

Channel Islands Condors May, 2014

AMA # 1343 - IMAA # 89 - EST. 1984

Next meeting: Wednesday, June 4th at 7:00 PM

**Channel Islands Condors
P.O. Box 1993
Camarillo CA 93011-1993
Web Site: www.cicondors.com**

**Meeting Location
7:00 p.m.
Camarillo Parks and Recreation
Senior Center
1605 E. Burnley St.
Camarillo, Ca. 93010
(805)482-4881**



Ramblings:

Dear Condors, I want to thank Ken for putting together our newsletter and all of the other members who volunteer in our clubs efforts.

As an update to all flyers, the calendar goes out to July where the University has promised to give us a 4 month calendar as opposed to asking month to month for our fly days.

The field is in need of some clean up thus expect to see a request to knock down the weeds, one little rain and wham the grass grows and the weeds pop up.

As a lot of you know Chris S and I have been going to the AUVSI Channel Islands Chapter meetings most months where all Condors are invited to attend. The AUVSI-Association for Unmanned Vehicle Systems International meet in the Broome library at CSUCI, each month there is a guest speaker

where the meetings are well attended. The Unmanned Vehicle is the next big thing in aviation where the FAA is deeply involved in getting their act together and coming out with regulations for these type of flying vehicles. There are many activities in the county that are involved in this where our Condor club will fit in and will most likely shape the club in the future. Stay involved and try to make the next meeting with them where I will send out an update on meeting time and date. Look forward to the next announcements concerning events at the Condor field now that we know our Fly days. There are plans in the works to have a money making helicopter day and a war bird day.

See you at the Field
Chris Brashears



A Magnificent Mosquito by a Master Modeler

In a recently published interview, Dave Platt was reported to have stated his belief that “there are no true modelers left except in free flight and control line”. While I share some of his distain for the inclusion of ARF and nearly ready to fly aircraft in competition, I also believe that included in our ranks are still some true modelers and master craftsmen. The opportunity to know these folks and fly with them in competition or any similar venue is what invigorates and motivates me as a modeler and occasional competitor.

One such builder is my friend Tom Wolf who regularly beats me in every event in which we compete! Tom’s Mosquito is featured on the cover in another spectacular photo by Rich Cox, whose work has graced many previous High Flight issues.

Tom has provided me a detailed description of his model, its construction, and a brief history of the full scale Mosquito the model represents. This is a very realistic giant scale model and when flown by Tom, it captures the true essence of the full scale Mosquito in graceful flight. It is truly a superb model.

Tom, from Goleta California and a member of the Santa Barbara RC Modelers, built the 1/5 scale (124 inch wing span) DeHavilland Mosquito FBVI, which he completed in November 2011 after about two years of construction. The model features functional bomb bay doors, bomb releases at the wing stations and inside the bomb bay (four bombs total), retracts, and flaps. It first flew on November 30, 2011, and it flies extremely well. During the last year, he has been competing with it in Scalemasters events, including the Northwest Scale Championships in Wenatchee Washington, where he place first in Expert. In addition, he competed at Top Gun 2012, where he

placed sixth in Expert. He plans to continue competing with this airplane for the foreseeable future.

Historical Background

Tom's model is a replica of NS850 / TH-M "Black Rufe" of No. 418 City of Edmonton Squadron, Royal Canadian Air Force; based at Holmesley South in June 1944. NS850 was flown by Squadron Leader Robert Allan Kipp and Flight Lieutenant Peter Huletsky. Kipp and Huletsky did quite well in combat with this aircraft having shot down ten enemy aircraft with one shared destroyed, one shared probable, one shared damaged, seven destroyed on the ground, and eight damaged on the ground. Unfortunately, NS850 was destroyed in landing accident on 1 November 1944, when it overshot the runway after landing with an engine out.

The DeHavilland Mosquito was built almost entirely of wood. The fuselage was laid up in two halves on male molds with thin plywood inner and outer skins and a balsa core sandwiched in between. A large press applied pressure to a female outer mold to clamp the assembly during glue curing. After the glue had cured, the half fuselages were removed from the molds and glued/bolted together to form a very light and strong structure. The wing was similarly fabricated entirely of wood with plywood skins and wood ribs, spars and stiffeners. The use of aluminum was limited to the engine nacelles, engine mounts, landing gears, etc. Because of the nature of this type of construction, DeHavilland employed cabinet makers and wood workers extensively to produce the Mosquito. Thus, there was little raw material or manpower diversion from other critical warplane projects required in order to produce the Mosquito. This was critical to the Mosquito's production because at the time, there were shortages of aluminum and skilled aircraft assembly labor, and the priority for the British Air Ministry was producing fighters such as the Spitfire and the Hurricane.

