Newsletter of the Jet Pilot's Organization

Contrails

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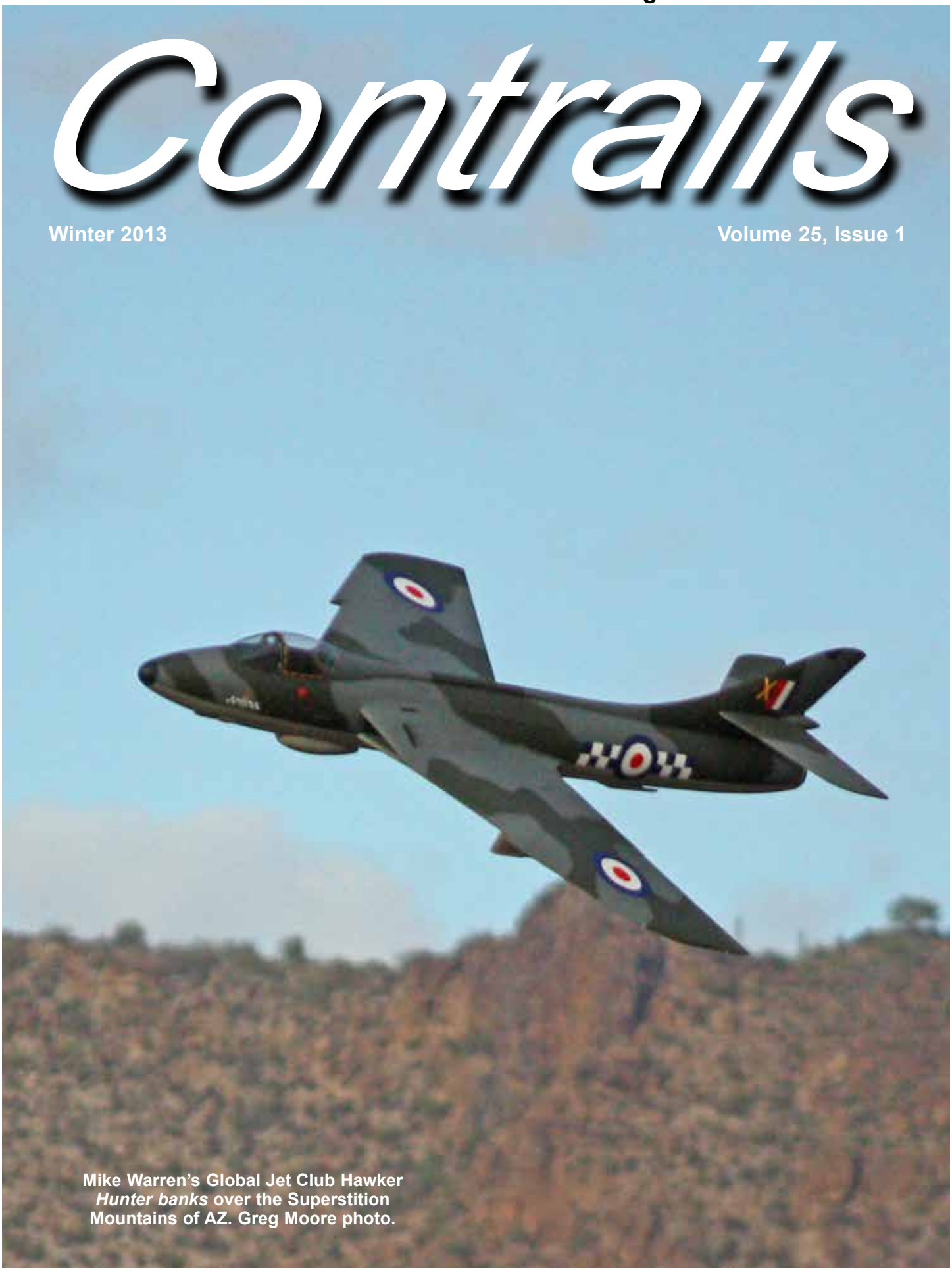

Mike Warren's Global Jet Club Hawker *Hunter banks* over the Superstition Mountains of AZ. Greg Moore photo.

President's Report — Keith Sievers

A beginner's experience with shipping jets .....

From time to time, we need to sell one of our models in order to fund a new project that has caught our interest. While it would be great to be able to sell it in our own backyard or at a local jet meet, sometimes the buyer who is willing to meet our price lives some distance away. That means crating and shipping. I found myself in this situation twice recently, and while I am not a shipping expert by any means, I will share my experiences and the few things that I learned. To jump to the bottom line, it was not as difficult a process as I had always feared.

A few months back, my Yellow F-15 found a new home across the country and I began by researching a variety of shippers to move the plane. The most economical by far (that would handle a large crate) was Forward Air. Greyhound was a bit less expensive, but their size limitations ruled them out. Forward Air has terminals in many major cities, however you will need to take the shipping container to them, and the purchaser will need to pick up the container at the destination, but avoiding home delivery is where a large chunk of the savings arises. For pricing, Forward Air uses the concept of dimensional weight. They will take the exact size of the box and compute a standard weight based upon size. As long as the actual weight is less, they will charge based on the volume of the container. If you exceed their standard weight, there will be a surcharge, but this will not likely be the case. In my case, their dimensional weight was about 100 pounds over the actual weight - and I suspect that will be the case with most of the light airframes we ship. If you call Forward Air, they will give you an estimate over the phone, but the actual cost can't be determined until you take the shipment to the terminal and they measure it for themselves.

