



# UN-SCRAMBLE



The Official Newsletter of the Valiant Air Command, Inc.  
6600 Tico Road, Titusville, FL 32780 - (321) 268-1941  
website: <http://www.valiantaircommand.com>  
email: [warbirds@valiantaircommand.com](mailto:warbirds@valiantaircommand.com)

## 2nd Quarter Review - April, May and June 2017

Framed, Autographed Thunderbird Lithographs Are Presented:



### Exceptional AirShow volunteer

l to r: Bob Boswell, VAC PR Officer  
Joe Cross, AirShow Field Supervisor



### Community Support

l to r: Bob Boswell, VAC PR Officer  
Walt Johnson, Titusville Mayor



l to r: Scott Larese, Titusville City Mgr  
Bob Boswell, VAC Public Relations



This beautifully restored Albatross visited the VAC Warbird Air Museum recently

MUSEUM AND GIFT SHOP - OPEN 7 DAYS A WEEK - 9AM TO 5PM

Closed Thanksgiving, Christmas and New Year's Day

Adults \$20.00 - Senior or Military \$18.00 - Students 13 to 18 years old \$10.00

Children 5 to 12 years old \$5.00 - Children under 5 years old FREE - Special Group Tour Rates Available

### Statement of Purpose

*The Valiant Air Command was formed to perpetuate the history of aviation, to encourage gathering of men and women in camaraderie, research and Warbird restoration, to serve as an educational tool for young and old alike; and to assure that the memory of those who gave their lives in service to their country shall not perish.*

501 (c) (3) Non-Profit Organization Museum Recognized by the Internal Revenue Service

## Future Events • 3rd Quarter • 2017

July 4	C-47 to drop Surfing Skydivers at Cocoa Beach	August 15	Board of Director's Meeting 12 Noon
July 8	Warbird Museum Fly-in Breakfast 8-10:30 am	Sept 4	Labor Day
July 18	Board of Director's Meeting 12 Noon	Sept 9	Warbird Museum Fly-in Breakfast 8-10:30 am
August 6	72 years ago Enola Gay dropped Atomic Bomb	Sept 19	Board of Director's Meeting 12 Noon
August 14	Anniversary of V-J Day 72 years ago	Check the VAC website for late breaking dates & cancellations	
August 12	Warbird Museum Fly-in Breakfast 8-10:30 am	<a href="http://www.valiantaircommand.com">http://www.valiantaircommand.com</a>	



### Commander's Report

*Norm Daniels, Commander*  
 Email: [Commander@valiantaircommand.com](mailto:Commander@valiantaircommand.com)  
 (321) 268-1941 ext. 4101

So far, this year even with a hot early summer and a late rainy season, we received visitors from around the world in increasing numbers and increased numbers of visitors from in and out of state. Word of mouth, as well as increased advertising, has made a difference. Additionally, almost 100% of our members have renewed their membership and we have many new members.

Heads up, mark your calendar. Our 2018 Airshow will be April 6,7,8. Look on our website in the very near future for advance price ticketing. A dramatic night show on Friday 4/6 is scheduled.

More good news. On June 1 this year your warbird museum was awarded the 2017 Best of Titusville Award in the Museums Category. We have stiff competition in our geographical area. "Recognition is given to those companies that have shown the ability to use best practices and implemented programs to generate competitive advantages and long-term value". Much credit for our success is due to our tour guides providing not only facts and figures about our stable of aircraft but the stories that go with them.

Speaking of aircraft, we recently took possession of a French designed Fouga Magister twin-jet trainer now assembled and in our restoration hangar to prepare it

for repainting in the same Israeli camouflage colors. The Israelis used the Fouga Magisters in the 6-day war in 1957 as a close ground attack aircraft responsible for destroying a reported 50 tanks. Once completed it will become one of the aircraft visitors can enter for photo opportunities.

Organization changes have occurred as follows: Charlie Hammer has stepped down as Maintenance Officer to devote his time as lead mechanic for our flying aircraft. To replace Charlie, Marvin Juhl has been elected by the Board as Maintenance Officer. Marvin retired from the USAF with over 27 years of service and was Director of Maintenance with AirScan and Director of Maintenance with Discovery Air Charter. He holds an A&P license since 1992 and is a Pilot with single and multi-engine ratings.

In recognition of Bob Boswell's contributions to the VAC and his skill sets the Board elected Bob to serve as Executive Officer replacing Karl Holly who resigned that position. Bob will also be the Air Show Chairman for our 2018 Air Show.

We are interviewing candidates for the open slots of Public Relations Officer and Flight Operations Officer, the positions previously held by Bob Boswell and Mark Adema respectively.

As always please avail

yourself of the merchandise in our PX. The PX staff has brought in new merchandise. Anita, Lorraine, Louise, and Rich are ready to serve you.

We are always seeking funds from sponsors and members to support the VAC and the annual Air Show. To that end, we also submit grants. Almost all grants require a STEM program to be in place (Science, Technology, Engineering, and Math) to receive a high score upon grading. A group of our Tour Guides are preparing a Youth Centered Aviation Education Program that the VAC can use to encourage young people's participation. More information is coming as the program is developed.



