launch of more than 1800 rubber-band powered space shuttles, setting a new world record for the mass launch of rubber-band powered aircraft. Congratulations to MAD Scientists Lathan Varnado, Chuck Morris and Kitty Sprout. Well done!

THE TITAN II HANDBOOK

The Titan II Handbook by Titan Archivist, Chuck Penson, is here, and the reviews are outstanding. Sales are brisk in the Titan Museum Store, and the

book is also doing well at the Pima Museum Store. Chuck's book is now officially one of the primary source documents for Docents, and by now, every volunteer at Titan should have this new handbook. Congratulations and thanks, Chuck. Great job!

THANK YOU!!!

Thanks to all of you for holding the fort while I'm managing the big picture.

You folks are the best!

PASM COORDINATOR'S CORNER

By Mina Stafford



Hello from the Blue Trailer. We have been busy getting ready for the busy season and welcoming back winter visitors. I am looking forward to seeing all of you at the Holiday party on December 3rd. We will have Santa and a photographer so you can get your picture taken with Santa.

The volunteer Golf Cart is having some battery trouble right now. If you need a golf cart and that one does not work please ask and we can find you another one. A request has already been made to purchase new batteries, however, if we can get batteries donated that would be great.

The PASM exhibits staff is busy setting new exhibits up. They just finished the 406th Fighter Exhibit in Hangar 3. They are getting ready to put up the Arizona Aviation Exhibit. To do this they have removed the Arizona Test Pilot exhibit from the Space Gallery. Many of the objects from this exhibit will be in the new

Arizona Aviation Exhibit in the Spirit of Freedom Hangar. And even more exciting things to come. PASM Collection books were recently purchased for all of the Hangars. Please use these books to answer visitor questions and keep them safe and in good condition.

Thank you for helping make our museum one of the best in the world!

Volunteers of the Month

September 2008 – Bob Deitrich

October 2008 – Fred Hudson

November 2008 – Fred Faust

New PASM Volunteers

Phil Ahlstrand (RS)

Gary Pakalski (Space Gallery)

Alec Markwell (Space Gallery)

Tim Mitman (H3/4)

Mary Schaffer (RS)

Al Ranes (GR/H3/4)

Keith Workman (RS)

Ed Pike (RS)

Jerry Carl (H1)

Visitor Counts

August – 7,863

September – 7,186

October – 10,719

Cumulative total = 3,980,100

PASM Milestones

250 Hours

Bill Preble, Danielle Bond, Bob Kurneta,
Dave Hinkleman, Bill Williams, Shane Jones,
Marjorie Isgrigg

500 Hours

Bob Robuck, John Miller, Dave Scoles

750 Hours

Paul Kuras, Carroll Oquest,
Dale Sprotbery, Lee Tracy

1000 Hours

John Keagle, Pat Johnson

1500 Hours

Glenn Carlson, Frank Aman, Chuck Mitchell

2000 Hours

Ken Brandt

3000 Hours

Robert Anderson, Richard Peterson,

4000 Hours

Mary Ellen Conrado

5000 Hours

Henry Dudley

6000 Hours

Martin Kalish, Ed Cullen

Needed Donation

- Golf Cart for 6 or more passengers or Golf Cart batteries
- 6ft by 3 ft bookshelves for the Volunteer Lending Library
- Carpet or tile for the Volunteer Trailer & the Red Trailer

PASM Calendar

December 3rd – Volunteer and Staff Holiday Party
5:15pm Hangar 4

December 10th – Volunteer All Hands Meeting
10:00am Stitt Auditorium

December 13th – New Volunteer Orientation
9:30am Stitt Auditorium

December 20th – Volunteer Presentation Series
10:00am Stitt Auditorium

December 25th – Christmas Both Museums and
Admin Closed

January 1st – New Years Day – Museums Open;
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10:00am Stitt Auditorium

