



# CONTRAILS



Volume 11 Issue 1

*“Information for and about our Volunteers”*

Spring 2008

## FROM THE EXECUTIVE DIRECTOR

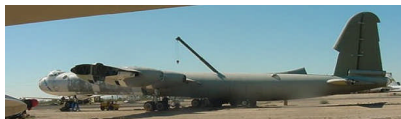
*Daniel J. Ryan*

As we are in the midst of our busiest season, please allow me to thank all of you for your tireless commitment to the visitors to the Pima Air & Space Museum and the Titan Missile Museum. Your devotion to providing an outstanding visitor experience is reflected in the outstanding comment cards that we receive from our visitors. Keep up the great work!



We are still in the exploratory stage as regards improving our food service operation at the Pima Air & Space Museum. Recently, we have relocated the service items and have removed the tables from inside of the Grill area congestion for the visitor waiting in line to place their order. We are also replacing the large cumbersome picnic tables with individual tables and chairs creating a more comfortable dining environment. We hope to have a new food service plan within the next few months.

Our collections department is extremely busy at the Pima Air & Space Museum with a number of exhibits scheduled for completion in the next year including the 406<sup>th</sup> FG exhibit in Hangar #3 and the Aviation in Arizona exhibit in the “Spirit of Freedom Hangar”. The aircraft restoration hangar is abuzz with activity as we are working on multiple projects at once with the Hawker Hunter scheduled to be painted soon and the B-36 is getting closer to being a “whole” aircraft once again.



The Titan Missile Museum continues to set new records for retail sales and is having a good season so far, although overall guest counts are down just a bit to budget and last year. We did have a significant spike in the guest counts last year due to some major national media coverage.

I look forward to seeing you at the annual volunteer recognition dinner on Wednesday, March 19<sup>th</sup>.

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## THE FOUNDATION CORNER

By *Cynthia Duncan*



### Items Applicable to both TMM & PASM

#### New Volunteer Coordinator

Mina Stafford (like Ina with an M in front) has accepted our offer for the Foundation Volunteer Coordinator position. She is currently with the Interfaith Community Services organization and wants to start after March 9th - after their volunteer appreciation celebration. She should start in the week of March 17th.

Mina worked previously at the Manassas Museum in VA and the DAR (Daughters of the American Revolution) Museum in DC. She has a Masters of Arts in Teaching from the Museum Education Program at George Washington University in DC and got her Bachelor of Arts Degree from the U of A.

#### Volunteer Presentation Series:

March - Jack Briggs - B-66 Missions in Viet Nam

April - Ken Hollett - A Brief Overview of  
Helicopter Flight

May - Vern Spohn - T-28 Pilot Training

#### June through August - hiatus

September - Brigitte Howells & the 99's -  
Women Who Fly

October - Ed Sanford - Cruise Missiles

November - Chuck Osborn & Glen Carlson -  
TBA

December - Chuck Mitchell - the F-16

### Field Trip Barry Goldwater Range Tour

#### Tour date Thursday March 6

Arrive at Pima 6:00

Board Bus @ Pima 6:15

Departure = 6:30

Travel time to the range is "just over 1 hour"

Tours are scheduled in accordance with the flying schedule to see F-16s and A-10s dropping training bombs and strafing on manned range.

Participants must bring their own lunch - please, let us know if we can borrow your big cooler.

Also, bring PLENTY of WATER, cameras, binoculars and wear sturdy shoes.

Depart from the range = 3:30

Return to Pima = 5:00

Sign up sheet in the Volunteer Trailer. Please RSVP by email or write your name on the list. Please remit your bus fair (\$15) in the Museum Store. Thank you!!!

#### AAF Calendar:

March 8<sup>th</sup> – New Volunteer Orientation 9:30 Stitt

March 15<sup>th</sup> – Volunteer Presentation Series Stitt  
10:00 a.m.

March 19<sup>th</sup> – Annual Volunteer Appreciation  
Dinner & Award Ceremony –  
Hangar 4 5:00 p.m.

March 30<sup>th</sup> --Annual Meeting of the Membership  
3 to 5p.m. Hangar 1

April 5<sup>th</sup> --Arizona Aviation Hall of Fame  
Induction Ceremony

April 12<sup>th</sup> – New Volunteer Orientation

April 19<sup>th</sup> – Volunteer Presentation Series

May 10<sup>th</sup> – New Volunteer Orientation

May 17<sup>th</sup> --Volunteer Presentation Series

May 26<sup>th</sup> – Memorial Day staff holiday

**And the Results are in!!! 98% of Volunteers recommend volunteering at our Museums-**

Thank you for participating in the Foundation's annual survey of Volunteers' Satisfaction. These results help us hone the Volunteer Program for maximum satisfaction and satisfied Volunteers make satisfied guests. Of 307 active Volunteers 63% responded to the survey, 32% from Pima and 47% from Titan. Overall the population is 25% Titan and 75% Pima. The following are the questions and your answers:

**My favorite aspect of volunteering is:**

Guests 19%  
Volunteers 16%  
Collection 11%  
Staff 4%  
All of the Above 50%

**My least favorite aspect of volunteering is:**

Guests 0%  
Volunteers 0%  
Environment 9%  
Red Tape 48%  
Staff 10%  
Other 32%

**Why do you volunteer?**

Stay Active 27%  
Learn 16%  
Altruism 20%  
Get Outta da House! 6%  
Socializing 14%  
Foundation's Mission 11%  
Other 5%