Forward Air will also insure the shipment for the declared value, so I would recommend taking plenty of pictures during the packing process just in case questions arise in the event of a loss.

Building the crate turned out to be a bit easier than I thought it would be, taking just a couple of hours. Materials included 1/4-inch Luan plywood (in 4x8 sheets), 2x2 pine strips for framing, a box of 1-inch drywall screws, a handful of 3-inch wood screws and a 10-gallon bag of peanuts, available for about $40 at your local UPS store. Build the frame out of the 2x2 strips fastened together with the 3-inch screws, with the frame elements spaced about every 16-inches. Cut the ply to size and affix it to the frame as you build in order to keep things square, using the shorter screws. Don't skimp on these screws...every 9 to 12 inches would be good. Gloves will help in working with the ply as Luan splinters are plentiful and painful! I left the top cross braces off until the plane was packed and "peanuted" for ease of access. When finished, you will be surprised at the strength of the crate, despite the light weight of the materials.

While you might remove the horizontal and vertical stabs for packing, that will probably require quite a bit of disassembly. I found that when I allowed width and height for the wings and other accessories, removing one horizontal stab was all that was necessary and the wings were packed on top of the fuse in front of the vertical stabs.

There was plenty of room as well for the engine case and canopy, which I packaged separately. I glued hard foam on the bottom of the box between the frame elements at strategic support points, avoiding anything under the gear doors and I used strips of an old towel screwed to the frame members to secure the airframe. Use large washers to prevent the screws from penetrating the towel. Peanuts were added along the way to keep things from shifting around in transit. All total, the materials for the crate were less than $150. Make sure to label the crate with lots of "FRAGILE" and "TOP LOAD" labels. Designate "THIS

President's Report (cont'd) — Keith Sievers

SIDE UP" as well. The shipper may ignore these, but again, they may be useful in the event of damage.

While traditional crating and shipping worked well, it still took time to build and pack the crate and transport the jet to the shipper. I was willing to do it for the second model I sold, but since the destination was only about 600 miles away, I advertised on RCU to see if I could find someone who was passing along the route who would carry the plane for some cash. What the ad led to was the discovery of a professional transporter...an individual with a large cargo van that moves small shipments around the country. The shipment was insured and delivered door to door in just a few days for about 80% of the Forward Air / crate option. All that was required was some bubble wrap around the plane and a moving blanket for added protection. When I have planes to move in the future, this is likely the option I will explore first.

FAA Update .....

The long awaited NPRM for the FAA on Small Unmanned Aerial Vehicles was delayed once again, but is scheduled to be published about the time that you are reading this. I continue to obtain updates from AMA headquarters on the status, and we will alert our membership on the status, implications and AMA responses as we learn about them.

Flying season is just about upon us in all parts of the country, and again, please fly safely and try to keep our jet community out of the limelight this year. Support your local jet meets, help the newer jet pilots at the field and most of all, have fun!

Keith

District I Report

Bob Radford

Connecticut
Maine
Massachusetts
New Hampshire
Rhode island
Vermont

The 2012 Jet season will be remembered as a great one here in the northeast with eleven events - I remember when four ducted-fan events a year was the norm. As Hurricane Sandy precluded completion of my Fall *Contrails* article, I will cover The New England Jet Rally, Horizon Air Meet (Maine Jet Rally) and the October Plum Island Fun Fly.

The New England Jet Rally at Gardner, MA was another superb event put on by Jeff Lynds, Karen Adrian and Mike Turocy. There were over 30 registered pilots with great flying all three days. John Almeida was presented with the JPO TOP GUN trophy for his over-the-top down-low-flying with his *Boomerang -XL 2*. Congratulations John!!

The next event was The Horizon Air Meet. This event turned out to be quite the spectacle - with open jet flying on Thursday and Friday followed with both open and demo events on Saturday and Sunday. The jets were joined by R/C cars, helicopters, foamies and control-line flying to give the public a wide spectrum of the hobby at the various site locations on Sanford Airport. There is talk of bringing the event back in 2013.

The Fall Plum Island event was another great success. Mike Turocy was CD for this open R/C event and it was popular with the local community as the parking lot was always full of cars and the spectators kept coming in asking questions and telling us they would be back in June to see us again.

So far, 2013 is shaping up to be another full year: Art Arro is hosting a jet meet in central NY from May 31 - June 2, and the following weekend (June 8-9) many of the New England jet guys are planning on attending the Plattsburgh Radio Aero Modeler's (PRAM) annual Hospice Charity Fun Fly. Father's Day weekend brings us back to Plum Island for the June event. Next up, for some of us, is the Big Apple Jet Rally, mid-July brings us to South Albany for Capitol Jets, August brings us to The New England Jet Rally followed by Maine and then the October Plum Island Fly In. For New England Jets members, we may or may not be able to have additional jet events as construction may make our facility unavailable this summer - I'll keep you posted as I receive information.