The Official Newsletter of the Valiant Air Command

#### The Un-Scramble Team

*Phyllis Lienthal, Editor*  
*Lynn Foraker - Lorraine Juhl - Louise Klebu*

- 1st Quarter - Jan, Feb & Mar
- Submission deadline - Mar 25th NL Published - April 1st
- 2nd Quarter - April, May & June
- Submission deadline - June 25th NL Published - June 30th
- 3rd Quarter - July, Aug & Sept
- Submission deadline - Sept 25th NL Published - Sept 30th
- 4th Quarter - Oct, Nov & Dec
- Submission deadline Dec 24th NL Published - Dec 31st

Please note:

Items submitted after the submission deadline will not be published or will be published the next month if applicable. The Editor reserves the right to not publish submitted items.



# Facilities Officer's Report

Tom Etter, Facilities Officer  
Email: [FacilitiesDirector@valiantaircommand.com](mailto:FacilitiesDirector@valiantaircommand.com)  
(321) 268-1941 ext. 4105

Much time was spent recovering from the Air Show as to the placement of aircraft, supporting C-47 operations, and repairing various items in and around the V.A.C. such as roof leaks, equipment, lighting, and plumbing.

What's happening in and around the facilities:

1. The Airport has loaned us their big tug and man-lift.
2. The Big V.A.C. Fork Lift is on loan to Area 51.
3. Our crane decided to spray hydraulic fluid everywhere while doing a lift operation for the F-100. Charlie Hammer saved the day when he got the dropping hook and boom off the F-100 and out the door as the crane was taking its last gasp. No dents!
4. We have a TA-4 and a Piper Meridian as rental guests until they leave.
5. Richard Jones hosted the Miata Club and the Docents did a great job showing them around.

The Facility crew worked or is working on the following:

1. We re-purposed Lester's Shed (AKA Lesterville) into a Motor Pool.
2. The L-13 was moved and is now on display in the Vietnam Hangar until room can be found in Restoration.
3. We parked some of the C-123 support equipment in the Vietnam Hangar.
4. We supported the Hawk Anniversary Event with 100 people using two hangars, the Zena Hendrick's Event and the QB BBQ.
5. For a while, we had all 4 golf carts down but Joel repaired two of them...the other two need batteries.
6. It took 3 trips but we now have a Fouga jet and it is mostly together. Norm and Andy are currently working on it with help from others.
7. F-100 wings were attached with C-47 crew help.
8. Terry Nies and crew were able to figure out how to close the F-14 canopy after opening it for an event.
9. The June rains have started and we have Main Hangar leaks; two old ones were fixed and now we have two new ones. We have a signed contract to repair the main roof as soon as the rain quits. The Lower Main Hangar roof was repaired a few months ago.
10. We were able to get rid of many of the old drums containing contaminated hydrocarbons that had accumulated over the years.
11. Tom Riley came down and taught the C-47 crew how to fix a stuck feathered prop. Jim Towe fixed it and Chris Bohann inspected the work. Many thanks for their response.
12. A list of 'To Do' steps in closing the V.A.C. at night has been made and are in the Docent's Manual if anyone has to close the museum up.
13. We fixed the Florida flag pole using the borrowed man-lift.
14. Joel and Roger built a movable wall from scavenged material as a prototype should we wish to make more walls to screen off any unsightly areas. Charlie Hammer cleaned up the mess in the Main Hangar that the wall was built for; there are more spots to be done (tables and chairs stored behind UH-1 for one).

We miss our Northern Volunteers (Snowbirds) and appreciate all the help they give us when they are here.

*"To Honor the Past, Educate the Future and Preserve Our Heritage"*



## Finance Officer's Report

Tracy Bohrmann, Officer  
Email: FinanceDirector@valiantaircommand.com  
(321) 268-1941

I know it is only July, but we are starting up plans for the AirShow for 2018. As always, the AirShow depends on volunteers and donations, and we sure could use your help. Please look for future requests coming soon for volunteer positions. As Personnel Director Richard Jones will be spearheading the volunteer coordination, so let him know as soon as possible if you can be available and if so, where you would prefer to work. Please see Richard for details.

A big thank you to all who helped move the Fouga Magister from Kissimmee to the VAC over two separate days! We now have this aircraft here at the Restoration Hangar awaiting refurbishment and painting before going on display.

As always, the VAC runs on member volunteering and donations, and a big thank you goes out to everyone who contributes to making the VAC successful. As a reminder, if you donate money by check, and wish the funds to go to a specific project, be sure to write that in the subject line of the check so I know to add the funds to that project.



## Procurement Officer's Report

Robert Frazier, Procurement Officer  
Email: ProcurementOfficer@valiantaircommand.com  
(321) 268-1941 ext. 4106

The aeronautical world continues to provide new interests and support for the Valiant Air Command Warbird Museum.

The recent member donation of a fully operational motor home can now expand VAC activities at county and state fairs as well as air shows.

The acquisition of the C-123 Provider will add to the number of display aircraft at the Museum. Meanwhile, the B-52 forward fuselage and the F-100 Super Sabre make their way through the restoration process.