**How long have you been with us?**

<6 months 11%  
1-3 yrs 33%  
4-6 yrs 25%  
6-10 yrs 21%  
> 10 yrs 10%

**Are you here seasonally?**

Y 21%  
N 79%

**Is 4 hours / week...**

Too Much 1%  
Just Right 74%  
Not enough 25%

**How was your Orientation?**

Good 99%  
Not so Good 1%

**How was your Training?**

Good 94%  
Not so Good 6%

**Who trained you?**

Paid staff 5%  
Volunteer staff 58%  
Both 29%  
Neither 6%  
Other 3%

**Is \$10 for training materials...**

Worthwhile 76%  
Not Worthwhile 24%

**Were job descriptions & training Materials...**

Good 63%  
Bad 1%  
OK 32%

**Info received about the Foundation is...**

Good 73%  
Bad 0%  
OK 27%

**How do you get Information?**

Team meetings 22%  
Email 33%  
Telephone 19%  
Bulletin Board/Desk 12%  
Other 15%

**Do you attend All-Hands meetings?**

Y 57%  
N 38%  
Sometimes 5%

**Do you read Contrails?**

Y 94%  
N 6%

**Do you read Skywriting?**

Y 71%  
N 28%

**Do you use the website?**

Y 50%  
N 50%

**Is the \$5 membership fee...**

Just right 89%  
Too much 7%  
Too little 4%

**What makes you feel most rewarded?**

Guest acknowledgement 51%  
Personal satisfaction 30%  
Formal recognition 6%  
Staff recognition 9%  
Other 5%

**What makes you feel least rewarded?**

Guest acknowledgement 3%  
Personal satisfaction 2%  
Formal recognition 2%  
Staff recognition 11%  
Other 67%

**Would you recommend to a friend?**

Y 98%  
N 2%

**Do you feel that your input matters?**

Y 71%  
N 25%  
Sometimes 4%

**Where do you work?**

Titan 33%  
Pima 67%  
Both 0%

**Are you a tour docent?**

Y 50%  
N 50%

**Is your satisfaction with the program this year, as compared to last...**

Better 48%  
Worse 7%  
Same 45%

**Here are some Additional Comments:**

Don't like morning tour that makes lunch at 2:00 p.m.

Especially appreciate the store discount and good communications.

Lunch & Brook Great. Volunteer's desks need improvement. Love Volunteer Presentations and fellow volunteers. Staff seems to intentionally ignore us at times...

It's special to listen to real life stories from guests from all over the world.

Most enjoyable experience of my adult life!

I find that issues brought to staff are not acted upon.

Would like to see us in publications like Caliente and Thursday's AZ Daily Star. Volunteer Presentations should be open to the public & publicized.

Often see hotel racks without information about our museums.

Displays that don't work and can't be fixed should be removed!

It's embarrassing to have VIPs here to lecture and not have the events publicized!

There are lots of opportunities missed due to interdepartmental miscommunication and lack of mutual cooperation.

**My personal favorite...**

The beginning of knowledge is the discovery of something we do not understand.

An investment in knowledge always pays the best interest.

For success, attitude is equally important as ability.

Being willing makes you able.

Excellence is doing ordinary things extraordinarily well.

**Thanks for all that you do...**

## **The International Archive of The Martin B-26 Marauder**

By Phil Henderson

Many of you are not aware but one part of the vast collections of the Pima Air and Space Museum is the International Archive of Martin B-26 Marauder. The archive was formed by the Marauder Historical Society in the 1990's. The goal for the archive was to have a central point for research relating to the Marauder and the men and women, who flew, maintained, supported and built it.

The archive was moved to PASM in the late nineties and was originally stored in a room in the Challenger building. In 2004 the current archivist Andrew Boehly moved the archive to its current location in the museum's main library and archive. Here research can be conducted by appointment only.

The archive contains collections relating to the Free French, British, South African and all USAAF units that flew the Marauder. These collections contain films, papers, artifacts and ephemera. One of the most important and useful items in the archive are the vast collections of photographs. The archive contains thousands of photos relating to the Marauder. For example I have been cataloging a 387<sup>th</sup> Bombardment Group collection that contains almost 1,500 photos.

While the majority of the archive includes papers, photographs and other archival matter it still has some great three dimensional artifacts. These artifacts include uniforms, flight gear, flak pieces, identification aides, personal items and war souvenirs. Of the more interesting items is a small collection of personalized A2. This includes the archives pride and joy the personalized A2 jacket of James Farrell, the first pilot of the famed B-26 "Flak-Bait."

The archive is an important part of the Pima Air and Space Museum and the Marauder Historical

Society. It continues to grow to this day and will be an important research tool for future generations.



**Phil Henderson**

Born in Georgetown, Illinois on January 4, 1922, Phil attended public schools in Georgetown. In 1940 he successfully competed in the Non-College Civilian Pilot Training program and obtained a Private Pilots License in July 1941.

At that time, both the army and navy required two years of college to become an Aviation cadet. While attending Wabash College at Crawfordsville, Indiana in 1942, both the army and navy lowered requirements for aviation cadet to a high school education.

Phil enlisted in the army as an Aviation Cadet in September 1942, called to active duty in 1943 and graduated as a 2<sup>nd</sup> Lieutenant and pilot from Brooks Field at San Antonio, Texas in December 1943. Martin B-26 Marauder training was completed at Dodge City, Kansas and he was assigned to Lake Charles, Louisiana for crew training. The crew and Phil flew a new airplane across the North Atlantic to England where they were assigned to the 454<sup>th</sup> Bombardment Squadron, 323<sup>rd</sup> Bombardment Group. Flying for the 454<sup>th</sup> he completed forty four missions and returned to the states in the summer of 1945.