January 17th - Volunteer Presentation Series
10:00am Stitt Auditorium

January 19th - Martin Luther King Jr. Day -
Museums Open; No AMARG;
Admin Closed

February 11th - Volunteer All Hands Meeting
10:00am Stitt Auditorium

February 14th - New Volunteer Orientation
9:30am Stitt Auditorium

February 16th - President's Day - Museums
Open; No AMARG; Admin
Closed

February 21st and 22nd - SR-71 Symposium in
Spirit of Freedom Hangar

STUFF FROM YOUR FELLOW VOLUNTEERS

FOOD for THOUGHT

If you happen to see one or more of the four people that work in the Thunderbird Sandwich Shop, Jean, Lois, Debby or Jason you might want to thank them for the nice "spread" they put out for the volunteers 363 days a year!!!

Greeter Team

By: Bill McGuire

Thanks again to all the greeters who stuck it out this hot summer and welcomed our visitors.

We welcome back a few winter visitors who have re-joined the ranks. Bob Weber is back from MN, Joe Siebold is back from MI and George Hackstead, Bob Jones and Randy Hannon have returned from the coolness of the 390th Hangar. In the first 11 months of 2008 AMARG and the Tram have done very well and a lot of the credit goes to those greeters who welcomed them at the front entrance.

AMARG Report

By: Bill McGuire

Starting in November AMARG docents have been going through the yearly re-certification and we're happy to say we have finished with 16 of the 18 docents. Were happy to report that the three team leaders for AMARG passed their tests.

Starting December 1 (Monday) we will go back to two coach tours per day at 1130 and 1400. We have been at three tours a day but past records show that two should suffice until December 26th at which time we will be doing four tours per day-1000-1130-1330-1500. We'll continue with four as long as needed which is dictated by how many riders we have.

The AMARG team welcomes aboard Terry Lingrel (who also does Tram). Terry was certified in November and is already doing tours. Terry will be working on Fridays as well



The Apollo Program

By: Earl Larsen

During the last nine issues of Conrails I have presented an article on each of the nine major exhibits contained in our Space Gallery. I'd now like to branch out and address in a little more detail, the Apollo Program, only briefly summarized previously as part of one of the Space Race Exhibit in an earlier issue.

This program occupied NASA's full-time attention from 1967 – 1972, with Apollo missions 1 – 17. Representing this noteworthy space achievement is our full-scale engineering mockup of the Apollo Command Module. Our mockup was used by Walter Cronkite on the CBS Evening News, and was later used by Tom Hanks camera crew for the movie Apollo 13. There is accompanying signage containing the complete Apollo scorecard summarizing all 17 missions, the crewmembers assigned to each mission, photographs of the lunar surface, lunar rover, and Apollo hardware during periods of construction. Equally impressive is the model of the Saturn V booster, the largest launch vehicle ever built by the U.S., standing 363 feet on the launch pad and generating 7.5 million pounds of thrust from the first stage at lift-off.

Of the 17 Apollo program missions most were successful. A few others were doomed to failure and loss of life in the case of Apollo 1. While undergoing tests on the launch pad Apollo 1 experienced a fire and astronauts Grissom, White and Chaffee died. The other near catastrophic event occurred during the Apollo 13 launch in 1970 when an oxygen tank in the service module exploded placing astronauts Lovell, Haise and Swigert in extreme jeopardy. They took refuge in the lunar module while mission control devised a method to use the moon's gravity in a slingshot-type effect to return them to earth. At the beginning of this effort to develop rescue options, was when the mission control lead engineer stated, "failure is not one of the options." The astronauts then shut down all but absolutely essential systems to

conserve electrical power and managed to jury rig the oxygen-generating system to significantly reduce the buildup of potentially dangerous levels of carbon dioxide. During this period of intense brainstorming and round-the-clock deliberation, mission control engineers were directed to use only those items which the astronauts had at their disposal in the lunar module to develop a rescue plan. These items included existing pieces of on-board hardware (some only minimally operational), technical orders, and certain spare parts. NASA's resolve paid off, necessary systems were rendered operable, and the astronauts were safely brought back to earth.