JPO is now selling T-shirts, Polo shirts and hats on the website, so check it out and renew via PayPal. If you select e-*Contrails* you will get a T-shirt with the JPO Logo. The Notice of Proposed Rule Making (NPRM) still has yet to be released by the FAA so keep your eye out for that and be ready to submit comments, as required.

As the fourth JPO District I rep, following Hal Peters, Ray Davis and Jeff Lynds, it is approaching my time to pass the reins of the district on the JPO board to some new blood. The end of my third two-year term, which ends this year, will be my last as JPO District I Rep; I will be looking for a replacement throughout the year - let me know if you are interested as there are some exciting things coming your way through JPO.

District III (cont'd) from page 6

District II Report

Len McIntosh

New Jersey
New York
Europe

On October 29, 2012 Super Storm Sandy devastated portions of the MidAtlantic and Northeastern United States, not the least of which was Breezy Point, Brooklyn and our own Floyd Bennett Field (FBF). At Breezy Point, over forty homes were lost to fire and flood - they will be rebuilding for many years to come. At FBF, our model field is closed until further notice. Fortunately, the damage there was restricted to trees and some of our tables were blown around.

During the “Recovery and Rescue” operation, our field was used as a staging area for the relief effort. Over 50 trailers were used to support and supply the helicopters, trucks and heavy equipment that were used in the effort.

At present the relief effort is slowing and they are mainly involved in clean up and we have high hopes that the field will be opened by early spring. The PARCS web page is a good place to help you stay current with the latest status.

The photos on this page (by Ron Molaro) tell the story.

Len

District III Report

Mark McCracken

Ohio
Pennsylvania
West Virginia

As I am sitting here putting words on paper, I am looking out the window at the ground displayed in the bright white color of fresh fallen snow. Temperatures are in the single digits, I am thinking that it has been many months since I attended a jet rally, and I am sure most of us in the northern states can relate. Fortunately, we are about to start off the 2013 season with a number of events for District III.

Upcoming events for 2013, held or sponsored by clubs in District III, are: 1) Farview R/C Flyers located in Hamburg, PA (www.Farviewflyers.net). 2) The boys in Titusville who hold the summer and fall rallies at the Titusville airport. 3) The D.O.G.S. show held in Dayton, OH (www.dogsairshow.com). And 4) the Nighthawks R/C club event Jets Over the Valley.

In early 2012, the boys from Farview R/C Flyers, knowing the dates originally scheduled for the LBJR were open, decided to host the "Hamburg Summer Afterburner" to be followed later by the fall version of the "Farview Jet Rally." Those who attended the 2012 Summer Afterburner know the name was very fitting as the temperatures seemed to be as hot as the exhaust from our tail pipes. A few close calls, with very poor weather passing close by (as we were just missed), didn't stop the flying action for long.

In the pictures included with this issue, you will see the Sea Cadets. Each day the Sea Cadets presented The Colors at show center with an F4 flown in the background by Dave Malchione, Jr. As with the Sea Cadets, the Farview R/C club had the chance to honor the son of a Club member for his years of service and volunteering to the club.

Dave Brown's son, Zack, was a Sea Cadet, and over the years helped out at many events and also participated in the Color Guard, featured during our National Anthem. This award from the Farview R/C Flyers was to be awarded at the awards dinner on Saturday night, but plans changed since he was shipped out a week early. Zack is now sworn into the US Navy, and will be a Marine battlefield medic.

As for the rest of the events held at Farview (both the August and October events), nothing but good friends, good flying and a great time were shared by our extended family.

There are many of us in District III with many different types of aircraft being built, repaired, test-flown, or having new technology being added; or maybe you have a unique way of building something that might be of help or interest to others. Whatever it may be, if you would like to share it with us, please e-mail me with your write-up and a few pictures and I will get it the next issue.

Additionally, if there is anything JPO or I can do for you, please contact me.

Mark

Cont'd on Page 4

District VI Report

Lance Campbell

Illinois
Indiana
Kentucky
Missouri

This time around, my column is a bit different. I know this space is normally reserved for model-jet-related topics, but this time, I've got something to tell you about on the full-scale jet front.

Late last fall, I was honored to be invited along on an in-flight, aerial refueling training flight by the 155th Air Refueling Wing with the Nebraska Air National Guard. A good friend of mine, Mark Basel (R/C jet pilot and JPO Member in Nebraska), asked if I'd be interested in going on the outing, based on his contacts, and I jumped at the chance.

After going through some clearance checks, I was slated to go on a particular day. I arrived nice and early for our morning briefing, given by Major Adam Worden. There was a group of 8 of us going on the flight as spectators. We were told about the operations of the KC-135R tanker we would be flying on, and how the mission would proceed. We came to find out, that there can be a bit of uncertainty on how these flights go. There could be mechanical issues with the tanker, or there could be issues with the aircraft we would be refueling. For that matter, I didn't know what aircraft would be the one taking on fuel until just before the flight. Sometimes it can be another tanker or a big C-5 *Galaxy*. I felt lucky, in that our flight was slated to refuel a group of F-16s out of Colorado.