After the war ended, Phil joined the Army Air Force reserve and served as a C-46 pilot at O'Hare Airport, Illinois until his squadron was deactivated. Phil retired from the Air Force in

1968 as a Lt. Colonel.

After the war, Phil was a flight instructor at the University of Illinois until entering corporate aviation; where he served as a pilot in command for Kroehler Furniture and the First National Bank of Chicago. In 1965 Phil became Aviation manager for the Natural Gas Pipeline Company in Chicago and retired in 1986 as Aviation Director. He holds FAA air transport pilot type ratings in the Sabliner (T-39) and the Lear Jet (C-21).

In 2002 Phil started spending winters here in Tucson and being a Marauder Man, decided to start volunteering in the International Archive of the Martin B-26 Marauder here at PASM. For the last five years he has helped catalogue and process different collections in the archive and is currently cataloging photographs and entering the information into the museum's new database.

It is a fulfilling job helping preserve the history of such a unique aircraft for future generations, while at the same time revisiting his past.

**TMM  
DIRECTOR's CORNER**

*By Yvonne Morris*



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

**TITAN MISSILE MUSEUM  
VOLUNTEERS OF THE MONTH**

**December: Marge Humphrey.** Marge is a former Titan II Missile Combat Crew Commander who has been volunteering at Titan for over a year now. In addition to giving tours, Marge has used her prior experience with the Titan system to assist the Museum with several special projects. Marge has also been selected to become an Instructor

Docent.



**January: Jim Schultz.** Jim is an Instructor Docent who inspires his students, peers and staff with his “can do” attitude. Visitors rave about his tours, and students rave about his ability to train them well.



**February: Chuck Morris.** MAD Scientist and Briefer, Chuck is a favorite with our visitors, young and old.



Congratulations to each of you, and thanks for your great work on behalf of the museum and the Foundation.

**MILESTONES**

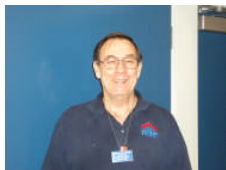
<b>Bill Beauvais</b>	<b>750 Hours</b>
<b>Norm Goetz</b>	<b>500 Hours</b>
<b>Ralph Hoemke</b>	<b>6000 Hours</b>
<b>Bill Hinkelman</b>	<b>750 Hours</b>
<b>Marge Humphrey</b>	<b>500 Hours</b>
<b>Roy Mastic</b>	<b>1000 Hours</b>
<b>Chuck Morris</b>	<b>1000 Hours</b>
<b>Ed Smith</b>	<b>2000 Hours</b>
<b>Clif Sonberg</b>	<b>500 Hours</b>

**Congratulations to all of you, and thanks!**

**ADVANCE TO MEMORY**

As many of you know already, John Lovern passed away in January, and everyone here at the

Titan Missile Museum misses him terribly. John volunteered in the archive every Thursday morning, and I always looked forward to seeing him. We usually didn't get to spend more than a few minutes chatting, but he was always upbeat and entertaining. John was funny, smart, easy-going, and he was there to help the museum, not to satisfy his ego. Several of you were there to see him blush and hang his head when we surprised him with the Volunteer of the Month Award in September of 2005. He sputtered something about not doing anything special, but he was wrong. When Orv Doughty retired, John took over supervising the other volunteers in the archive. He made sure we were following proper conservation procedures, and he oversaw the project to catalog the museum's extensive tech order collection. This is a project he and the other archive volunteers worked on for over three years. We completed it shortly before John's death, and we were all very proud that John knew that we'd achieved that milestone before he passed away.



John may be gone from this life, but he left an imprint on the Titan Missile Museum that will last many, many years.

**VISITOR NUMBERS**

November 2007: 4127 (+8% over last year)  
 December 2007: 4123 (-3% from last year)  
 January 2008: 4631 (-8% from last year)

**CHANGES IN OPERATING HOURS**

As you all know, the Titan Missile Museum expanded its hours to add a 4:30 tour for the winter months. From November 1 through April 30 of every year, we will now stay open until 5:30 pm, and the last tour will begin at 4:30. Some volunteers have been less than enthusiastic about

this switch because they don't think the additional tour is yielding enough visitors to justify it. As you can see, our overall visitor numbers are down from last year, and the museum needs all the visitors it can get. It's true that on many days we don't have a 4:30 tour, but it's also true that we **do** have a 4:30 on many other days. Really, this extra tour is already adding to the bottom line of the museum. Also, I'd like you all to remember that it takes time for changes like this to really start yielding significant results. We experienced this same slow start when we transitioned from being closed on Mondays and Tuesdays in the summer months, to being open 7 days a week in the summer. It took a couple of years, but Mondays and Tuesdays in the summer now constitute a large part of our summer business. I'm confident the 4:30 tour will yield similar results in the coming years.

In the meantime, I appreciate everyone's cooperation as we all adjust to these new hours.

**DONATION FROM THE 390<sup>TH</sup> STRATEGIC MISSILE WING MEMORIAL ASSOCIATION**

In December, at their annual holiday event, the 390<sup>th</sup> Strategic Missile Wing Memorial Association reaffirmed its commitment to continue to support the Titan Missile Museum by making a \$2,000 donation to the museum. The Association donated \$1000 to the operating fund at Titan as the first payment on its pledge to purchase the naming rights for the Briefing Room; \$750 for purchasing launch duct lights and ballast; and \$250 to the Volunteer Fund.

