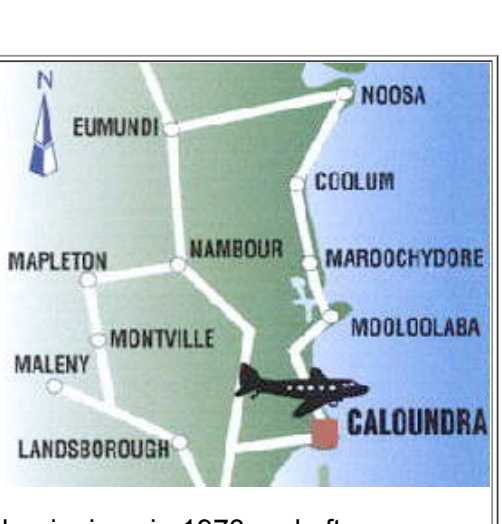
Warringah Radio Control Society Incorporated
(Incorporated under the Association Incorporation Act 1984)

Newsletter - February 2007


"A couple of old Fokkers" (how long have you been waiting to hear that?!?). David Rose and Tony Warren-Smith some years ago
Photo/caption courtesy of Mike Minty's archives

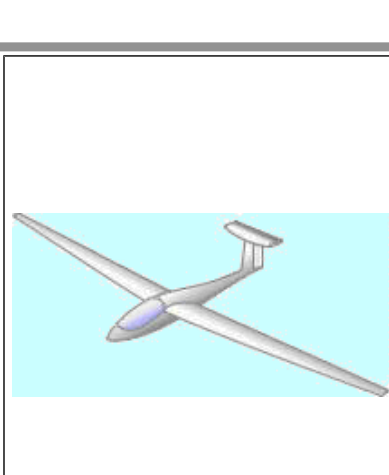
MEETINGSMEETINGSMEETINGSMEETINGSMEETINGSMEETINGS
The next meeting will be held on Tuesday, 13th February 2007 at Tennis Cove, Eastern Valley Way, starting at 7.30 pm. The next meeting after that will be on Tuesday, 13th March 2007

WORTH A VISIT!



The Queensland Air Museum
Caloundra Aerodrome,
Queensland's Sunshine Coast (approximately 100 km north of Brisbane).

The Queensland Air Museum had its beginnings in 1973 and after a nomadic existence for years, the Museum settled into a modern hangar type building on Caloundra Aerodrome in June 1986, and a Canberra, a Meteor and two Sea Venoms were stored in the hangar, although by this time, only the Meteor was ready for display.
The Museum at Caloundra was opened in April 1987 by which time the volunteers had the entire display ready.
The road leading to the Museum has been officially named Pathfinder Drive in honour of the Pathfinder Force founded by Don Bennett. A second, much larger display building was erected towards the end of 2001.
For more info: http://www.qam.com.au/



GLIDER & ELECTRIC DAY
Sunday, 18 February 2007

Open to all electric models
Glider 5 minute max. Bonus points for spot landing, 3 rounds.
Electric 5 minute max. Bonus points for spot landing, 3 rounds.
Deduct motor run times from total flight times.

And for the first time ever
THE JOHN MEEK MEMORIAL TROPHY
will be awarded for the "Best Glider"