As we settled into the aircraft, I was one of the lucky two that got to sit in the cockpit area for the climb to altitude. It was interesting to listen in on the radio chatter as the crew went through their duties. I'll say this much, the upgraded engines in the "R" version don't mess around getting a very large aircraft to altitude quite quickly. These new engines produce 22,500 pounds of thrust each...and it's got 4 of them. I also thought I heard them remark that if they were using the onboard fuel entirely for themselves, they could fly anywhere in the world - non-stop...talk about range!

Once in the air, we traveled across Nebraska into eastern Colorado. While in route, we each got to go down into the refueling pod area, and look around with the operator showing us how everything worked. The space held enough room for the boom operator in the center, and then off each of his shoulders, one other person could observe through the window as well. This time was well spent, because when the actual refueling time came it was good to be familiar with the area, since it happens so fast. In this area you actually lay on your stomach, facing rearward. Once in the 'pod' area, you're outside what would normally be the skin of original aircraft, had it not been a refueling tanker.

When we got to the refueling track, we were told to be vigilant, as things were going to happen quickly. The 3 F-16s would come up and park in formation on the left wing tip, and then one-by-one, rotate back for refueling. Then, when they were full, take up formation on the right wingtip. The nimble nature of the fighters moving about was interesting to watch. You got the impression that around the tanker, they were like sports cars just idling about. There were not many windows, so we had to take turns looking out. I expected that we'd see the fighters coming up from the distance to take their formation position...nope. I looked out one moment, let someone else take look, then looked back about 30 seconds later, and there they were, right off the wing tip.

We each got to take turns watching the refueling down in the pod, two people at a time. Considering it only takes two minutes to fill up an empty F-16, and there were only three fighters to refuel, we all had to be quick in taking our turn. But, we all got a couple minutes watching the fighters pull up, plug in, and practice a couple connections. The F-16 being refueled was only 35 feet from us when on the boom, which was quite strange given your normal view from an airliner window. In the photos I took, I can read the name on the patch of the flight jacket of the pilot, we were that close. The fuel is put under high pressure, and forced quickly into the aircraft. To give you a comparison…if you had a large enough nozzle on your car, this refueling boom would refill your car in less than two seconds.

After watching the F-16s for a few minutes on the right wing tip, they were gone, just as quickly as they had arrived. I'd wager they were around the tanker for probably 10 minutes at the most. We then headed back to the base in Nebraska. Unless you're close to it, most of us go about our daily lives not thinking about the men and women in our military, either serving in theater or training at home. Overall, it was quite a unique experience, and I'd like to give a sincere thank you to Mark Basel and our flight crew for helping make it happen.

Mark Basel gives perspective to the size of a KC-135.

District VI Report (cont'd) Lance Campbell

The view from the front as the big KC-135R accelerates down the runway.

Once in the air, the flight crew turns their attention to getting us into the refueling track.

Crewman Jeff explains to another civilian how the refuelling controls are operated.

The refueling operators office.

A pilot comes into the contact position so that the boomer can plug in and complete the fuel transfer.

District VI Report (cont'd) — Lance Campbell

Talk about up-close and personal ....

2 F-16s in formation off the right wingtip, having just finished refueling.

Our flight crew after returning to Nebraska.

World Jet Masters Team

Last issue, I mentioned that the United States team is set for the 10th World Jet Masters, to be held next fall in Switzerland. There has been a small lineup change, since Rod had that pesky thing called work get in the way of airplane flying! The team roster is:

Jason Bauer, Team Captain

Andy Andrews	David Ribbe
David Shulman	Rei Gonzalez
Scott Harris	Lance Campbell, Team Manger

Also, Jason has been working very hard to drum up sponsorship, and has had good results so far. To date, the following have provided sponsorship to the US Team:

Aeroloft	AviatorGear.com
BVM Jets	DownandLocked.com
Duralite Flight Systems	IV Computers
Jersey Modeler	King Tech Turbines
Model Glasses.com	RC Jet Addiction
Snyder Designs Inc.	Zap Glue

Lastly...good luck to everyone doing that dreary, mid-winter maintenance in order to get the birds ready for spring flying. It will be here before you know it!

Lance

District VIII Report

Ron Schwarzkopf

Arkansas
Louisiana
New Mexico
Oklahoma
Texas

Hello again from District VIII. We are back to having a new years worth of flying to prepare for - and as usual, I am not ready! I am juggling with which model I want to build next, while trying to squeeze in more work on my ongoing MiG-21 project. I am also hoping to make it to Tucson Jets in a few weeks, but I admit I have not been able to get any flights in until long before Christmas break. So I hope you are farther along than I am in getting your models ready for the flying season. Now is a great time to review your model: check your batteries - are they able to hold a full charge? What about your air system - any slow leaks you've been meaning to fix and haven't gotten to yet? (I know I do!) Fuel filters - it's a great time to pop them open and look for any buildup on the screens.