Although the Apollo 1 fatalities unfortunately did occur, the successes were laudable. A total of twelve astronauts walked on the moon, a lunar rover was used on Apollo Missions 15, 16 and 17 for increased mobility in the collection of rock samples, and the command module was used to map future landing sites. Astronaut Jack Schmidt, Apollo 17, was the only professional geologist to walk on the moon. Alan Sheppard successfully hit two golf balls with a six-iron which he had smuggled on board!

What NASA scientists learned from the Apollo program was immeasurable in terms of dollars and time invested, and has and will continue to benefit mankind for years to come.

- The moon may be a useful place to visit again and perhaps to colonize (the very reasons why NASA has regenerated plans to return to the moon).
- Humans can live and function in open space.
- Lunar samples of rock and soil are very similar to those found on earth.
- The moon has no atmosphere and only about one-fifth the gravity of earth, yet humans can function (and even play golf!) on the lunar surface.
- On-going scientific investigation of lunar data and rock samples by both the U.S. and then Soviet researchers proved that two nations could work closely together irrespective of their political and ideological differences during the cold war years.

Continental/Teledyne Turbine Engines

By: Joe Pacholec

The last issue of Contrails contained an article “Continental Motors: The Rest of the Story” that discussed how the company got into the small turbine engine business in 1951 through a licensing agreement with the French company, Turbomeca, that gave Continental the exclusive U.S. manufacturing rights to a family of eight gas turbine engines which was then sub-licensed to their subsidiary company, Continental Aviation and Engineering (CAE), to market and produce these engines. These engines consisted of three turbojets ranging from 330 to 880 lbs thrust; a ducted fan of 790 lbs; two turboshaft engines of 280 and 425 shp; and two air compressor engines of 185 and 325 air hp. These engines provided the genesis for a family of CAE gas turbine engines of which 22,770 have been produced as of the end of 2007.

The first Turbomeca engine that CAE produced was the Palouste II which became the CAE Model 140/141 and was installed in the military MA-1A start cart to provide compressed air for air starting the J-47 engine. Starting in 1952, CAE built 1077 MA-1/1A units. In mid 1952, the Marbore II turbojet engine was selected for the Ryan Firebee Remotely Piloted Vehicle (RPV) target drone and given its military designation of J69. In December 1952, the Cessna Aircraft Co. won an Air Force competition for a jet trainer with their proposal of a T-37 aircraft powered by two Marbore II turbojet engines. Selection of the J69 for use in the Firebee and the T-37 provided CAE with the opportunity to become a legitimate contender in the aircraft gas turbine marketplace. CAE had its greatest success with the development of turbojet engines based on the J69 engine. The basic design of the J69 engine consisted of a single-stage centrifugal compressor, a through-flow annular combustor, a single-stage axial flow turbine and a unique slinger type fuel injector system integral with the shaft that was developed by Turbomeca and provided for good fuel atomization throughout the operating speed range. Not only was the J69 series of engines highly successful as a result

of its use in the Ryan Firebee and the Cessna T-37, but two other successful engines were derived from it. One was the J100 engine used in advanced versions of the Firebee, and the other was the J402 engine that powered the McDonald Douglas Harpoon missile.