THIS IS A FUN EVENT WITH SAFETY PARAMOUNT
Competition Director - Mike Minty

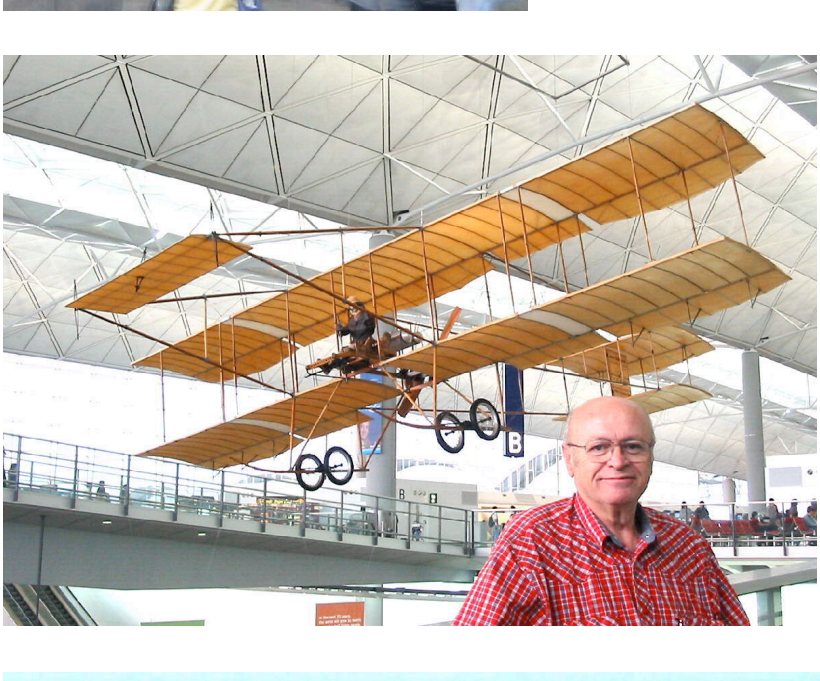
CONGRATULATIONS TO
DENNIS GRECH
on achieving his GOLD WINGS

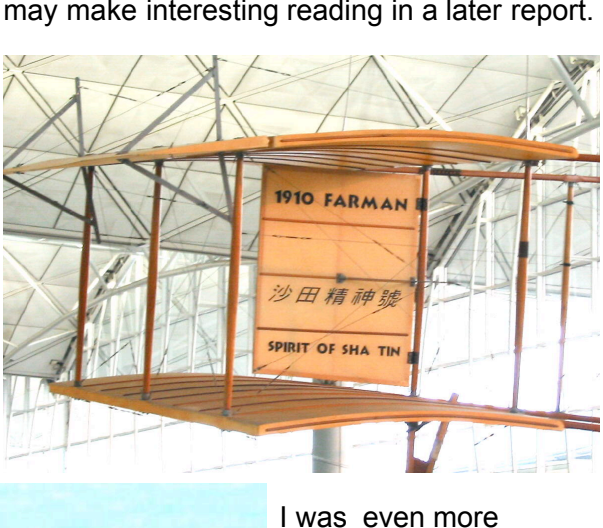
FLYING TIGERS MUSEUM, CHONGQING, CHINA

by Tom Wolf

On a recent visit to the Chinese city of Chongqing (which incidentally is now the highest populated city in China with a population of 31 million) I had the pleasure of visiting to the Flying Tigers Museum.

On the way to Chongqing I was surprised to find a replica 1910 Farman "The Spirit of Sha Tin" hanging on the ceiling of Hong Kong's new international airport. The Farman was the first aircraft to be flown in Hong Kong, it may make interesting reading in a later report.

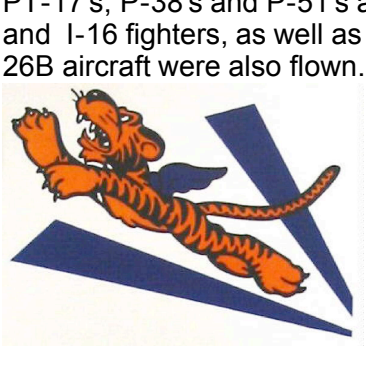




I was even more surprised to find a very large bi-plane sitting on the tarmac at Guilin. Despite enquiry from the large number of non-English speaking people at Guilin Airport, I never did find out what that aircraft was used for, but after the horror stories I have read about China's commercial aviation it may be the prototype of the next airliner? That's probably a very unfair comment because I did not experience any problems during my 4 commercial flights within China with various carriers.

But back to the "Tigers". We often see models of P-40's wearing the shark-tooth hallmarks of the "Flying Tigers". This was an affectionate name given by the Chinese to the aviators of the American Volunteer Group (AVG), the China Air Task Force and the US Army's 14th Air Force under the leadership of Claire L.Chennault.
The shark-tooth idea to decorate the air intake was actually "borrowed" from the Brits who decorated their Spitfires with this nose-art in the desert campaign against Rommel.