Additional donations of aircraft auxiliary equipment, uniforms and historic memorabilia continue to provide for museum displays.

The Fouga CM.170 Magister, a 1950s French two-seat, twin engine jet trainer arrived at VAC on May 6.



Sixteen volunteers made the journey to Kissimmee - Gateway Airport Saturday, April 30th and May 6th, 2017, to retrieve a CM.170 Fouga Magister jet fighter/trainer aircraft that was donated to the museum. The aircraft had been sitting static for a few years; at the time of placement in Kissimmee, it was actually a flyable airframe.

Of the 16 volunteers, we had four museum Officers in the fray. All those wonderful volunteers looked like ants moving around the plane as everyone did their part.

The Officers of the Valiant Air Command would like to thank all the volunteers that came out to help.

More detail on the history of this little fighter will follow as we get her back together and on static display in our museum.

### June 10, 2017 Fly-in Breakfast



VAC Fly-in Breakfast Volunteers: left to right. Barb Rathbone, Patti Champion, Charlene Page, Violet Rice, Lorraine Juhl.



Chef Matt from DIYM Catering (Delicious In Your Mouth) flips an omelette. Not only do you get a great breakfast, you also get a show.



## Personnel Officer's Report

Richard Jones, Personnel Officer  
Email: Richard.Jones@valiantaircommand.com  
(321) 268-1941 ext.4100

Hello to all the members, volunteers and fans. Firstly, I would like to thank the BOD for the opportunity to serve this Organization as the Personnel Officer. I hope to gain your confidence and support moving forward with a common goal to look after the Valiant Air Command and it's long term goals and objectives.

Quick review of what we have had going here:

1. Volunteer database: With the data we gained by the 2017 AirShow, we have about an 85% rate of known positions for Staffing and who worked the positions this year. Unfortunately, I fear the late dates for our 2018 AirShow will cause us some significant staffing problems, since a lot of our volunteers are snowbirds and they will have either already gone home or in the process of going home. I guess we will see how it rolls out next year. We need to get a hold on those positions that had no "Point Of Contact" personnel, to better serve the volunteers of the 2018 show.

2. Volunteer Timekeeping: The Volgistics Database has been successfully used for the last year with the Tour Guides and BOD and several other volunteers' services. I am moving forward with getting the Restoration Group involved with logging in and out, as the rest of the staff does. I am in need of a few used iPads or touch screen tablets for use around the facilities for ease of login and out. Every volunteer hour we record helps

us apply for grants to continue our mission here of preserving and restoring these beautiful and historic aircraft.

3. Membership Database: The Membership Database has been working the last year with fewer complaints than I heard to start with. We cleaned up some of the structure of it and added some functionality. I will continue to work with staff to clean up and remove stale records and information so we can continue to use this database for member information and contact.

4. PX Inventory and Register Application: We successfully implemented and "OJT" tested the second remote cash register concept at Sun-N-Fun 2017, it was a huge success for being first time users and new equipment setup. My compliments to the Tico Belle Crew for pulling that off effortlessly. I have been working for weeks now with the PX inventory and staff to clean up and slim line that overgrown and out of control process. We are currently cleaning up items that have "0" and negative quantities with live inventory checks until we can stabilize that process.

5. Technology Hardware: Obviously, we have come a long way technology-wise in this organization the last two years. We have implemented "Enterprise Class" network connectivity, wired and wireless to all three hangars; we have PCs on all the desks. We have a new VOIP phone system that users are beginning to get the

hang of in daily use. Correcting the Alarm Systems, Fire, Burglar, and are getting ready to go live with that product, further restricting the unauthorized access to the facility. We have re-keyed the entire facility to further secure our treasures.

A successful leader is only as good as the staff he has working with him. Personally, I have had a very successful and dedicated group of people working with me to accomplish all we've gotten done. Thank you to all that staff and I look forward to working with each and every one of you as your Personnel Officer as we and move forward in making our organization all it can be and then some.

Would you like to be part of the volunteer restoration crew or how about becoming a Tour Guide? Fill out an application on our website or stop at the Gift Shop and get an application.



A Thank You For Your Service plaque was presented to Genie Owens for her many years as VAC Office Manager. Genie came to the VAC in 2009 and moved out of the area this past month. Genie's husband, Jim Owens looks on.



## Public Relations Officer's Report

Bob Boswell, Public Relations Officer  
Email: [PublicRelations@valiantaircommand.com](mailto:PublicRelations@valiantaircommand.com)  
(321) 268-1941 ext. 4104

A special thanks to all the members and volunteers who provided feedback at our 2017 Warbird AirShow Debrief Meeting. The greatest concern was about the traffic gridlock on Saturday as the crowd all tried to leave at the same time after the Thunderbird Performance. We had a maximum crowd on Saturday because afternoon showers were forecast for Sunday. This maximum crowd also caused some vendors as well as some of our chalets to run short of food and beverage. We are already working on these major issues. Feedback from all sources on all issues will be considered to help make our next Warbird AirShow better.