The project to replace the launch duct ballast and lights ensures that our visitors will enjoy the full view of the missile in the launch duct, and it will also allow us to operate more lights without increasing our electric bill because we're installing more efficient units. This donation allowed us to purchase fifteen sets of lights and ballast, which staff, volunteers, and the fire department will install over the next few months.

Titan volunteers will directly benefit from the Association's donation to the Volunteer Fund, which supplies volunteer incentives like recognition badges and pins, jackets, snacks, lunches, etc.

As always, we're extremely grateful to the Association for its continuing support of the Titan Missile Museum.

### **YOU-TUBE MEANS WORLD-WIDE EXPOSURE**

While researching web sites on the Titan II, I came across several postings on "You Tube," the web site where just about anyone can post just about any random video they happen to make. If you have internet access, I encourage you to explore this little gem, if you haven't already done so. The web address is below.

<http://www.youtube.com/>

When you get to "You Tube," do a search for Titan Missile Museum, and you'll discover that there are at least seven videos about the Titan Missile Museum. The following Titan volunteers are now stars around the world: Jim Lewelling, Owen Hefner, Pat Parker, Harry Synovetz, Jim Schultz, Brenda Visotski, Doug Cook, Norm Goetz, and Jim McMillan. These are just the stars of the videos I've discovered so far. Many more videos could be posted under different topics like "what I did on my summer vacation," or "how to launch a nuclear missile" which is the title of the video that Jim Lewelling is in.

In this day in age, turning up on "You Tube" is one of the benefits (or hazards, depending on your point of view) of duty at the Titan Missile Museum. Share the videos with your friends and family and enjoy. But also remember, when you're briefing or giving tours here, never say anything you don't want repeated around the world. Because in this day in age, that's how far your words can travel.

### **VOLUNTEER MEETING**

The next Volunteer Meeting at Titan will be March 11, 2008, at 0800 hours in the classroom.

### **THANK YOU!**

I want to thank all of the volunteers at Titan for working as hard as you do. I'm grateful to all of you for your dedication and professionalism. But most of all, thanks for keeping it fun!

### **FROM THE TMM ARCHIVE**

By Chuck Penson, Archivist, Titan Missile Museum

#### **The 487L "Slifix" Antenna**



I had always wondered exactly where the 487L Survivable Low Frequency Communication System antenna was buried. When describing its location for visitors, I always pointed vaguely into the distance and said something like "over there somewhere."

Then, a couple of weeks ago, while looking for something else, I discovered a box (several boxes, actually) containing hundreds of documents related to changes and modifications to the missile complex over the years. Sifting through a few of these, I found a set of documents describing the installation of the 487L antenna, with diagrams showing its precise location at all 18 of the missile sites around Tucson. I know what you're thinking—this is something only I could get excited about. Over the years I have taken a cue from the late Richard Feynman, a Nobel prize winner and physicist on the Manhattan Project. When

asked what he liked best about his work, Feynman replied, "It's the joy of finding things out."

Anyway, it turns out the 487L antenna at 571-7 is buried about 46 feet to the left of the northwest corner of the Access Portal, putting its location between the Access Portal and the Control Center Air Intake Shaft. A copy of the site drawing is on the bulletin board in the Volunteer Lounge so that you can see the exact location.

Here's what the 487L antenna looked like. The loops are about six feet in diameter. At 571-7, the top of the antenna is about four feet below the surface. The antenna was installed in 1967, four years after the site went on alert.

**PASM  
COORDINATOR'S  
CORNER**

*By Cynthia Duncan*



At February's All-Hands meeting we received a challenge gift for the Hangar 3/4 Skylight Fund from M. Stuart Anderson! He will match the next 10 \$50 donations for the project. Thank You Andy! Total donations as of January 31<sup>st</sup> equal \$1,280 – so, with February's donations we'll have a total of \$2,280... or more

Trivia item – Shaol Pozez is the name of the donor of the land to the east of the museum. This land was sold and the proceeds used to help pay for the Spirit of Freedom Hangar. Shaol's family has been waiting for some years to see this memorial and we are all pleased to see it come to fruition.

Golf Cart – The Volunteer Trailer has a 2 (3 in a pinch) seater golf cart. Its priority use is for volunteers, but staff and VIPs are welcome to use it when it's not in use by a volunteer. The key for the cart is in a box next to the fire extinguisher on the wall opposite from the coffee maker. There is also a new sign-out sheet. Since the cart is shared by many users, we need to know where it is and who's got it. We don't want to waste people's

time waiting for a cart that's been hi-jacked for the day or is out for repair. Please be considerate of your fellow users and thank you for your cooperation. Also, please note that the golf cart battery should not be charged until it is at the low charge range. Plugging it in at the full charge range shortens the \$600 battery life.

**New Volunteers**

The following are the new volunteers at PIMA since the last Contrails.