When the Mosquito was introduced into service it was faster than any German fighter of the time. While the original version of the Mosquito was an unarmed bomber, armament was incorporated into fighter and fighter-bomber variants shortly thereafter. The FBVI had four .303 machine guns in the nose and four 20 mm cannon under the nose with the main portion of the cannons and the ammunition storage in the forward portion of the bomb bay. With so much forward firing firepower, coupled with the ability to carry up to four 500 pound bombs, or two 500 pound bombs and up to eight 5 inch rockets, the FBVI saw great success in anti-shipping, close ground support and low altitude interdiction missions. With its high speed (almost 400 mph) and excellent maneuverability, the FBVI was also quite effective in air-to-air combat, as was demonstrated by the success of NS850.

The Model

Tom built a 1/8 scale (82 inch span) version of this airplane about 20 years ago from a set of plans purchased from Bob Holman that were a 115% blow-up of a 71 inch Brian Taylor design. This smaller airplane has been his workhorse competition aircraft for

Scalemasters events for a number of years, as well as two trips to Top Gun. Tom tackled this more recent and much larger project because while his original Mosquito is an excellent flier, it is small by today's standards for scale competition, especially for an event such as Top Gun. This, together with the fact that the larger airplanes fly better and look more prototypical in the air, prompted him to go bigger. Tom's newest Mosquito was built from a 175% blow up of the same Brian Taylor plans that he built his original Mosquito from, resulting in a wing span of 124 inches. The plans and a set of spun aluminum spinners were purchased from Bob Holman. No other accessories were available for the 124 inch version, so everything else had to be fabricated, including the scale landing gear mechanics for both the main landing gear and the tail wheel, the vacuum formed canopy, and the epoxy fiberglass engine nacelles.

The high degree of enlargement of the design required a lot of re-engineering of the structure to be appropriate for the size of the aircraft, making this project much more like a scratch or "designer scale" project than a "simple" build-from-plans effort. Because the resulting spacing for fuselage bulkheads was excessive, intermediate partial bulkheads between the main fuselage bulkheads were added to ensure that fuselage cross-sections were maintained without oil-canning between the main bulkheads. Stress calculations of the scaled-up wing spar showed that it was inadequate for the anticipated structural loads, so the wing spar was modified to provide the necessary strength. The original design featured a one piece wing, which at this much larger size was impractical for transportation and storage. To solve this problem, the wing center section was redesigned to convert the configuration to a two-piece wing (left and right side) that plugs into pockets in the side of the fuselage. A 1.50 inch diameter carbon fiber joiner tube provides the structural load transfer from the wing panels to the fuselage. The wing / fuselage interface was redesigned to accommodate the plug-in panels, utilizing the scale joint locations so that the appearance of the assembled model is completely scale: No non-scale wing joints are visible.

Other than the fiberglass nacelles, the construction of the model is built-up balsa and plywood, with 3/4 oz fiberglass/epoxy over all sheeted surfaces. The fuselage was built in two halves, each sheeted with 1/8 inch balsa and then glued together. The wing and tail surfaces were standard built up construction with balsa ribs and balsa sheeting. The only open framework item is the rudder, and it is covered with Super Coverite. The nacelles were fabricated via the "lost foam" technique, whereby the nacelles were shaped from foam blanks, then fiberglass was applied on the exterior using West Systems epoxy resin. After lots of sanding and filling, the foam was removed from the interior. The airplane is finished with water-based paint from Warbird Colors, with a dead flat two-part epoxy clear coat by Klass Kote over the entire airplane. Cockpit detailing utilized Best Pilots 1/5 scale "Adolph Malan" pilot and radio-operator/navigator, and the scale WW2 British instruments were from inZpan and IFlyTailies.