We will continue with the Fly-In Breakfast at the Museum on the second Saturday of each month. Members do not have to fly-in to eat; drive or bike in and just pay for the breakfast. Non-members must pay for the daily museum admission; however, they eat for free when they pay the full price. The next Fly-In Breakfast will be Saturday, 8 July. I am requesting that we do not park cars and other equipment on the ramp west of the main hangar on fly-in mornings.

Plans are underway for the Space Coast Warbird AirShow 2018, 6-8 April. Yes, there has been a slight name change to better establish the geographical location of the show and further promote our area to out of town visitors. For this event, we will be recognizing those who served in the Pacific Theater. Friday will be a late afternoon and Twilight/

Night show with the gates open to the public around Noon. A grand fireworks display will end the show on Friday night around 7:15 pm. Saturday and Sunday will be a day show only with the gates opening to the public at 08:30 am and the show will end at 4:30 pm. Media Day will be on Thursday, April 5th. We are in the process of contacting member crewmembers and other performers to build the show. The Sky Soldiers Demonstration Team from the Army Aviation Heritage Foundation will be here and will offer flights in the UH-1 Huey and



the AH-1 Cobra Helicopter and we will have several fixed wing aircraft also offering flights.

The kickoff meeting for Space Coast Warbird AirShow 2018 will be held at the VAC Library at Noon on Saturday, September 16th. This initial organizational meeting is very important as the primary Team Leaders, Key Workers and their areas of responsibility will be established. Lunch will be provided.

As always, we are looking for volunteer support. If you are interested in working one or more days please go to our VAC website and sign-up, indicating your area of interest and availability. Advance Warbird AirShow online tickets will be offered shortly at a deep

discount.

In June and July, the Museum is hosting three film crews. The most notable is a TV station from the UK that is filming a series called Wings of War. They are visiting many locations in the USA this summer and will be filming at our museum on 3-4 July.

November 9th, the museum will host the Senior Boomer Festival. This all-day event is open to the public at no cost and will provide a large number of display tables and booths featuring numerous businesses in the local area.

The annual Veterans Day Weekend Open House will be held at the Museum Saturday and Sunday 11 & 12 November. This event is free to all Florida residents and all Military Active or Retired. The Radio Control Airplane Club will be there as will the Model Building Club. Several Train Clubs will have their train displays running. The Petting Zoo and Pony Rides will be there along with Jungle Adventures. Several of the local car clubs will be there. Food vendors will be there and the museum will have its food concession with hamburgers, hotdogs and other food and drink available for purchase at a nominal cost. Please join us as we honor our Military Veterans, thanking them for the service they provided.

Throughout the year the VAC is very busy working to acquire additional aircraft and artifacts for display. The Gift Shop continues to diversify, adding new aviation related items each month. If you have not been to the museum recently, you owe it to yourself to stop by. The museum has become a family destination and the perfect place to take your out of town visitors to see.

## Gift Shop News

Anita, Louise, Lorraine, Rich  
Email: VAC-PX@valiantaircommand.com  
(321) 268-1941 ext. 4112

Rain, wind, Hurricanes!!! It must be Summer in Florida. We hope your July 4th is memorable and not because of a hurricane.

Our AirShow tee-shirts are now on sale at 25% off. Get yours before they are all gone, "cause there ain't gonna be no more."

We have backpacks with wheels that are great for your summer vacation or back to school. Consider shopping early for Christmas and put an item or two on lay-away. You'll be taking it easy on your psyche and your wallet by putting your 10% member discount to work; a great time to consider one of our new Bomber Jackets. (Some jackets are still at 50% off.)

Stop in and visit...we are always happy to see you.