Now that I'm thinking about this - I need to do ALL of this! So let me get going with the bulk of this article, so I can start checking my models. One item of interest is that we may have a new jet fly to attend this year. Details for these events and others can be found on www.RCUniverse.com, in the RC Jet forum.

Upcoming Events in District VIII

April 13 - Fortbend RC's 1st Jet Rally - Rosenberg, Texas (Southwest of Houston).
May 2-4 - Mississippi Afterburner (Bolton, Mississippi) not in District VIII but still a goodie!
May 24-25 - Central Texas Jet Rally (Austin, Texas)
June 13-15 - Texas Jets (Mt. Pleasant, Texas)

Past Jet Events

I know this is a bit late, but last September we did attend the 30th Anniversary of the Greater Southwest Jet Fly in Waco, Texas. Fifty-six pilots attended, and I suspect 56 pilots also brought back at least some sort of award or giveaway - one item was a Spektrum DX18 radio. Even the weather behaved. Thanks to the HOTMAC club for another great event in Waco!

Sam Snyder brought out a new project at the event (which already showed up on the cover of last quarter's *Contrails*) - a scratch-built Gloster *Javelin*. This model weighs about 40 pounds, has an 86-inch wingspan (19 square feet of wing area!), and flew with two x Jetcat P60s. Great job again, Sam! (If you are interested in seeing how Sam built this *Javelin* or any of his other aircraft, you can visit www.UAVDE.com where he has the entire build process of his model documented.)

Sam Snyder's RQ-16 and 17.

We had a guest reporter from *Model Airplane News* show up - Rich Uravitch - who did a great job of reviewing this event in their January 2013 issue. Rich attended the very first Greater Southwest event too - so we can figure that makes him at least 31 years old! Thanks to Rich for the positive words on the event in your article! Enclosed are some pictures from the event.

Smitty's *Flash* smokes past.

Steve Ellzey's F-100 at the rotation point.

District VIII Report (cont'd) — Ron Schwarzkopf

Mike Kulczyk's own-designed FJ-1 *Fury.*

David Hudson taxies his *Reaction* to the runway.

Craig Pingleton spots for Kevin Whitlow.

David Reid's F-86 departing the runway.

I think one of my favorite sport models at the event was Scott Marr's 1.9m *Futura* (above). It seemed to be a nice match with the Jetcat P-100 - a very smooth flying, simple model. It was not flown like a missile, and it seemed very happy doing large figure eights around the model field. I wouldn't mind getting one, but I have a few projects to move along first.

I also got the chance to head over to the Florida panhandle for Pensacola Jets in early November - not quite in District VIII, but I still attended. The weather was perfect, the runway at Holley Field was huge, and the sky was wide open! I attended this event a few years back, and was finally able to do another visit. This was a laid back event, and I had a chance to see some new faces, and some I haven't seen in a while. Due in part to some scheduling edits one month before the event, this year was down to 16 pilots, but that just meant more flying time per pilot! Pensacola is also home to the US Naval Air Museum, and I can highly recommend a visit if you are in the area. The museum contents are a wealth of model documentation just waiting to be photographed for your next project!

Joe Rafalowski brought his beautiful F-86 and Navy Aggressor themed e-*Bandit.*

District VIII Report (cont'd) — Ron Schwarzkopf

Steve Stricker's F4 taxies back from a flight.

Rob Baker's Aggressor-camo themed *Flash* in the flare.

A big T-33 doing a slow pass with his speed brakes open.

Well, time to get my stuff ready for Tucson Jets…See you at the next jet event!

Ron

District X Report (cont'd) from page 13

A small selection of jets at the AJR, most of these are edf.

James Lashmett brought (and flew the paint off of) his nice edf *Starfire*.

Mike Warren's Hawker *Hunter* powered by a Wren 120.

Greg Moore's HET *Super Sniper-XL* on a low pass.

That's all I have for this issue. As always, if you have an upcoming event or pictures you would like to share, send me an email or look up the District 10 Facebook page at: https://www.facebook.com/pages/Jet-Pilots-Organization-District-10/251307765078?ref=hl#!/pages/Jet-Pilots-Organization-District-10/251307765078.

'Till next time, keep the low passes where they belong.

Dave

District X Report

David Reynolds

Arizona
California
Guam
Hawaii
Nevada
Utah

On January 12, at the AMA EXPO in Ontario, CA, Ryan Sherrow's AMA number (613168) was retired in a ceremony presided over by AMA President Bob Brown. Ryan was a very talented young pilot who passed due to a sudden illness. Since then, Ryan's parents have worked tirelessly to create and fund a scholarship in Ryan's name through the AMA. President Brown gave remarks praising Ryan and his parents, Debbie and Clay, for Ryan's modeling achievements and his parents desire to create this AMA scholarship in Ryan's name. Clay was asked to speak about his son and why the scholarship was so important to his family. Ryan's story was well told and the education of Clay and now of their daughter, Brianna (PHD in Special Education), showed why an education fund is dear to the Sherrow's heart. If you have ever been to the Tucson Jet Rally, which is coming up in March (If you can - you should, it's a great event), you have helped to support the cause. Thanks to Bob Reynolds for the pictures and report.