Name	Duty Code
<b>Bas</b>	<b>RS</b>
<b>Sally Moon</b>	<b>RS</b>
<b>Cliff Schroeder</b>	<b>EX</b>
<b>Dale Sprotbery</b>	<b>TR</b>
<b>Ken Wise</b>	<b>RS</b>
<b>Matthew Wise</b>	<b>RS</b>
<b>Jim Zimmerman</b>	<b>RS</b>

**Welcome aboard and thanks for volunteering!!!**

**Visitor Counts**

Nov 2007 = 12,176	Nov 2006 = 12,262
Dec 2007 = 12,004	Dec 2006 = 12,064
Jan 2008 = 13,730	Jan 2007 = 13,430

Cumulative Total = 3,861,652

**PASM Calendar:**

- March 1<sup>st</sup> British Car Show H4 9a.m. to 4p.m.
- March 12<sup>th</sup> All Hands Stitt 10:00 a.m.
- March 23 Easter Bunny fly-in
- March 31<sup>st</sup> Team Leader Meeting
- April 9<sup>th</sup> All Hands
- April 27<sup>th</sup> Special Veterans Event with possible 600 vets doing AMARG & TRAM tours – volunteers needed – all hands on deck
- April 28<sup>th</sup> Team Leader Meeting
- May 14<sup>th</sup> All Hands
- May 19<sup>th</sup> – note change to week before last Monday of the month- Team Leader Meeting

**Milestones:**

**250 Hours**

**Bob Dundas, Ed Duthweiler  
John McDonald, Ken Hollett  
Pat Shumway, Tom Rehm**

**500 Hours**

**Bill Newton, Dale Sprotbery  
Lyle Moore**

**750 Hours**

**Brigitte Howells**

**1000 Hours**

**Bill Stickel, Noreen Frizelle  
Shel Coudray**

**1500 Hours**

**Denny Detherage, Les Powell**

**2000 Hours**

**Bob Helmers, Fred Hudson**

**3000 Hours**

**Mary Ellen Conrado**

**4000 Hours**

**Joe Pacholec**

**THANK YOU TO THE GREETERS**

By Bill McGuire (Team Leader)

Braving the cold weather (with no shelter available) our greeters at the front entrance helped AMARG set new records for the past months and also helped set new records in 2007 and in January of 2008. They also helped boost Tram attendance to new heights. Kudos to Noreen Frizelle, Dick Flam and Pat Johnson on Mondays, George Hackstead, Bob Jones, Randy Hannon and Felice Rolfes on Tuesdays, Frank King, Dick Casey and Pat Johnson on Wednesdays, John Keagle, Howard Fox and Ron Furry on Thursdays, General Lee Vensel, John Keagle, Bob Weber and Mac McFadden on Fridays and part timer Al Frizelle.

**My sincere thanks to you ALL!!**

**AMARG REPORT**

By Bill McGuire

The AMARG team is intact with three docents each day with two back-up docents, Keith Connolly and John Moffitt. All AMARG docents have been re-certified during the months of November and December under the leadership of team leader Tom Bohan and assistant team leaders Tom Howard and Bill McGuire and the wonderful backing of Brook Sklenar. With the help of the greeters and Admissions personnel, AMARG has set new records for attendance. In January, 2008 AMARG had 501 more "riders" than in Jan 2007 and of this we are proud. Our docents are as follows. Al Frizelle, Al Mosher and Bob Ratledge on Mondays, Wayne Butler, Denny Detherage and Ken Hollett on Tuesdays, Tom Howard, Ed Grant and Harvey Diesner on Wednesdays, Tom Bohan, Chuck Osborn and Bob Robuck on Thursdays, Frank Davidson, John Miller and Bill McGuire on Fridays. The team also handled many AMARG "specials" during the past year which brought in much revenue to the Foundation.

**Kudos to AMARG!!**

**A PASM Perquisite**

By Rick Felker

One of the benefits of volunteering at our Museum is the opportunities there for us to keep learning more about the history of flight. Your Docent Lending Library, in the north end of the red trailer, was established by our fellow volunteers just so we could add to the knowledge we pass on to our visitors. There you'll find printed catalogs of over 265 books and selected periodicals on its shelves. Another lists some 60 DVDs and videotapes of the unique Volunteer Presentation Series talks. Still another lists nearly 100 tapes and DVDs you can even view on the player in the room if you want to see one before or after your shift. Recent DVD additions include *The Wright Stuff*, *The Berlin Airlift*, *Jimmy Doolittle*, *The Shackleton Bomber*, and the popular History Channel series *Dogfights*.

To make the most of our browse-and-borrow treasury, we ask that you (1) Check out only one item at a time, placing the card with your name on it in the box for them, and (2) Bring it back in two weeks to the book return box for reshelving, since others are waiting. Many volunteers want to help by donating books and tapes from home; however, space limitations make it difficult to accommodate everyone's spring cleaning efforts! Many books "dumped" in the Library are either (1) Too out of date when intended to describe "current" technology, (2) On subjects already well covered by existing assets, (3) About too narrow a subject to be of use to the larger volunteer readership, or simply (4) Not good enough to justify removing a book already on the shelf to make room for it.

So if you are thinking of leaving an item for us, please call me first at 885-0842, or email rickfelker@aol.com, and let's talk it over. And if you happen to have a couple of six-foot-by-three-foot shelves you want to get rid of, let us know! But most of all, take advantage of the resources there, including background information binders full of fact sheets, selected articles, and a wealth of info on the fascinating subject of flight—it's all there waiting just for you.

**Book Review by Ed Sanford**  
Into The Teeth of The Tiger,

by Donald Lopez, Smithsonian Books.

I checked out a book from the Ruby Lounge North Library by Don Lopez entitled 'Fighter Pilot's Heaven'. It was about his experiences flying at Eglin AFB testing aircraft weapons systems. Loved the book, and the author's writing style, so I bought his other book, written about his experiences as a member of the 23<sup>rd</sup> Fighter Group, 14<sup>th</sup> Air Force, in China, 1943-44. That unit had been formed from the residue of the American Volunteer Group (AVG), otherwise known as the Flying Tigers.