Anita, Louise, Lorraine, Rich

## 2017 AirShow T-shirts



## Meet The Gift Shop Crew



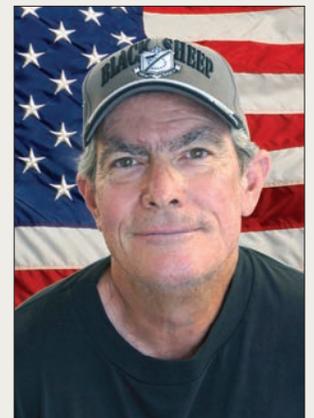
Anita  
Gift Shop Manager



Louise  
Sales Associate



Lorraine  
Sales Associate



Rich  
Inventory Manager

## Curator's Corner

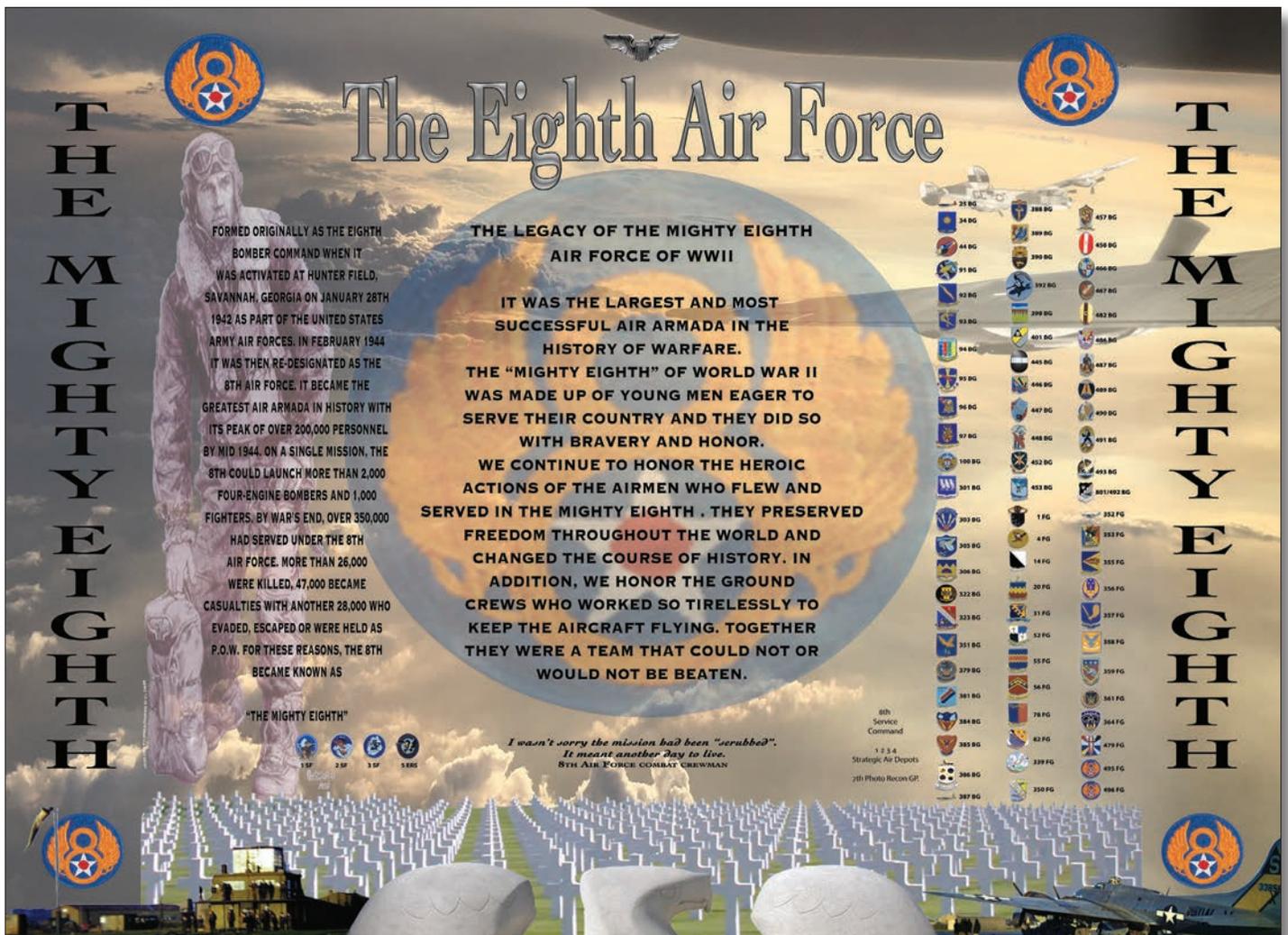
Don Leathers, Curator  
 Email: Don.leathers@valiantaircommand.com  
 (321) 268-1941 ext. 4114

### A dynamic new addition to Memorabilia

The Valiant Air Command will receive a large display backdrop from the 8th Air Force Historical Society in the next thirty days. This exhibit honors those airmen who died in the performance of their duty from 1942 to 1945. Dimensions of the backdrop are 89" high, 90" wide and 24" deep with end caps. This backdrop is "vertically concave" in form. It will touch the

wall in the center and come forward at the end caps. We plan to position the backdrop behind the 8th Air Force Roll of Honor in a new location.

The 8th Air Force Roll of Honor and Backdrop are on loan to the Valiant Air Command Museum for at least one year and can be displayed for as many years as we wish. However, both exhibits are the property of the Eighth Air Force Historical Society and must be returned if this museum no longer desires to display them. I'm sure that the Valiant Air Command Museum will treasure these exhibits for many years to come.



We're on **facebook**

Be sure to  and share!

<https://www.facebook.com/VACwarbirdairshow/>



# F-100 Super Sabre Restoration Progress

*by Marvin Juhl*

After the removal of nose and both main landing gear by means of brute force, the gear along with its related components were cleaned, corrosion removed, primed and painted along with its wheel wells. Greasing the landing gear made installation back into its wheel wells a snap.

The left wing was attached first to the Wing Center Box and set into position below the fuselage. The right wing was moved (by a steady crane operator) into position and secured to the Wing Center Box. There are 144 bolts in securing left and right wings to the Wing Center Box.

With wing assembly on jacks, aligned and set below the fuselage attachment points, wings were jacked up into the fuselage attachment points to be secured only by four large bolts. That's four bolts holding 5000 plus pounds to the fuselage, plus fuel, ordnance

and all the "G" forces put on by the pilot. Love it when a plan comes together.

With the nose and main landing gear wheels and brakes installed, the F-100 was gently lowered to once again rest itself on the landing gear wheels, (that's where the rubber meets the concrete).