The initial Firebee target drone had a short life version of the Marbore II engine designated as the J69-T-19 which raised the turbine temperature and incorporated various compressor modifications to raise the thrust from 880 to 1000 lb. CAE began developing uprated models of the engine which incorporated an axial-flow compressor stage ahead of the centrifugal compressor to increase both engine airflow and pressure ratio. The results were the J69-T-29 engine rated at 1700 lb and the J69-T-41A engine with an improved axial compressor rated at 1920 lb. These engines powered a variety of Firebee target drones at altitudes up to 62,500 ft and at speeds up to Mach 0.97 in level flight. A version of the J69-T-41A engine designated the YJ69-T-406 used changed compressor materials to permit the engine to be operated at the elevated inlet temperatures associated with supersonic flight and powered the Firebee II supersonic target drone to speeds of Mach 1.1 at sea level and up to Mach 1.5 at 60,000 ft. With the advent of the Vietnam War, a need arose for unmanned aircraft that could conduct photo reconnaissance missions over hostile terrain. The answer was the Ryan series of RPV's known as “Lightning Bugs” powered by J69-T-29 and T-41A engines. The need for even a higher flying reconnaissance drone led to the development of the 2700 lb. thrust J100-CA-100 engine which incorporated two transonic flow axial stages and a two stage turbine. This allowed the Firebee to operate at altitudes in excess of 75,000 ft. The J69 and J100 powered photo reconnaissance versions of the Firebee flew a total of 3,435 operational sorties over Southeast Asia between 1964 and 1975. Production of engines for unmanned applications totaled 6929 J69s and 96 J100s.

The first T-37 trainer with a prototype J69 engine flew in Oct. 1954. The first 920 lb. thrust

production engines, designated the J69-T-9, were delivered in 1955. Engine compressor surge problems at higher altitudes resulted in CAE redesigning both the J69-T-9 compressor to increase its size and the turbine to match the new compressor. The “new” engine, the J69-T-25, had an adequate compressor surge margin, a thrust increase from 920 to 1025 lb, and weighed 6 lb less than its predecessor. Production of the J69-T-25 engine began in 1959 and ended in 1976. A total of 3005 T-9 and T-25 engines have been produced. The T-37 trainer has the best safety record in the Air Force inventory and through FY 07 had accumulated 13,525,228 operational hours. The T-37 is being phased out and over the next 2-3 years will be replaced by the JPATS system.

The J402 engine is a derivative of the J69 family of engines and was developed by CAE as an expendable short-life turbojet designed for use in short range missiles. The engine was required to have low acquisition cost, had to meet significant volume and diameter constraints, and had to meet a “wooden round” requirement, meaning no maintenance. In 1972, following a competitive evaluation, CAE received a contract from the Navy to develop the J402-CA-400 (CAE Model 370) engine to power the McDonnell Douglas Harpoon (AGM-84A), an anti-ship cruise missile that could be launched from surface ships, aircraft, and submarines. The resultant engine produces 660 lb of thrust, weighs 101 pounds for a thrust to weight ratio of 6.6. The first production engine was delivered on April 30, 1975 and as of Dec 2007, over 8000 engines have been produced. Both the missile and engine have demonstrated very high reliability.

CAE was involved in many other turbine engine programs. They included turboshafts for helicopters; turboprops for aircraft; turbofans for cruise missiles; demonstrator engines such as the XLJ95 lift engine for VTOL aircraft, and advanced technology engines for pilotless and trainer types of aircraft under the Advanced Turbine Engine Gas Generator (ATEGG) and Joint Technology Demonstrator Engine (JTDE) programs. None of these programs resulted in

production contracts. However, experience gained with their small turbofan engine for a cruise missile resulted in a second source contract to build the Williams Int'l F-107. A family of small miniature engines ranging from 40 to 350 lb thrust were developed for expendable missiles with a 177 lb engine derivative designated the J700-CA-100 selected to power the ITALD decoy built by IMI in Israel for the USN. Variants of the J-402 have been developed and include the J402-CA-100 for the JASSM missile and J402-CA-700 for the VSTT and SCARAB unmanned air vehicles.