The book covers Lopez' life from earliest memories of seeing Lucky Lindy at a parade in

Brooklyn to his reassignment to Eglin. He enlisted in 1942 and went to flying training, getting into fighters. After additional training, he was shipped to China to join the 23<sup>rd</sup> and begin his operational career. The book is written in the first person and relates personal experiences, as well as the larger picture of conflict among USAAC leaders and the political issues between Chiang Kai-chek and Mao Tse-Tung.

He was impressed by most of his commanders. They rotated in and out, getting their tickets punched. But one wasn't so well received. He would fly missions, but usually found something wrong with his plane and would have to return to base. It was a sore point among the pilots, and there was some general dislike and distrust of their new commander. Finally, the commander called all the pilots together and angrily asked one of them if it was true that that pilot had been telling new replacements that he, the commander, was a coward who was afraid of combat. That pilot replied 'No Sir. I don't know how they found that out.' The assembled pilots had to work HARD to stifle giggles, and the commander was reassigned within a couple of days. This is the level on which the book is written.

It's a great book. PASM volunteers will get a lot of understanding about that particular Area of Operation during WWII. I have loaned it to the North Library.

**Ed Sanford**

## **Joseph Szydlowski, The Founder of Turbomeca**

by: Joe Pacholec

Although not as well known as some of the early inventors of the gas turbine engine, Joseph Szydlowski had a major impact on the industry. He was the founder of the French company Turbomeca which manufactures low and medium power gas turbine turboshaft engines for helicopters, turbojet engines for aircraft and missiles, as well as turbines for land, industrial and marine applications. In the year 2006 the company generated revenues of 870 million Euro dollars and had 5,178 employees.

He was born Nov 21, 1896 to a Jewish family living in Chelm Poland which was part of Russia at that time. Little is known about his formal education, but he was well trained technically and was knowledgeable about drawings, machining, and electricity. He was mobilized into the Russian army from 1914-1918 and became a prisoner of the Germans. He found himself in East Prussia during the Russian revolution. He stayed there, got married to a German woman, Ida Konopatzki, and had two daughters, Sonia and Dorothy, who were born in Germany.

In 1920, he began a career in Germany where his only title "Polish Engineer" gave no indication of his schooling. His first patents were filed in 1920. He worked as counsel at Krupp (trucks), and Junkers (planes-engines-compressors). His interest in gas turbine engines started in 1927 because of a belief that the use of diesel power in airplanes would reduce the number of accidents experienced in gasoline powered aircraft. He went to work on development of a two-cycle diesel type engine which involved use of a high-efficiency rotary compressor, not then available. The result was a compressor unit far superior to anything previously built. In 1928, at the invitation of the French Air Force, he moved to France where he continued his work with the backing of the Air Ministry. Although the diesel engine program was cancelled, by 1936 he had produced the S39 boost compressor with variable

air circulation which was commissioned for use in the Hispano-Suiza 12Y aircraft engine powering the Dewoitine 520.

In 1938, he founded Turbomeca in Paris with the purpose of exploiting his patents on variable flow compressors. With the declaration of war in Sept 1939, large orders of compressors for fighter aircraft resulted in him setting up his factory in Mezieres sur Siene, a suburb of Paris. In 1940, he had to flee the German invasion and settled in the southern free areas, near the Pyrenees mountains, first at St. Pe de Bigorre, and then in 1942, with 150 employees, at Bordes which is still the headquarters of the business. In Nov 1942, with the Germans taking over the southern parts of France, he was forced to flee into Switzerland. In Sept 1944, he returned to Bordes to help out in the post war recovery of France.

After the war, even though Turbomeca continued to manufacture compressors, Joseph Szydlowski understood that the era of the aviation piston engine was over and decided to devote all the resources of the company to develop gas turbine engines. In 1946, an agreement was reached with the French Ministry that Turbomeca would concentrate on small to medium sized gas turbines and that Snecma would retain a monopoly on large. The first turbojet, Pimene was sized at about 160 lbs. of thrust. All Turbomeca engines are named after mountains in the Pyrenees. A number of gas turbines were developed for various applications, Oredon, Pallas, Artouste, Turmo, but in the early 1950's, two programs were responsible for the future growth of the company. The Marbore turbojet engine (880 lbs thrust) for the Fouga C.M. 170 Magister trainer and the Artouste II turboshaft engine (280 shaft hp.) for the Alouette II helicopter. In June 1955, an Alouette II helicopter powered by an Artouste II engine established an altitude record of 26, 932 ft. and in June 1958, a similar helicopter powered by a more powerful Astazou engine achieved 36,037 ft. In 1972, an Alouette SA 315-001 Lama helicopter powered by an Artouste IIIB engine set the absolute record of 40,820 ft. which still stands today. The F-1 Pilatus BJSZ became the first

aircraft to be powered by a turboprop engine, the Astazou II, which enabled Altiports to be established at the high altitude ski resorts of Maribel and Courcheval in Switzerland.

Many turboshaft and turbojet projects followed including joint efforts with Rolls-Royce and Snecma. Szydlowski realized the need for development of future products and he poured substantial amounts of revenue into research and development. He was a highly respected man by his employees. He was described as a colorful character, allergic to major speeches, and had a way of turning deaf when he had made up his mind. His villa was included in its factory: he lived in the midst of its staff and workshop. He surrounded himself with men of value and was still "The Boss" well into the 1980's.