The above was a great milestone, but more needs to come. Our next steps: clean up the wing leading edge, rear empennage clean up and prep to receive its tail feathers, installation of speed brake, and the list goes on.

Special Note: I would like to list all the names of the people who put their talents and time in on the F-100 to date. That list is way too long, but do believe everyone in restoration had a part in leaving their fingerprints on her. A BIG THANK YOU to all.

If you or anyone you know would like to get your hands dirty with the rest of us, please contact us through VAC Website or one of the volunteers.



**Wings and wheels are on and the aircraft is off the jacks.**

## *Fairchild C123 Provider acquisition*

*This article contains edited and modified excerpts from the "Memo to the VAC Board of Directors", May 16, 2017 by Dr. F. J. Erik Kramer, VAC Historian.*

The VAC has acquired a C-123 Fairchild Provider and in the near future, the C-123 will be moved to the VAC complex to join the VAC Aircraft Inventory.

The Fairchild C-123 Provider was originally designed as a glider by Chase Aircraft just before the end of World War II but was then re-designed as a propeller-driven transport aircraft. Ultimately the manufacturing contract was awarded to Fairchild Aircraft. Production started in 1954. This transporter was originally equipped with two Pratt & Whitney R-2800 radial engines. Due to increased lift requirement for taking off and landing on dangerous, short, undeveloped airstrips, two J85 turbojets were added; a fairly unique engineering approach that resulted in a much-improved takeoff performance in the steamy hot climate of Southeast

Asia. Most of the storied fleet of CIA masterminded Air America consisted of STOL (Short take-off and landing) aircraft, and the Provider became its mainstay. Short take-off and landing C-123's were badly needed due to the mountainous terrain and hostile conditions in Laos and Vietnam.

It is important to realize that the C-123 Provider, number 54-00674, that is joining the VAC's



collection is a real Vietnam veteran. She is a survivor of operation "Ranch Hand", which was effective in Vietnam from 1962 to 1971. It was an unheralded task, unfolding over nine long and very dangerous years. This mission involved older, unarmed aircraft performing low and slow flights, often straight into enemy fire, to drop chemical herbicides for the defoliation of jungle vegetation so as to deprive

the guerillas coming from Laos and North Vietnam of cover for their clandestine marching and supply routes. One of the many different types of the herbicides used became infamous as "Agent Orange". Even by the standards of the Vietnam War, this strategy was politically sensitive, and political leaders tended to refrain from discussing it.

After Fairchild C-123 Provider 54-00674 served many years with USAF Special Ops (315th SOG), it was retired from Air Force inventory, but during the Reagan era, this aircraft was recruited for more cloak-and-dagger flights: the secretive "Iran-Contra" missions.

During the mid-1990's the aircraft returned to the United States, where it continued to fly with the Pennsylvania Air National Guard. "Provider 674" eventually was fully retired from all duties; as a consequence, she rarely flew anymore and soon fell into disrepair and became neglected.

The Air America Foundation rescued the aircraft from demolition in 2001 and has been restoring and preserving "Provider 674" ever since.



Thirty students and their instructors flew in from the Florida Institute of technology; they arrived in seven planes. Five VAC Tour Guides were on hand to help and answer any questions.

# Fokker Dr.1

*Dr. F. J. Erik Kramer, VAC Historian*

The Fokker Dr.1 Dreidecker (triplane) was a World War I fighter aircraft built in Germany by the factory of Dutch aeronautical pioneer Anthony Fokker. As of spring 1918, the Germans used the Dr.1 as their preferred fighter. Baron Manfred von Richthofen, the legendary German "Ace" pilot, was killed on 21 April 1918 flying the Fokker "Dreidecker" after he scored his last 19 victories. His nickname was the "Red Baron" because he was identified with his favorite aircraft, a red painted Fokker Dr.1.

The worthy opponent of the Dr.1 was the British fighter Sopwith Camel. Although the Camel had only one Vickers machine gun armament, it quickly proved itself superior to the more heavily armed German Albatross fighters, then in use by the German Air Force. In order to respond to the Camel's excellent flying characteristics, Fokker decided to convert an unfinished biplane prototype he had on the drawing board, into the V.4, a small rotary-powered triplane with a steel-tube fuselage and thick cantilever wings, first developed during Antony Fokker's government-mandated collaboration with aircraft designer Hugo Junkers.

When tested the V.4, Fokker discovered that the unbalanced ailerons and elevators required such high control forces, that pilots had difficulties to handle the V.4 in combat.

Fokker did not bother to spend more time on further testing of this prototype but came up with

a revised prototype designated V.5. The most notable modifications were the introduction of horn-balanced ailerons, elevators and longer-span wings. The V.5 also featured interplane struts, which were really not necessary from a structural point of view, but which minimized wing flexing! Fokker received an order for 20 pre-production aircraft on 14 July



1917. The first two aircraft were designated F.1, in accordance with an earlier existing prefix for triplanes. These aircraft could be distinguished from subsequent aircraft by a slight convex curve, and were sent to squadrons 10 and 11 for combat evaluation and arrived in Belgium on 28 August 1917.