Prior to the AVG's arrival devastating losses of lives and property were suffered by the Chinese from daily bombing by the Japanese,
In October 1940, Chennault was summoned urgently by General Chiang Kai-shek in Chongqing and requested to set up an American air force team to defend China in the air.
The AVG was officially formed on 1 August 1941 their main mission was to protect the Burma Road and Chongqing (which is where the Chinese Army had retreated and was made the capital of China after the fall of Nanjing during the Japanese invasion). In all, the AVG destroyed 297 Japanese aircraft.
In the China campaign, various aircraft were used against the Japanese Mitsubishi Type 97 and "Zero" fighters. the best known were the famous tiger-tooth P-40's, however US PT-17's, P-38's and P-51's and Russian Polikarpov I-15 and I-16 fighters, as well as US C-46, P-61, B-25A and A-26B aircraft were also flown.



The original Flying Tigers patch was designed in early 1942 by the Walt Disney Studio, the Group was made up of 3 Squadrons, the Adam-Eve Squadron, the Angel Squadron and the Panda Squadron.

Eventually, after the American entry into the war the AVG was designated the CATF and were finally integrated into the 14th Air Force and they were mostly responsible for FLYING THE HUMP, this being the flying of war materials that could no longer be delivered by the Burma Road from India to China on the hazardous route over the Himalayas. This was the world's first major airlift.
The Museum was established in 2004 and is still in its infancy state, but the love and respect by the locals for this small band of mercenary adventurers is clear to be seen.

The Flying Tiger's "Life Saver" or "Blood Chit"

The "Life Saver" or "Blood Chit" was issued to foreign pilots, the main text reads:

The foreign person has come to China to help the war effort. Soldiers and civilians, one and all, should rescue, protect and provide him medical care.

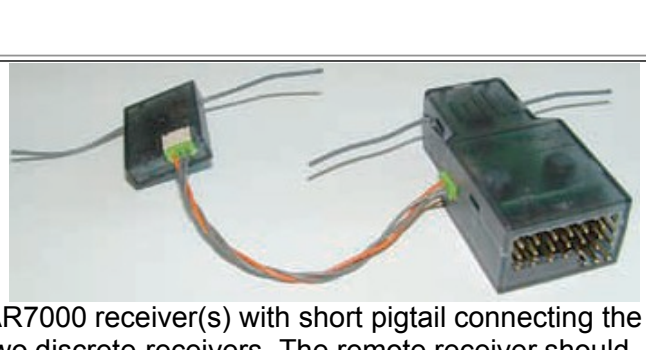
The Life Saver was sewn on the back of the pilot's jacket and was signed with the stamp of Generalissimo Chiang Kai-shek.

Many of the pilots shot down during the fighting were enthuseastically rescued and "brought home".

SPREAD SPECTRUM
Are You Ready for Full Range?