Robart air cylinders, control valves and pressure vessels drive the scratch-built main landing gear, with separate systems in each wing. Thus there are no air system

connections impacted by wing removal or installation, negating any requirement for leak-prone quick disconnects. The separate air systems also provide a more realistic retract operation, in that each side works independently and smoothly. The main landing gear includes about ½ inch of oleo shock absorbing through the use of die springs inside telescoping main landing gear legs. A conventional retract servo is the moving force for the scratch-built retractable tail wheel. The tail wheel steering is linked to the rudder servo via a pull-pull cable system with in-line springs to provide shock absorbing for the servo and some amount of free-castor of the tail wheel during taxiing.

For better ground handling, especially during take-off, the airplane includes mechanical brakes on the main landing gear which are actuated with the rudder channel. Right rudder applies braking to the right main wheel, and left rudder applies braking to the left main wheel. The brakes are simply a fixed torsion spring working on the outside of a brass bushing that rotates with the wheel. A pull-string running from a servo connected to the rudder channel is attached to one leg of the spring, and the other leg of the spring is anchored to the brake cover. When the leg of the spring is pulled by the pull string, the spring clamps down on the bushing and provides the brake action. A similar brake system was utilized on his smaller Mosquito, and it completely tamed the Mosquito's notoriously poor directional control during the early stages of the take-off run. The two engine's throttles are also on separate radio channels that are mixed together to allow synchronizing the engines throughout the throttle range via the radio's 5-point mixing curve. In addition, there is a small amount of mixing between the rudder channel and the throttle channels to aid in taxiing: Left rudder advances the throttle slightly for the right engine, while right rudder advances the throttle slightly for the left engine.

Tom's model weighs 58.3 pounds fully fueled and ready to fly and is powered by two O.S. BGX-1 35cc two cycle engines. While gas engines would have been Tom's first choice for this project, the glow engines were selected because suitable gas engines (40-50cc) could not be found that would fit within the Mosquito's slender nacelles. The custom mufflers and exhaust piping are fully contained within the nacelles and exit out the scale location at the rear of the exhaust shroud in each nacelle. Guidance is via a Futaba 10 CAG 2.4 GHz radio, driving 21 servos. The airplane has two 5-cell (6V) 4200 mAh NiMh battery packs for the radio / servos working through a Smart-Fly BatShare battery backup unit to provide battery and switch redundancy.



Condors Minutes for the Regular Meeting May 7th 2014

The meeting was opened by Chris Brashears, President, at 7:10pm. The pledge of allegiance was led by Anthony. There were 30 members present and one visitor, Rich Freedman a Thousand Oaks High School instructor.

Mike Pontel, a long time member, passed away in January from a prolonged illness. Our sympathies go out to his family and friends. His presence at the field has been missed.

Old Business:

IMAC: Frank Oliver requested an event plan for the Red Shoes IMAC again this year. The university representative, Ray Forest, recommended a “no” due to noise related issues referring to last year as a “911” issue. Carl Bergstrom questioned the recommendation since the IMAC feedback Mark received after last years event was very positive. VP Chris Spangenberg stated that we have no leverage with CSUCI and recommended not proceeding. Questioned whether the Campus Police log noise complaints. With respect to University Glen, their newsletter has the Condor schedule for the month.

Frank Oliver will cancel the Camarillo IMAC even on the Southwest IMAC calendar.

Javier Garcia found a document relating to the founding of the IMAA Chapter in 1984 which was passed around the meeting. That would mean the club has been active for 30 years this year!

The AUVSI, Channel Islands Chapter, will meet May 13th at 6pm at the Broome Library at CSUCI. Free parking and cookies! The speaker will be Dr Tiffany Morris. Her topic will be “Unmanned Aerial Vehicle Pathways”. A student pilot program will be discussed as well.

The latest newsletter was published by John Brant including the minutes of the previous three meetings. Al moved to approve the published minutes to date. Don B seconded, and the motion was approved by the membership. Ken Osborn will return to the newsletter next month.

Chris Spangenberg presented the newly approved flying days given by the University. They have been approved for a 3 month period rather than month to month as previously. The days remain the same i.e. no consecutive weekend days. As a condition of our use, we must find a place for a new field. To be determined is whether a CSUCI representative will help with the search.

Chris Spangenberg presented possible club events as follows:

June, an Open House Event. The University food concessionaire will let us know if we can provide

Food or they want to serve the event.

July, a Warbird day; August, fun fly; September a helicopter day. Aug 16th is National Model Aviation

Day so perhaps something could be planned around that date.