Last November marked the 24th Arizona Jet Rally in Apache Junction. As usual, it was a great mix of edfs and turbines, all sharing the sky. Next year marks the 25th annual for this great event. Does anybody know of any other events in the west that have been running for that long? I asked Bob Ruff what was being planned for next year and while he didn't say exactly, he hinted that yes, it should be a party. I'll let the pictures do the talking.

Mike Warren thanks Chris Wolfe for doing a successful maiden flight on Mike's Global Jet Club *Hunter.*

A turbinized Joe Saitta Me-163 climbs out.

Clark Hans' edf "*sort-a-russian fighter" blasts past.*

District XI Report — Bob Brusa

Alaska
Idaho
Montana
Oregon
Washington

Happy new year everyone! I hope you are all doing well and working on your newest projects for 2013. Last winter I managed to build two jets (F9 *Panther* and Boomerang *Torus*) and flew them all year. I plan to fly them this year as well, so I do not have a winter project to work on. JPO will keep Carol and I busy with mailings this winter because of the t-shirt promotion we are running. I'll explain more about this below.

Select jet events for 2013 that I am aware of are:
1) Jets Over Whidbey on Whidbey Island, WA: Aug 23-25.
2) Princeton Jets in BC, Canada: May 30 - June 2 and again Sept 19-22.
3) Idaho Jets near Boise, ID: I don't have any date yet - usually in June
4) Again not in our district, but Tucson Jets: Mar 8-10, and Woodland/Davis in CA: June 21-23 are great events to enjoy.
5) In Alberta, Canada they will be hosting a jet meet in Cayley July 18-21.

I hope some of you will venture out this year and attend these events. Carol and I are going to try and make all of the above.

If you have not done so already, it is time to renew your JPO membership for 2013. I mentioned the Tee shirt promotion above, so, for all new members and renewing members for 2013, you will receive an excellent quality Tee shirt with the JPO logo on it. We still are unsure about the contents of the NPRM, which hopefully will be published soon, so please encourage all the jet pilots to support the JPO. Remember, there is strength in numbers! We are the Special Interest Group (SIG) to the AMA and they do listen to our recommendations.

We are looking for a JPO representative in Dist IX (CO,KS,NE,ND,SD,WY). If anyone has any friends or knows of someone in that area who might be interested, please let me know and I will forward it on. If someone in our own District XI would be interested in being a future JPO representative, again, please let me know. It's a lot of fun and only requires writing four articles per year.

I'm still looking for pictures of your planes and any articles you would like to see published in *Contrails.* I don't have any for this issue, but I will for next time. Send me what you have and get a photo of your jet in the next issue!

Bob

Treasurer's Report

Financial Report from January1, 2012 - December 31, 2012

Dues Income (all forms):		$4, 276.72
Expenses:		
Postage/stamps	$230.48	
Office supplies	$18.91	
PayPal Fee	$0.30	
Contrails	$4,021.41	
Software for Contrails	$349.00	
Renewal postcards	$217.08	
Web site	$89.55	
JPO tee shirts	$2,020.00	
JPO Top Gun trophies	$1,112.00	
Total Expenses		$8,058.73
Ending Balance as of December 31, 2012		$3,599.45

Respectfully submitted: Carol Brusa

Canada District Report

Paul Dries

Sorry guys, for being a broken record here and this will be the last time - I promise....I might be a broken record on this topic but I need to remind all CDs and clubs that anyone from Canada travelling to the US to fly needs to have the new Turbine Operator's Certificate (TOC) as of Jan 1, 2013. The old Letter of Proficiency (LOP) has now expired and is invalid. The MAAC Jet Committee page on the MAAC website maintains a list of current TOC holders and their status, that can be accessed by anyone from a computer or even a smart phone with web access.

SMOKE SYSTEMS

I have written before about simple methods to achieve smoke system installations in jets and what I have done in creating these. I am of the mindset that sometimes guys are too quick to get a case of "jet bling" and find themselves pushing the buy button on a packaged, programmable smoke system - and while some of the products on the market are excellent, they typically cost 300+ dollars to purchase. You can build your own, that is very effective, for under 50 bucks.

Here's what my experiences have taught me in simple terms. Making smoke is not rocket science as the exhaust from our turbines make easy work of converting fluid into smoke. All we really have to do is find a simple method to spray fluid into the exhaust stream and get it well atomized, then you will have LOTS of smoke. On jets, if you want to go fast and have smoke, be prepared to carry lots of smoke fluid as when you're moving close to 200 mph it takes a lot of smoke to lay down a trail that stands out. It therefore makes more sense to me to put smoke on jets that are more on the aerobatic side and less on the speed.

Step 1 - Airplane and fluid - it doesn't make any sense to me if you want to put smoke into an airframe that doesn't have capacity to fit decent-sized smoke tanks. Thirty to forty ounces is about the minimum I would see as a reasonable size of smoke tank(s). If you're dealing with an airframe that you will struggle to fit smoke tanks into, or the addition of smoke will push the wing-loading/power-to-weight ratio to the point that the jet will be underpowered on take off, or even worse, highly-wing-loaded on a dead stick that was early into a flight before you had time to empty the tanks, it may not the best choice. So airframes that have lots of internal room for extra tanks and lower wing loading such as Boomerangs, sport jets (and some “big-bodied” scale jets) usually make great platforms for smoke systems.