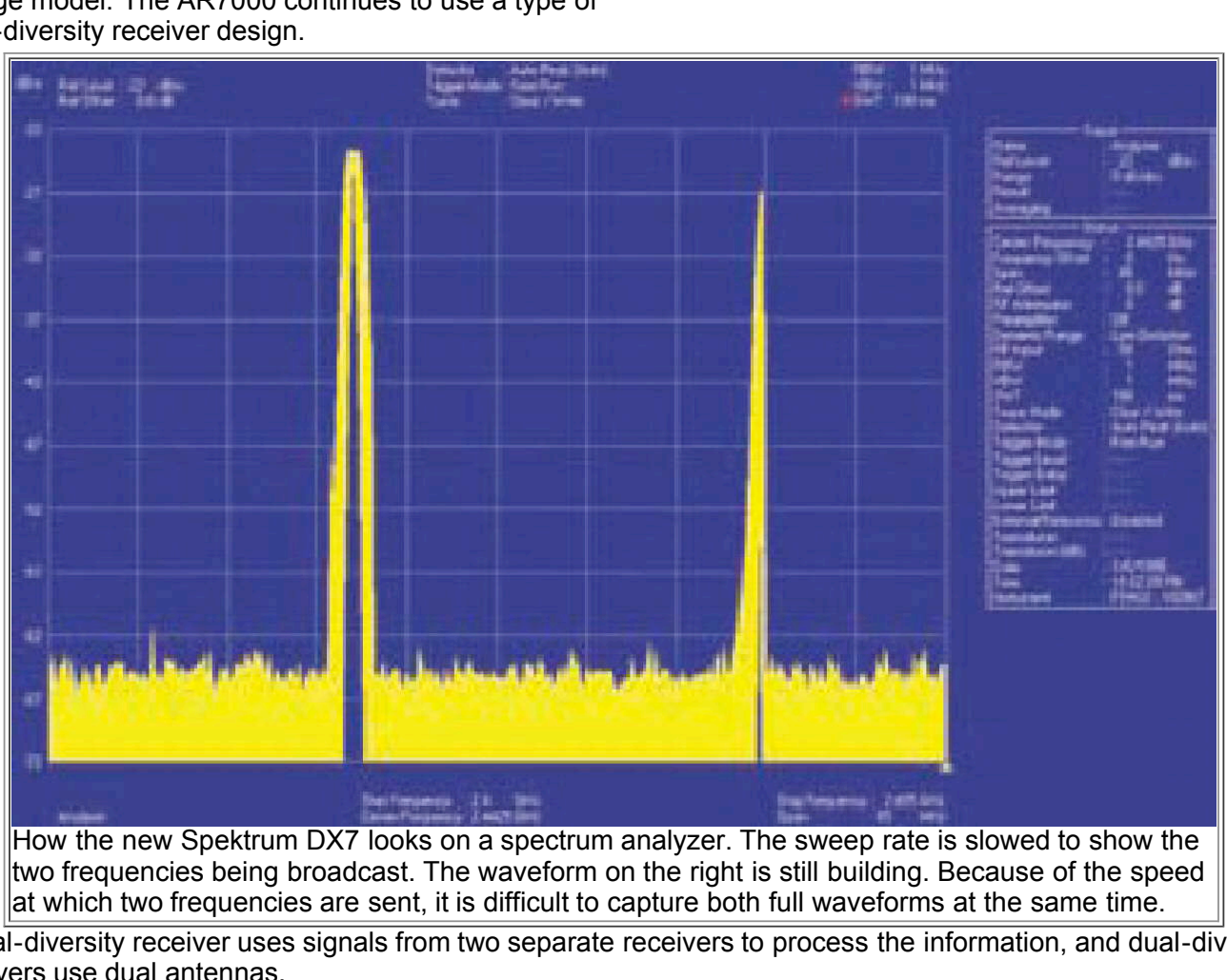
by Steve Kaluf and Dan Williams
(printed with the kind permission of Steve)

ROUGHLY 18 MONTHS ago a new company introduced spread spectrum technology to the radio-control-modeling world. This first system was a surface unit for use in cars/trucks.
Almost exactly a year ago that company debuted a six-channel aircraft radio also utilizing spread spectrum technology. This new system was limited to park-size/mini-helicopter use because of range and antenna considerations.
That unit has literally taken the parksize/mini-helicopter world by storm. Modelers who are using these systems have enjoyed no longer having to worry about frequency control and interference from outside sources. However, we've all been left wanting, wondering when we would finally be able to fly our larger, glow/gas aircraft with a similar system.
Well, members, the wait is over! Spektrum and Horizon Hobby—which brought you the Spektrum car system and then the DX6 park flyer system—released the Spektrum DX7 Full Range system at the iHobby Expo in October. Now everyone can finally fly utilizing the benefits of spread spectrum technology.
This is an exciting time for RC, and it is truly the beginning of a new era for us. Let's look at what it took for Spektrum to introduce this new system and get it ready to operate our larger aircraft. (I hope you have been following along for the last 18 months or so and have read the information we have published in MA and on the AMA Web site.)
For this update I will turn this article over to AMA Electronic Technology Committee member Dan Williams. He wrote the article "Digital Spread Spectrum: The Story So Far," which was published in the July 2005 MA. I'll drop back in following Dan's words to tell you a little more about what to expect with this new system.