In 1969, Continental Aviation and Engineering became part of the Teledyne family and was designated Teledyne CAE. It is now known as Teledyne Turbine Engines and is located in Toledo, Ohio at the facility that was acquired in 1955 to produce J69 engines. The company currently supports five production engines; J402-CA-400 (Harpoon SLAM-ER), J402-CA-100 (JASSM), J402-CA-700 (VSTT and SCARAB), J700-CA-100 (ITALD) and J-69-T25 (T-37). R&D activity is high, supporting multiple customers and platforms. The company is involved in the Versatile Advanced Affordable Turbine Engine (VAATE) program sponsored by the USAF/AFRL-Propulsion Directorate, Turbine Engine Division at WPAFB, OH. They are also working on advanced small turbine engines for the US ARMY and US NAVY under direct contracts or through Prime Contractors such as Boeing, Lockheed Martin, Northrop Grumman and Raytheon as well as several smaller and innovative companies. These engines range from less than 50 lb of thrust/shp through 3000 lb/shp. With its extensive heritage, Teledyne Turbine Engines is well positioned to continue to be a supplier of engines for future advanced missiles and unmanned air vehicles.

Ref: “The History of North American Small Gas Turbine Engines” by Richard Leyes II and William A. Fleming. 1999. Sponsored by the AIAA and the Smithsonian Institution

But Wait! There's More!

By Rick Felker

One look at the Red Trailer's Docent Lending Library will show you that it contains a goldmine of memoirs and biographies of the pioneers of flight and participants in all the major air conflicts. There are even golden READ ME bookmarks in selected volumes to showcase specially recommended books. But do you realize how many other great resources it has to offer?

Yes, there are videotape and DVD personal histories by our colleagues in the Volunteer Presentation Series, but did you know that collection includes presentations by guest speakers like Al White on flight testing the F-107, David Jones on piloting a Doolittle Raid B-25, and Steve Ritchie on downing five MiG-21s over North Viet Nam?

There are shelves full of other fine videos and disks, like a superb interview with Chuck Yeager and Bob Hoover on breaking the sound barrier, and many segments of the *Wings* series on historic aircraft.

There's a Background Info Binder with extracted articles on everything from how flaps work to the *Super Guppy*, and from the Fieseler *Storch* to Glen Curtiss to the X-15. There's another binder with all you ever wanted to know about how helicopters fly. There's yet a third binder with a complete set of color photos, script, and fact sheets from a NASM presentation by an SR-71 *Blackbird* pilot that's sure to "peg your Gee-Whiz-meter."

There's a copy of the log maintained by Davis-Monthan airport from 1926-1936, when Tucson was a major stop on the main transcontinental air route. Transients were required to log their origin and destination so that, if they failed to arrive, the searchers would have a decent place to start looking. Page through the log to see the signatures of aviators from Amelia Earhart to Jimmy Doolittle to Clyde Cessna to Roscoe

Turner to Wiley Post to Buzz Aldrin's dad!

There's a color print of a vignette from WWI aviation, with the story of the event captioned below. The selection rotates each month with a new anecdote about those intrepid knights of the air.

There are even some great scale models of WWII combat planes suspended from the room's ceiling to give a den-like feeling to the reading room.

Your Docent Lending Library has books, all right—and much, much more. Check it out.

A book review by Ed Sanford

Flying in Coffin Corner, Robert L. "Bob" Thompson, Whitewing Press, Tucson, AZ. The title looked interesting. 'Coffin Corner' means different things to different folks. On the football field, it means a punt that goes out of bounds inside the 5-yard line, putting the receiving team in a pickle with their backs to the wall. When an airplane approaches its maximum altitude, the critical mach may be just a few knots above the stall speed, giving the pilot little latitude for maneuvering, and that's also called 'coffin corner'. Neither apply to this book.

In WWII bombers would fly in mass formations for mutual protection. But some folks had to be tail-end Charlie – those squadrons flying at the rear, in the lower right- or left-corners of the big formation didn't have as much protection, and got most of the attention from the German fighters – hence, Coffin Corner.

Bob Thompson writes about his experience as a photographer in the USAAC during WWII, and does it very well. He had enlisted in the USAAC before the war, and attended photo school at Lowry AFB. The book is written from the aspect of the Sgt-in-charge of a Photo lab, from England, to Africa, to Italy. He flew combat missions, got bombed at, had interplay with famous people, and

tells it like it is - or was - about some of them. His experience with Margaret Bourke-White, the famous photographer, and her use of his helmet is - interesting. His adventures are written in a personal style that really puts one into the milieu of the rear-echelon support troops and their tribulations. It was very tribulationish to fly combat missions, since the photographers flew in Coffin Corners, because that was where the action was, hence the name of the book. He almost flew the 5 missions required for the award of an Air Medal. Four and a half didn't count.