Excellent smoke fluid is available off-the-shelf from Super Dry, Robart, Liquid Sky and many others, or you can mix your own. The cheapest source for smoke I have found is to mix 4-6 ounces of a light oil or mineral oil with a gallon of diesel. Other options are Concrete Form release oil or even transformer oil, which can be used as-is, or mixed with diesel to thin it out. If you are running a piped aircraft, it may be wise to consider Super Dry as I'm not sure what would happen if the pipe got coated with oil, and you then had a hot start. The form release oil/diesel mix is my favourite as I have a buddy in the construction business who flys jets and mixes his own "brew." Best of all, he shares it with some of his buddies.

Step 2- Pump and installation - I have built several smoke pump systems for around $25. I use the Sullivan "Red" diesel transfer pump and convert it to a smoke pump by gutting the electronics and soldering in a brushed 10Amp speed control. As far as I can tell, Sullivan's *Skywriter* system uses the same pump and just installs a speed control with a machined aluminum cover for the housing. The housing can be opened easily and the bi-directional switch removed by unsoldering the wires at the motor. From there you can solder the speed control wires directly to the motor, after you have fed them thru the cover, either thru the switch hole or by drilling some holes. I then just use some double-sided tape to mount the speed control to one of the sides of the case of the pump housing. A simple test of the pump with some fluid and a couple of pieces of tubing should help verify the connections and function plus identify which port will be the in and out.

For power supply, I have used everything from a 6.0 Volt NiMh receiver battery pack to 7.4 Volt LIPO's and A123s. I like using NiMh or A123s to try to stick with chemistries that will not be a problem to charge in the plane. You don't need a lot of voltage as the pump will put out too much volume on 3s or 12v set-ups - just watch the spec/programming on your speed control so that the voltage isn't so low that it trips its low voltage cut-off. On the speed controller, I remove the red (center) wire on the servo plug and cover it off with some shrinkwrap so that the BEC on the speed control does not have an adverse effect on the receiver power supply/batteries. You can put the power input to the

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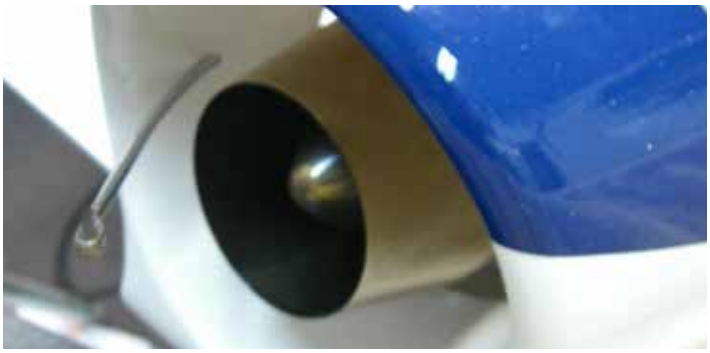
speed control on a receiver on/off switch or just plug the battery in directly. You could even convert the switch supplied with the Sullivan pump to the on/off switch for the system by creatively re-soldering the wires and installing a battery connector in place of the alligator clips that come with the pump.

Step 3- plumbing and nozzle. The forums have several threads on how to make your own smoke nozzles using stainless tubing. I managed to pick up some 1/8" stainless tubing from Swagelock but you can also find this stuff at McMaster-Carr or just purchase a pre-made nozzle from Tam or Dreamworks. The nozzles I originally made were done simply by partially squeezing the last 1/4" of the tubing in a vise just enough that I could fit the pointed end of a No 11 blade into the tubing, and then crimping the tubing down on the blade to form a tip with a narrow, flat opening that should create a fan spray pattern for the fluid. I recently made an upgraded version by cutting about 1" from the end of the tube using a cut-off wheel splitting the tube down it's centreline. From there, I cut 1/2 of the split off leaving the other half exposed and used a hammer to pound this into a flat strip. You can then use the same squeeze/knife blade tip into the end of the tube at the base of the cut followed by using a pair of pliers to bend the exposed strip into a loop with the tip of the strip pointing directly at the opening in the end of the tube. Care must be taken while making the split cut with the cut-off wheel as it's easy to twist the blade and have it shatter. Thanks to Philip Baum for his article and pictures in *Jetpower* magazine for his guidance on how to make your own split/looped nozzle.

I don't have any definite advice of where to locate the nozzle in the exhaust stream other than I find one nozzle extended back a couple inches from the turbine and aligned so that the spray is in the center seems to work well. I also prefer to mount the nozzle separately from the turbine so either can be removed independently of the other for maintenance. I have also seen successful installations with a long length of tubing run down the gap between the inner and outer pipe and turned into the exhaust stream at the end of the pipe. A couple of benefits to doing this is there's no chance of fluid accumulating in the pipe, and the smoke forms behind the aircraft which has a nice effect.