AR7000 receiver(s) with short pigtail connecting the two discrete receivers. The remote receiver should be at least 2 inches from the main receiver with the antenna oriented perpendicular to the main receiver's antenna.

The main problem that exists in a larger model when attempting to use a spread spectrum system such as the DX6 is the propensity for the large metallic and electrically conductive components to block, or directionally shield, the receiver's antennas from the signal.
The small size of the (DX6's) AR6000 receiver and its antennas can be completely masked by a large gasoline engine, muffler, or carbon-fiber structure.
At 2.4 GHz the transmitted signal's ability to "go around" the engine is greatly diminished.For that same reason, wireless components for PC networking have the same problem going around I-beams or furnace ductwork in your house. Longwave radios, such as AM broadcast, work well around buildings and under bridges.
FM VHF broadcast radios can suffer from shadowing of buildings and structures. Your satellite radio really hates anything blocking its view of the sky and the satellite. The same problem applies to the 2.4 GHz digital spread spectrum (DSS) systems.
The AR6000 DuaLink technology uses two transmitted frequencies that send the information to the two receivers in the receiver enclosure. That's why there are two antennas protruding from the receiver.
This works well to take care of any blockage of one or the other receiver from its signal on a small model. Small motors and carbon fiber used on small models don't block both of the receiver antennas at any one time, so there's always a solid link to the aircraft.
Another problem with using signals at 2.4 GHz is that the antenna orientation can become critical. By employing a separate antenna for each receiver, and orienting them 90° to each other, they see around the various objects in the aircraft differently.
Also, as the aircraft goes through different orientations when performing aerobatics, there's always one antenna that is going to see the transmitter signal for a solid lock. However, as the model size grows, so does the chance of large objects in the model blocking the signal to the tiny receiver box and antennas.
As model distances are increased, because of the greater ability to see large models at farther distances, the critical nature of antenna direction becomes worse. The chance that antenna orientation between transmitter and receiver causes a signal drop becomes much greater. Big models can fly longer distances. The farther away the receiver is, the less signal it can receive.
Those are fundamental limitations on the size of model the DX6 and AR6000 receiver can fly reliably. Regardless of the supposed success stories using this receiver with big models, there's a possibility that the sheer size of the receiver vs. the model can cause a problem with the RF link.
The DX7 and AR7000 receiver solve all of that. Besides the intelligence added to the DX7 transmitter, which Steve will describe, the AR7000 receiver is a total redesign of the AR6000. It too uses DuaLink technology, but it is now known as "Full Range" DuaLink technology.
The receiver has undergone development to eliminate the problems inherent with combining the AR6000 with a large model. The AR7000 continues to use a type of dual-diversity receiver design.


AR7000 installed in a helicopter. Main receiver is mounted in the normal location. Remote receiver has Velcro on its back and is stuck to Velcro straps holding main receiver in place. Note perpendicular orientation of the two antennas.


How the new Spektrum DX7 looks on a spectrum analyzer. The sweep rate is slowed to show the two frequencies being broadcast. The waveform on the right is still building. Because of the speed at which two frequencies are sent, it is difficult to capture both full waveforms at the same time.

A dual-diversity receiver uses signals from two separate receivers to process the information, and dual-diversity receivers use dual antennas.
The idea in a dual-diversity receiver is to have the two antennas located some distance apart. In doing that, any signal blockage or other problem in receiving the signal with one antenna won't be a problem with the second antenna, which is located separately.
The big difference in this system is that two RF channels are sending information simultaneously to two receivers. Add to that all the digital signal processing done from both receivers, and one has a robust signal link to the dynamic environment of a model.
The AR7000 is actually composed of two receivers with an umbilical cord between them. Now they can be located in different parts of the aircraft to take full advantage of the dual-diversity design.
By placing the receivers in different positions in the aircraft, any blockage from, say, an engine probably won't affect the other. Signal integrity is maintained and there is no signal loss.
Another advantage to the new AR7000 design is in the antennas themselves. In the AR6000 park/mini flyer receiver, each antenna is more or less a single "whip" style, or monopole antenna.
The new AR7000 utilizes two "dipole" wire antennas instead of whips.
A dipole antenna has added gain (more signal received) than a wire whip antenna, plus the added "capture area" of the dipole.
Capture area is physically the amount of wire exposed to the RF signal from the transmitter. The longer the antenna, the more signal that is received.
Finally, by separating the two receivers for placement and following the recommendation to orient the antennas perpendicularly (known as "orthogonal" in the RF world), all model orientation with respect to the transmitter antenna will be taken care of. No matter what attitude the model is in, an antenna will be oriented correctly for a good signal lock.
Now Steve can take on the rest of the radio-system details.