All Hoff presented a Field Rules Update. First, all engine starts on the taxiway. This will be discussed at the next meeting after the membership has received an email re this issue. There is a Spotter update - Use ABC instead of AB type extinguishers. Finally the proposed changes will be posted at the field. The possibility of an outreach program proposed to Ron Reiger of the local AUV. No feedback has been received so far.

Show & Tell:

- 1. Robert Vizzo brought a 570 electric Goblin Helicopter. It has a CF boom and HV servos. The frame can hold a 6, 12, or 14 cell battery. The motor is a new G3 series. It is a flybarless design. The model uses a Vbar controller with an internal governor. By linking the Rx..Vbar..Esc an improved response rate is realized. Currently listed at \$699 but it is available at \$639. Savox motors are having a sale. If you are interested, email Robert for a code that gets you 50% off.**
- 2. Chris Brashers showed a quad copter powered by a 3 cell 3300mAh pack. The controller is a Digilite unit w/o GPS which sells for \$65. It will self correct for hands off recovery. Atlanta Hobby sells the frame/motors/props, and HK for the DGI**
- 3. Chris Spangenberg and Daryl Bergstrom reminded us of the California Scale Modelers Association Group Build. They are building a Balsa USA Sopwith replica. There will be a 2 day WWI event in October. Marty's normally sells the kit for \$370 but will give it to us at \$315 w/cowl on special order. They are hoping to form a "Pup Squadron" and meet with Orange County replica builders at their monthly meeting. Daryl's build report: he is upgrading his Sopwith build to scale docs for Scale Masters competition. He has finished the fuselage and wings. The modifications for scale are modeled after the Naval Pup 1917 vintage. The differences are in the fuselage length, tail shape and wing outlines. He is using Solartex covering with 3cts of 50/50 dope to finish. Landing gear mods have been made and the house paint color finish hasn't been determined.**

The speaker was Tony Martino talking about his process for making parts with 3-D printers and older methods. He has been a modeler for 40yrs and worked in auto design, bicycle design, toy design, and independent design houses. His process for part design is: sketch, model, prototype the product. In some instances an animation has been used to sell designs even before a prototype is made. The primary aim of the design, aside from function, is product safety and reliability. He uses Rhino 3D NURBS modeling software, and some hobby apps that are readily available. One

recent project involved the design of scale model parts for an SE5A scale model— instruments and valve covers were among the parts designed and prototyped using 3D methods. He also uses vacuum form tooling for parts. Once a design is completed on the computer the model is exported for 3D printing using the .stl file format (sterolithography format) to print a 3D part.

Programs available for 3D design are:

- Auto Desk 123 apps for android or Ipad. Once your design is completed, then send it to a design/fab house for the actual part.
- Rhino 3D, Rhino 5 is available as a free trial version which can be downloaded. The help files are very good for first time users just starting out.
- Sketchup is Google Free-Ware used for the same purpose.

With respect to 3D printing, the better the resolution of the printer, the more expensive the printer. Extruded parts are produced by MakerBot (selling for around \$1,300) using lower cost materials and gives a resolution of 100 micron. If you use the Shapeways program you can send your completed file out for printing of the parts thru the program. Stepcraft is a DiY CNC machine for cutting parts and the cost is around \$500. Older style 3D printing was done with SLS or SLA laser based scintering in which a liquid is cured by a laser beam to build up a part. This gets a 20 to 25 micron resolution. These parts suffer from a relatively short life time and tend to deform over time – not optimum for model use.

Following Tony's presentation the meeting was adjourned.



From the Membership Chairman

2014 Membership Renewals: Membership renewal information is on the CIC website on the Membership page: <http://cicondors.com/membership> or you can contact Al Hoff by email: amhoff93010@verizon.net or by phone: 805-388-5898 (leave a message, I will call back).

Proposed Updated Field Operation Rules and Updated Spotter Safety Rules are on the CIC website on the Safety page: <http://cicondors.com/outreach>. We will discuss and vote on accepting the revised documents at the next general meeting, June 4th. Changes are marked in red, with strikethrough text for deletions and underlined text for insertions. The insertion of rule to not start gas or fuel engines in the pit area (i.e. start them on the taxi way), caused a vigorous discussion at the May general meeting. If you have an opinion, come to the meeting.

Al Hoff