Von Richthofen first flew the F.1 in September 1917 and shot down two enemy aircraft in the two next days. On account of these successes, von Richthofen concluded that the F.1 was superior to the British Sopwith Camel and recommended that fighter squadrons should be equipped with the new aircraft as soon as possible. An order was issued to built 100 of the triplanes, followed by an order for 200 in November. The only modification was the addition of wingtip-skids, which

proved necessary because the fighter was tricky to land and prone to ground looping. The Fokker factory began delivery of the now renamed aircraft Dr.1 to squadrons within Richthofen's fighter wing.

While the initial rate of climb was excellent, performance fell short dramatically at higher altitude, because of the low compression of the Oberursel UR.II engine, a clone of the originally assigned Le Rhone 9J rotary engine. As the war continued, a chronic shortage of castor motor oil made rotary operation increasingly difficult. Moreover, the poor quality of the German replacement lubricant (usually considered more expensive and/or of inferior quality to the product it substitutes), resulted in many engine failures. The situation became worse during summer of 1918.

German fighter pilot Baron von Richthofen had become the greatest air ace of WW-1. At the time of his death on 21st April 1918 in France, near Vaux-sur-Somme, Von Richthofen, had shot down no less than 80 enemy aircraft. As such his passing was treated with great respect and he was accorded a full military funeral. His body was recovered by allied personnel from the wreckage of his Fokker Dr.1 near the city of Amiens. His funeral took place at the cemetery at Berangles and was conducted by personnel of the No. 3 Squadron Australian Flying Corps. Six flying officers with the rank of captain, the same rank as Richthofen, served as pallbearers and other ranks from the squadron provided a guard of honor. Numerous memorial wreaths were sent, including

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# Fokker Dr.1

*continued from page 11*

one from 5th Australian Division Headquarters and one from the Royal Air Force. Each wreath bore the German Colors.

After his death, Richthofen's Fokker Triplane was taken apart by souvenir hunters. In 1925 Richthofen's body was recovered and buried in a cemetery in Berlin, but in 1975 exhumed again and reburied in his family's tomb in Wiesbaden. Manfred von Richthofen was known by his pilots as a modest man, who seems to have really disliked all the attention... but went along with all the propaganda for Germany's sake.

The Germans paid the same respect to the American pilot Quentin Roosevelt, son of the American president, who was killed in combat in 1918. Also, this pilot was buried with full military honors.

This profile cannot be concluded before we highlight some important deficiencies of the Fokker Dreidecker.

Compared to the Albatross and Pfalz fighters, the Dr.1 offered exceptional maneuverability. Though ailerons were not very effective, the rudder and elevator controls were light and powerful. However, rapid turns, especially to the right, were made possible by the triplane's marked directional instability. Enemy fighters could be avoided by diving with perfect safety. However, the Dr.1 was considerably slower in level flight and in dive than contemporary allied fighters. While the initial rate of climb was excellent, performance fell off dramatically

at higher altitudes. Furthermore, pilot's view was poor during takeoff and landing. Moreover, the cockpit was cramped and furnished with materials of inferior quality. In addition, the proximity of the gun-butt to the cockpit, combined with inadequate crash padding, left the pilot vulnerable to serious head injury in the event of a hard landing.

A more serious defect of the Dr.1 was catastrophic wing failures. On 29 October 1917 German Squadron commander Gonterman was performing aerobatics when his triplane broke up and he was killed in the crash-landing that followed. Two days later another Dr.1 broke up in level flight. A third Dr.1 successfully landed after suffering a failure of the upper wing leading edge and ribs. On 2 November all other remaining triplanes were grounded pending an inquiry. Inspection of wrecked aircraft showed that poor construction and lack of waterproofing had allowed moisture to damage the wing structure. This caused the wing ribs to disintegrate and ailerons to break away in flight. In response to the crash investigation, Fokker improved quality control on the production line, particularly varnishing of the wing spars and ribs to combat moisture. At the expense of Fokker, existing airplanes were repaired and modified. Production resumed in early December 1917. By January 1918 squadrons again were up to full strength. Postwar research revealed that poor workmanship was not the only cause of the triplane's structural failures. In 1929 investigators of NACA found that the upper wing carried a higher lift coefficient than the lower wing!

It will be made clear that

Fokker's Triplane chronic structural problems severely influenced any prospect of future large-scale orders. Production eventually ended in March 1918, by which time only 320 Dr.1 fighters had been built. When the replacement Fokker D.VII entered widespread frontline service in June and July of 1918, the Triplane was withdrawn from frontline service

Only three airframes are known to have survived the Armistice. Serial 528/17 was used as a test-bed. A second one is believed to have crashed after it was used in the movie the "Blue Max." The third Dr.1, in which Von Richthofen was credited with three aerial victories, was destroyed in 1943 at a Berlin located museum by an allied bombing raid.