Thanks for that update on the technology and what was involved to get spread spectrum to the point we can use it in all of our aircraft, Dan. As I mentioned in the introduction, this is an exciting time for RC modelers. Although we certainly do not see this new technology causing our 72 MHz systems to disappear, it will certainly ease the congestion at many flying sites and make flightlines at large events more enjoyable for those using spread spectrum systems and 72 MHz systems. The 72 MHz band will open up a bit as more spread spectrum systems become available.
The new Spektrum RC system is, once again, based on an existing JR transmitter; this time the new JR 7202. So everything except the RF link (which is significant) is JR. I've been fortunate to have been given access to this new system in early August 2006 and have enjoyed flying with it and learning about it ever since.
As does the DX6, the DX7 uses what Spektrum calls DSM (Digital Spread Spectrum Modulation). However, the DX7 and its receiver (AR7000) use what Spektrum calls DSM2: a second generation form of this modulation. The AR7000 receiver is also actually two receivers. However, unlike the DX6's AR6000, the AR7000 is actually an internal and external receiver. The internal is located on the main printed circuit board of the AR7000, and the external receiver is attached to the board with a 6-inch extension lead.
As Dan mentioned, each receiver has a short dipole antenna. That allows the two receivers to see a different RF environment, which improves path diversity, allowing the AR7000 to see the transmitter's signal in all conditions.
Spektrum recommends that the receivers be mounted at least 2 inches from each other and preferably with the antennas oriented perpendicular to each other. This technique maintains as much path diversity as possible. Spektrum does point out that the receiver placement has been proven not to be critical.
Along with this article are pictures of the AR7000 installed in a helicopter so you can see how I arranged the two receivers. Installation is simple, and I, too, found receiver orientation to be non-critical.
All flight testing and ground range testing I have conducted has shown excellent range for this system. In fact, I got tired of walking while doing the ground range tests. The external receiver is tiny and thin, so it's easy for which to find a home.
This system takes advantage of spread spectrum technology with another safetyenhancing feature called "Model Match," which is patented technology. It identifies each model stored in the transmitter's memory with a code that is unique to that aircraft memory position. That code is also transmitted to its receiver. This means if you attempt to operate Model 1 and the transmitter is set to the wrong model (such as Model 3), the receiver will not operate.
The DX7 is also compatible with the DX6's AR6000 receiver. However, it is important when using the DX7 with the AR6000 receiver to limit aircraft types to park size and mini/micro helicopters only.
We hope you have enjoyed this look at the latest technology available to the RC modeler. The next couple years are going to be interesting and fun as more manufacturers jump on the spread spectrum bandwagon. I suspect each will have a slightly different way of doing things.
With the cooperation of each manufacturer, we hope to be able to bring you a technical update on each new system as it is released. AMA thanks Horizon Hobby and Spektrum for being cooperative with us in the last two years as they have been working on this technology. This has allowed us to learn about it and hopefully educate you, our members, properly.