Shortly before his death in 1988, Szydlowski realized that his company could no longer remain family owned and an agreement was made to merge the company with the Labinal group. A holding company, Sopatec, was set up under the control of the family with ownership of 49.1% of Labinal. He died in Israel, the land of his ancestors; however he had unwavering loyalty and love for his adopted country of France.

Turbomeca is now part of the SAFRAN Group. Including its joint programs with other manufacturers, Turbomeca is today the leading helicopter engine manufacturer on the international market. The company also develops and markets turbojet engines for aircraft and has two subsidiaries: Microturbo, a specialist in turbine engines for missiles and CGTM, dedicated to flight testing and maintenance. Turbomeca has sold 50,000 engines of their own design which have accumulated 88 million operating hours. There are currently 15,200 engines in operation, with 2,200 customers in 150 countries.

Ref: (1) Joseph Szydlowski-Wikipedia, the free encyclopedia; (2) Biography on the website of Musee Aeronautique et Spatial de Group Safran; (3) Translated article from [www.stratisc.org/moteurs\\_20.htm](http://www.stratisc.org/moteurs_20.htm) by Jean Bernard Cochetaux,

Director General of Turbomeca

PS. Look for a future article that will describe what influence Joseph Szydlowski had on my life.

## "The Inner Solar System"

By Earl Larsen

Hello again from space! The inner solar system is comprised of the four planets closest to the sun, Mercury, Venus, Earth, and Mars.

I will present a brief overview of some highlights of each planet, its atmosphere, what, if any, water may be present, the topography, and then a glance to the future, what spacecraft, probes, or landers have been programmed. When you visit our solar system exhibit in the Space Gallery, take particular note of the color images accompanying each planet display, the photos and artists' conceptual drawings provided by NASA are quite spectacular, and provide a vivid account of the unique aspects of each planet.

**Mercury.** No atmosphere, no signs of liquid water. Water ice craters are located at the poles. A gravitational field is barely existent. When elements do collide they ricochet into space.

### Future Exploration:

The NASA "Messenger" spacecraft should arrive at the planet in 2011. Its purpose is to: a.) Map the planet, b.) Determine the size and shape of its core, and c.) Locate and identify water, hopefully!

The ESA "BEPI - Columbo" spacecraft is to launch in 2011/12. It will complement the "Messenger" mission and will observe the planet with different instruments.

**Venus.** "Earth's twin". The atmosphere is very dry, water, nearly non-existent, no oceans, and it is covered with volcanoes and large impact craters. Several soviet "Venera" landers experienced a lifespan less than one hour due to the very hostile surface temperature of 480 degrees C and a pressure 90 times that of earth.

Future Exploration: The Hubble Space Telescope will continue to take photos.

**Earth.** The basic premise, "Wherever there is liquid water on earth, there is life". And where did our water come from: a.) Ice from a solar disc that collided with earth, b.) Volcanic eruptions as earth cooled, venting water vapor into the forming atmosphere, or c.) Comets impacting earth releasing water. Our third planet from the sun is generally a very pleasant environment for sustaining and perpetuating life, it has water, a breathable atmosphere, and resources with which to improve our existence, at least for now!!

Future Exploration: Though we don't associate this term with spacecraft or landers arriving at our planet, we do currently have an international priority to investigate and try to find a solution for the looming "greenhouse effect".

**Mars.** The red planet often associated with the Greek god of war. Its two small moons, Phobos and Deimos, "fear" and "terror", the sons of the Greek god. It has been the subject of much study for centuries. A virtual fleet of orbiters, landers, and rovers have compiled evidence of water on the planet. Water ice has been seen but as of yet, no water. The Mars Exploration Rovers (MERs), "Spirit" and "Opportunity" have photographed much of the surface for close to four years, a most commendable accomplishment considering that the two MERs were projected to be operational for ninety days. Mars has no oceans, polar ice caps are made of frozen water and carbon dioxide, there are large areas of permafrost, and the atmosphere is less than one one-hundredth as dense as earth and is made up of approximately 96% carbon dioxide with only traces of oxygen.

Future Exploration: The Phoenix Mars Mission, based at the University of Arizona and launched in mid-2007, is a resurrection of the earlier Mars Polar Lander and Mars Surveyor Lander missions which were never completed. The Phoenix Mars Lander is scheduled to land in the northern polar region of the planet in May, 2008 and is programmed to scrape up ice-rich soil for analysis by the Lander's instruments. The

primary purpose of this excavation is to validate the existence of water on Mars and to determine the possible existence of previous life. The history of this ice will be studied throughout the three-month long Phoenix mission and should reveal much to scientists, possibly paving the way for future manned missions to the planet.

Look for our article on the outer solar system in the next issue of Contrails.

A brief history of a remarkable engine,  
the Pratt & Whitney J-57 and civil JT3

By Steve Brown

Pratt & Whitney was a leader of reciprocating engines in design and production during WW II. To maintain a prominent position they realized they needed a bold move to secure a future in jet engines; as Allison, General Electric and Westinghouse were in the lead. Pratt and Whitney secured licenses to build two Rolls Royce engines for the Navy. These were the J-42 and J-48, both of the centrifugal compressor design.