Thompson's description of both sides of the war, the rear and the front, makes for VERY good reading. His experience with an English vicar (and the vicar's daughter), his ocean voyages, his recounting of his parachuting out of a B-17, what led up to it, and the results, are eye-opening. As is something he was sworn to secrecy for, that secrecy to last for fifty years. This book is located in Henry's library in the south end of the Ruby Lounge. It's a dang good read, and I strongly recommend it.

A book review by Ed Sanford

Operation Broken Reed, by Arthur L. Boyd, Lt Col Ret, De Capo Press. Wow... Art Boyd was a 1 Lt. AUS and was asked to volunteer for a super-secret mission during the Korean War. When he got his commission at age 18 he was the youngest officer in the US Army. Several years later he was married with a young boy.

Boyd was stationed in Germany as a communications officer waiting for his family to be allowed over when he was called in to talk to a Colonel 'George Brown', if that was his true name - and rank. It seems that the situation regarding intelligence before and during the Korean War was a shambles - no one knew for sure what was what - MacArthur had sworn that the Chinese had at most 50,000 men in theater, but no one was sure because of interservice rivalry, bureaucracy, lassitude, Ecetera. President Truman wanted, and needed ACCURATE Intel

regarding the order of battle of the enemy, and so arranged for a SUPER secret mission behind the lines that needed a comm. person who knew about crypto stuff, and Boyd was offered the position if he wished to volunteer, in the dark, so to speak. If he accepted, he could tell no one about it, and had to take on an alias, as did the other participants. Only about 25 people knew of the mission, and heads of services were included OUT, as was the CIA. Truman wanted it done and didn't trust the official channels. Boyd could not speak of it for over 46 years.

The mission was a complete success, and probably kept the world out of WWII. And of the roughly 75 active participants - Boyd was the only survivor. Maybe two others who were severely wounded made it, too, but he was never able to find out for sure. Completely black until 1998 when the classification was removed, there is absolutely NO record, no hard copy, NOTHING to show that it ever happened. Boyd was watched over during his Army career, and made promotions on time, even though continuously experiencing extreme psychological problems.

In the hospital, the doctor, an Army major, tried to be upbeat. "The first report we got on you was that you had a brain injury." He pointed to my flight suit. "That's brain tissue, but not yours. And if all that blood had been yours, you'd be in the morgue. Want to tell me about it?"

I shook my head. "I can't."

The major nodded. "Can't or won't?"

"Can't, sir."

I think one can see why a person might have psychological problems...

This book is a page-turner. I have loaned it to the PASM Volunteer Library - it is in the North Library in the Ruby Lounge.

MEET YOUR PASM VOLUNTEERS

This is the last issue of Contrails that will contain the "Meet Your PASM Volunteers" column as we have run out of one page biographies. If you haven't provided a biography please do so and we will take your picture for a future issue.



Bob Dietrich

Bob was born at Tucson Medical Center August of 1954. At the age of 4 our family moved near the flight path of the now defunct Freeway Airport and we were soon hooked on airplanes. We were allowed to roam the airport and see the airplanes close up.

He graduated from Flowing Wells School District in 1972 and the following fall enlisted in the Coast Guard. After boot camp in Alameda CA, Bob was stationed in Eureka, CA on the USCG Cutter Comanche, a WWII ocean going tugboat inherited from the Navy. The Comanche went on a lot of "Fishery" patrols to insure that other countries didn't violate the 12 mile limit from the U.S. coastline. They also resupplied St. George Lighthouse off of Crescent City CA., and as you would guess many search and rescue missions. On one mission to exchange personnel at the lighthouse, the Comanche ran into a terrible storm. The wind speed indicator on the lighthouse blew off at 102 mph. The mission couldn't be completed and 70 ft. seas sent the ship running to Crescent City harbor. Bob then had a change of heart about being a sailor and moved on into the air

branch of the Coast Guard. After schooling in Elizabeth City, NC, he flew as a crew member on the HH52 helicopter and was Plane Captain on the HU16E Albatross (SA16). In 1975 flying on an antique airplane was a thrill to Bob, but not to many of the other airmen. He attained the rank of AD3 (Aviation Machinists Mate).