Fokker Model: Dr.1  
Role: Fighter  
Designer: Reinhold Platz  
First Flight: 5 July 1917  
Made by Fokker-Flugzeugwerke  
Crew: one  
Length: 18ft 11 in  
Height: 9ft 8in  
Wingspan: 23 ft 7 in  
Wing Area: 201 sq ft.  
Empty Weight: 895 lb  
Range: 185 Miles  
Service Ceiling: 20,000ft  
Max Sp.: 115mph sea level  
Rate of Climb: 1,133 ft/min  
Armament: 2x 7.92 mm  
Spandau machine guns



*The Fokker (Red Baron) chasing a Sopwith Camel (Snoopy). Both these aircraft are on display in our Warbird Air Museum*

# UH-1 Huey

An intensive examination and feasibility study is being conducted to see if we can get our "Huey" blades turning again.

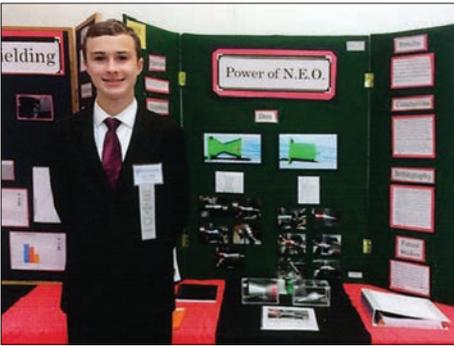


# *The Restoration Hangar, where wonderful things happen!*



**Rob Underwood (VAC Grumman Gremlin) helped Jack Stefano with his Science Fair Project.**

**Jack Stefano  
3rd place winner**

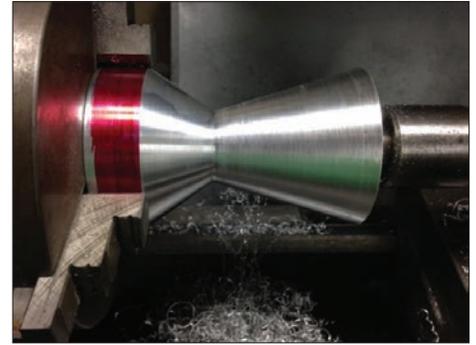


Jack's science fair project compares the performance of two different rocket nozzles that Jack designed. Jack had completed the design work and had fabricated small-scale plastic models of the two nozzles using 3-D printing. He was eager to make larger scale nozzles out of metal to further test his designs. The Florida Tech machine shop had originally agreed to machine the nozzles using their computer controlled equipment but their workload precluded them from being able to take on the job. Jack approached the VAC to see if we could make the nozzles using our manual machine tools in the restoration shop.

Rob Underwood has a master's degree in aeronautical engineering and was glad to see young kids interested in engineering and aeronautics and agreed to help. Underwood said "I do not have any formal machine shop training and I have never worked as a machinist, but machining is a hobby and I have a lathe and milling machine at home in my garage."

Jack's first design was a conventional convergent-divergent rocket nozzle known as a de Laval nozzle. Fabricating this nozzle was very straightforward, only requiring some careful work on the restoration shop's eleven inch lathe. The museum had a piece of aluminum in the scrap bin that was large enough to make the nozzle, and the boring and turning tools were available in the tool cabinet. Making the nozzle to Jack's drawing presented no problems at all. The second nozzle was a bit more difficult as it was an internal compression nozzle commonly called an "Aerospike". The de Laval nozzle only required simple taper turning on the lathe, a very straightforward procedure. The Aerospike nozzle required complex curves and difficult internal passageways. Jack provided a table of coordinates in a spreadsheet that allowed turning the complex curves using a technique called "step turning". A special boring tool bit was made in order to machine the internal angles. The lathe at Rob's home was used for some of the precision internal machining. The trusty eleven inch lathe in the restoration shop was used for the heavy machining. Jack did a wonderful job of designing the nozzles.

Rob gave him an old college textbook on rocket engine design that had collected dust on his bookshelf since graduating many eons ago. Jack was more excited about the textbook than he was about the rocket nozzles! Rob wishes the best to Jack and hopes he continues with his interest in rocketry and aeronautics.



*The divergent section outside diameter is completed and the tool marks have been removed with a fine file and emery cloth.*



*The lathe compound slide is set over to 17 degrees and the boring bar is advanced at that angle to cut the inside taper.*



*The finished nozzle*

## *Editor's Note...*

*The Grumman Gremlins are a group of dedicated men who work behind the scenes in the Restoration Hangar. They will repair, fabricate, make or machine any parts that are needed to restore our beautiful Warbirds.*

*The next time you walk through the Museum's hangars and see one of the restored Warbirds, you can be sure that a Grumman Gremlin worked on it.*



VAC entrance landscaping is getting a new look. Repositioning of the service flags is a nice touch.



**Fouga CM.170 Magister progress...wings and wheels are back on.**



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# 6 AUGUST 1945

*On August 6, 1945 - 72 years ago - the B-29 Bomber Enola Gay dropped an atomic bomb on the city of Hiroshima, Japan - hastening the war's end.*



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***Valiant Air Command, Inc.***

6600 Tico Road, Titusville, Florida 32780 - 321-268-1941

Website: [www.valiantaircommand.com](http://www.valiantaircommand.com) - Email: [warbirds@valiantaircommand.com](mailto:warbirds@valiantaircommand.com)