The specifications were drawn up late in 1948 for a new Air Force bomber which became the B-52. A redesign was done in spring 1949 to lighten the engine; the redesign featured a wasp waist look and was 600 lbs lighter. This engine was the first to have a two spool compressor of axial flow design. The two spools could turn at different speeds one being a low pressure compressor, the other a high pressure compressor. The compressors were turned by a concentric shaft and each had its own turbine section. The first run was in January 1950 and was flown in March 1951 suspended from the bomb bay of a B-50. The 150hr test was completed in November 1951. The YB-52 first flight was April 1952; the engine weight was about 4800 lbs and was reduced to 3800 lbs by incorporating titanium compressor components. The initial thrust was 10,000 lbs and later models were 13,500 lbs water injected and up to 18,000 lbs on later engines with afterburner. For this achievement the 1952 Collier

Trophy was awarded to Leonard S. Hobbs of Pratt & Whitney.

With an afterburner, this engine powered the YF-100A on its first flight and went supersonic on the same flight. The date was May 1953 and for this James H. Kindleberger and North American Aviation were awarded the 1953 Collier Trophy along with Ed Heinemann for the Douglas F4D Skyray also powered by a J-57.

A new generation of planes was becoming operational. The Douglas A3D was saved by the J-57 after the failure of the Westinghouse J-40 and became the heaviest carrier attack aircraft. The Collier Trophy for 1955 went to William Allen of Boeing and AF Chief of Staff Nathaniel Twining for the B-52.

Ford in Chicago became a second source for J-57s due to the very pressing need for this engine. On the commercial side the Boeing 707 first flew in August 1954 and the Tanker KC-135 rolled out July 1956. Douglas was a bit behind and the DC-8 was flown in May 1958. The 707 entered commercial service in October 1958 with an engine TBO of 800 hrs and an engine lighter by 1000 lbs than the early B-52 engines. Between 1951 and 1960 Pratt & Whitney built 15,024 engines and Ford built another 6202.

J-57s were now also powering F-101s, F-102s and the Navy was flying the supersonic F8U for which it and Chance Vought won the 1956 Collier Trophy. An astounding 4 out of 5 years and the J-57 is participating in this prestigious award

A bigger variant is the J-75 and commercially the JT-4 was rated at 17,500 lbs thrust and 26,500 with afterburner. The J-75 was 3" larger in diameter and weight was 5,000 to 6,000 lbs. This version powers the F-105 and F-106. The J-57 flew in early U-2s and the RB-57D, later U-2s have the J-75.

The Turbofan version, is the military TF-33 for B-52H and C-141 and some later 707s as the Civil JT3D as well as later DC-8s.

The next spinoff was a down sized JT8/J52. The Navy engine went in later A-4s and the A-6. The civil JT8 never found an application but as a turbofan it was a huge success as the JT8D. Over 12,000 engines were built for Boeing 727, early 737s and DC-9s and MD-80 series.

The J-57 was a mainstay through most of the Cold War. The civil engines pioneered commercial aviation as most of us know it. The success of these programs built Pratt & Whitney. It's hard to find a single engine that led to so much success.

## MEET YOUR PASM VOLUNTEERS



George Moore

Born on November 15th, 1934 in Shelton, Washington and graduated from high school in 1953.

Joined the Navy in 1953 and attended several aviation tech schools as an aircraft mechanic. He was assigned to Glenview, Illinois, N.A.S. until discharge in October 1955 as AD3.

George returned to Shelton, Washington and purchased his father's auto parts and machine shop. Later he bought commercial and residential rental property in Shelton and was the property manager for twenty years. In 1974, semi-retired George decided to try his hand at various other interests; he sold real estate and was a loan officer in the local credit union. George also drove a school bus for five years (tough job!), but his greatest pleasure was flying.

George learned to fly at Norman, Oklahoma and was licensed as a commercial pilot, land and sea, multi engine and instruments. He spent many

hours giving flight instruction and flew charter flights. George flew over forty types of civil aircraft, including new aircraft from the factory in Vero Beach, Florida to Portland, Oregon. He owned a Cessna 175 and a Beach Bonanza and survived over four thousand flying hours. The day that Mt. St. Helen's erupted he flew the local radio/TV station personnel to view the volcano and for several months flew people from all over the world to see the crater.

His volunteer work at P.A.S.M began in November, 2000 on the V.I.P circle. At present he enjoys Friday's in Hanger 4.

George married Brenda in 1992 and they have four children between them and several grandchildren and great-grandchildren. George and Brenda relocated from Washington State to live in Tucson Estates in 1998 after many winters being snowbirds. They both still enjoy the RV life and traveling and George misses flying.

### **Last Flight**

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

### **Gene Wright**

Born in West Virginia in 1931, passed on 11 Jan 08. Gene earned a Bachelors degree in Agriculture from West Virginia University in 1953. He moved to Arizona in 1956 and earned a Masters Degree in Agriculture from the U of A in 1958. He stayed at the U of A in Agriculture for the next 30 years.

After retiring from the U of A he began volunteering at PASM. He started out as a Tram driver and wound up in the Exhibits department until May of 2004 contributing a total of 1647.5 hours

### **Ted Memmel**

Born in July of 1934, passed in Feb 08. Ted and his wife Pat made their home in Helenville, Wisconsin and spent winters in Arizona.

Ted was a sheet metal specialist and worked in Restoration, beginning March 1999. When it became necessary to quit volunteering Ted donated all of his tools to the museum He contributed a total of 4053.5, working on many projects.



**Do you recognize this airplane?  
It is the latest acquisition .**



**PASM Billboard on I-10 North ,  
South of Wilcox AZ.**