After discharge from the Coast Guard Bob went to work at a radial engine shop, then on to refurbish deHavilland Herons, and finally back to Tucson to work for an airline flying Vickers Viscounts.

In 1982 he met his sister's best friend, Pam, and they married in 1984. Bob and Pam bought her parents legal services business, which they still run today.

Bob and Pam have two children, Jessica, 22, attending the U of A, and Eric, 19 attending Pima College.

Bob's PASM career began in August of 2003 in the Space Gallery, where he works every other Sunday as the only docent on duty.



James W. Sislo

Born on March 17, 1943 in Superior, WI. Jim attended Cathedral grade and high school, Marquette University (in Milwaukee, WI) pre-dental program from 1961 to 1963, and Loyola University Dental School (in Chicago, IL) graduating in 1967. He was a captain in the USAF Dental Corps serving the 4621st ADC in Niagara Falls, NY.

Jim is a private pilot holding a single engine land

and sea rating. He flies 1825 and 185F Cessna aircraft. He has other interests in golfing, hunting, hiking, water sports and various other studies.

Jim lives in Wausau, WI, with his wife Karen, where he practiced dentistry until retiring in 1994. He now spends the winter in Tucson. He has two children and five grandchildren.

Jim began his volunteer service with Pima Air & Space Museum in 1997 as a member of the education team.



Steve Hall Holt

Born in Matador, Texas on February 8, 1940; Steve's father worked for an oil company, so moved around throughout Texas, Louisiana, and Mississippi until the age of 8 and Grew up in Jennings, a small town in Southwestern Louisiana. Steve graduated from Jennings High School in 1958 and earned a BS in Mechanical Engineering from University of Louisiana, Lafayette in 1963.

Steve was a Test Engineer at Pratt & Whitney Aircraft in West Palm Beach, Florida from 1963 to 1966 where he worked on RL1 0 Rocket Engine, advanced rocket engine, and SST turbofan engine programs.

He worked at GE Aircraft Engines from 1966 to retirement at the end of 2001. While at GE, Steve managed the Flight Test Engineering Department, worked in Cincinnati, Edwards AFB, Seattle, and Toulouse, France. For the last 5 years, was Program Manager for Advanced Programs at Boeing in Seattle.

Married Janet in 1992 and they moved to Tucson in May of 2002 where they reside on the Northeast side.

Besides volunteering at PASM Steve likes to build and flying old time control line model airplanes. These are models that were designed prior to 1952.

Last Flight

Since the last issue of Contrails we have discovered that two members of our PASM family has passed.

John Ferguson

Born February 3, 1938 died September 2008. John served Pima Air and Space Museum in Hangar 1 beginning in July 2003 accumulating a total of 694.5 hours. John served in the US Army in Asia in 1961/62, his career was in Pet Inc. (Food Company) in marketing, R&D, Administration and management.

He was also involved in all aspects of vintage cars, restoring several and racing them in vintage car events.

Hoyt Oswald

Since 1994 Hoyt served 2,138 hours in the President's Plane, the Hangars of PASM and showing movies in Hangar 2, he passed on 19 Oct 08 here in Tucson. Hoyt and his wife Carmela lived in Apple Valley, MN in the summers and in Tucson in the winters, they returned early this year, Hoyt had a stroke and died in a nursing home, he was 88 years old. A memorial service will be held at the Cactus Country RV Park clubhouse on 8 Dec 08 at 11:00 am. He will be missed.