From here, its really up to you to figure out the plumbing. You need all the same stuff as with a fuel system - tank with vent and clunk system, fill point connection with shut-off to prevent the tank filling pressure from pushing fluid thru the pump and out the nozzle (some just use a check valve in-line with the nozzle to provide enough back pressure), some form of filter to prevent pieces of dirt blocking the nozzle tip (although not nearly as critical as for a turbine) plus installation hardware/clips to keep the system neat and organized. I highly recommend a plug for the nozzle tip so fluid cannot drip out of the nozzle while in transport. I am still trying to figure out a practical way to do this with the "looped" nozzle end.

Once you have all of the components mounted and plumbed, you will need to program the radio and test the system. I prefer to do this at home where I can annoy my neighbours with the noise from the turbine and give them reason to consider reaching for the phone to call the fire department from all the smoke. Definitely a good way to get the curious neighbours out of their houses to see what all the noise and commotion is! For radio programming, I create a throttle to aux mix turned on/off by a switch on the left side of the transmitter. I like the left side so If I want to do some skywriting I can keep the right stick under control while I use my left finger to move the switch on/off - you can also use a slider. At the same time, I create the mix such that the pump does not come on until at least 1/3 to 1/2

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throttle and have a shallow mix curve up to full throttle with a spare trim channel to control the amount of mix to adjust the smoke volume. Your results WILL vary so be prepared to experiment with the mixes to get things right. Also, don't overdo or underdo the amount of smoke - too much just limits your time with smoke on and too little may provide longer on time, but doesn't have the right effect.

If you get flames instead of smoke, you need to increase the start point on the curve so that the smoke pump doesn't come on as early on the throttle position. If your smoke has a "bluish" tinge to it, it might be your nozzle is not atomizing the fluid enough - also, some atmospheric conditions seem to create better smoke conditions than others - keep experimenting and I'm confident you'll find a set-up that works for you. By the time I got things ready for testing I was not able to get any good smoke pictures so I'll do an update in the next article.

Bruce Bender kindly sent in a report from Tofield Jets, near Edmonton BC.

The jet community in western Canada has grown substantially in the past few years. This growth was apparent during Tofield's Miniature Aircraft Association annual fun fly held Aug 9-12, 2012 at the town of Tofield's local airport, which is located 30 minutes east of Edmonton, Alberta. The airport has a paved runway 75 feet wide x 3,000 feet long with a terminal building and aircraft tie down area (available for camping) all for the Associations use. The use of the airport for model flying was negotiated by the Association's original members 10 years ago when jet flying was in its infancy. Since then, availability of this facility has proven to be a real plus for the local jet community.

The four-day fun fly had 26 registered pilots who traveled from as far away as BC and Yukon. There were also numerous participants from Calgary and northern Alberta, as well as locals. The weather was excellent throughout, with temperatures near 30 degrees (80 degrees F) with light winds down the runway, so the participants took advantage of this by flying from morning to evening. Although the fun fly has developed to be a goto site for the jet community, the organizers have encouraged a variety of modellers to participate. This is to gain greater numbers of participants, to expose other modellers to the jet community and to show spectators all aspects of the sport. The fun fly is advertised in the Tofield community, as a community event, and does attract a substantial number of spectators.

With the great weather, there were numerous flights by a wide variety of models with no major incidents, demonstrating the safety and reliability of jet models, as well as the skill levels of the attending pilots. A real attention grabber was Norm Rolleman's F-104 which was test flown by Dean Wichmann. This model was five years in the making, and to finally see it fly was quite memorable for Norm. Andrew Pohlmann also test flew his F-18. The sound and sight of this large jet got everyone's attention and Andrew pulled off a very spectacular landing which resulted in some gear damage. Two junior Snow Bird *Tutors* were in attendance and flown by their owners, Allan Blore and Dean Wichmann, and they did numerous flights throughout the weekend. These large models have a very good presence when flying and are always a thrill to see.

Sterling McCulloch came all the way from Watson Lake to fly his first ever turbine flight with a TBM DV8R. Sterling had purchased the aircraft from a local club member and enlisted the help of the former owner to have his first jet experience. Unfortunately, he hit a landing light on his first landing which caused considerable damage to DV8R's rear fuselage. He repaired the fuselage with borrowed tools and a trip to the local hobby shop and managed a second successful flight with the DV8R before the fun fly was over.

A highlight of the fun fly was the Saturday evening barbeque which was free of charge to registered pilots and partners sponsored by Fountain Tire. This included an Alberta beef steak dinner with all the trimmings. Hope to see many of you out next year for another great event.

Bruce

Steven Bondar taxis back with his Boomerang-XL.

Nate Rondeau prepares his *Tiger Meet* F18 with the help of his pit crew.

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The pit/ready area at the Tofield Airport.

Bob Wonitoy fuels his BVM *Bandit.*

Dave Redecliff taxis back his CARF *Lightning* while Dean Whichman looks on.

Alan Blore prepares for a CT-114 *Tutor* flight as Dean Whichman assists.

Bruce Bender guides his TBM DV8R past other planes to the flightline.

A Boomerang-XL in the "Jaws of the wolf."

A line-up of jets in the pit area.

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Steven Bondar makes a low pass with his Boomerang-XL at Tofield Jets.