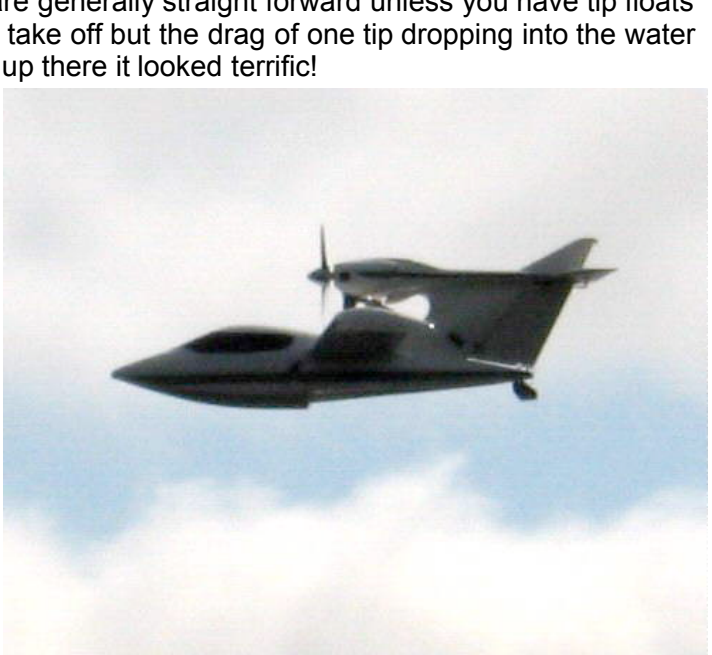
Steve Kaluf (skaluf@modelaircraft.org)

LITHGOW FLOAT FLY 2007

It's that time of year again when the lake is up for grabs – yes, the Lithgow Float Fly. This year fliers from WRCS were Al Zuger with a Wossname (a thing he bought at a Swap Night with a pair of floats banged on), Mike Minty (right) with his Spotty standard fun fly plane (this year with new improved painted floats and spots), Mike Close with his sexy Great Planes Seawind and another Cub and Grahame Hutchinson with his lovely Kingfisher and his Piper Cub. And David Pound came along to give moral (?) support.

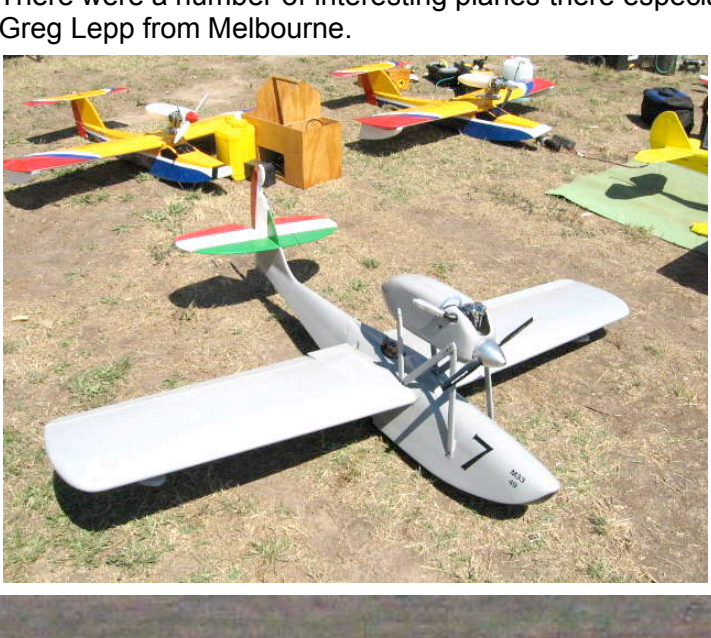
There was a good crowd on the Sunday and the weather soon warmed up. When Mike M came over the mountains in the early morning Leura was deep in a very cold cloud.

It was Al's first trip to the water so he decided, on advice from others, to put his Rx and battery in plastic bags. He duly wrapped the Rx tight and strapped it up with sticky tape …….only to find he had forgotten to attach the aileron servo lead! Once that was sorted he was soon out on the water and pitter-pattering off for a flight. He landed happily and was keen for more. The wind was a bit variable both in direction and strength which made for some tricky landing approaches some times. Take offs are generally straight forward unless you have tip floats like Mike C and his Seawind. Here he is getting ready to take off but the drag of one tip dropping into the water at speed meant it took a few goes to get airborne. Once up there it looked terrific!

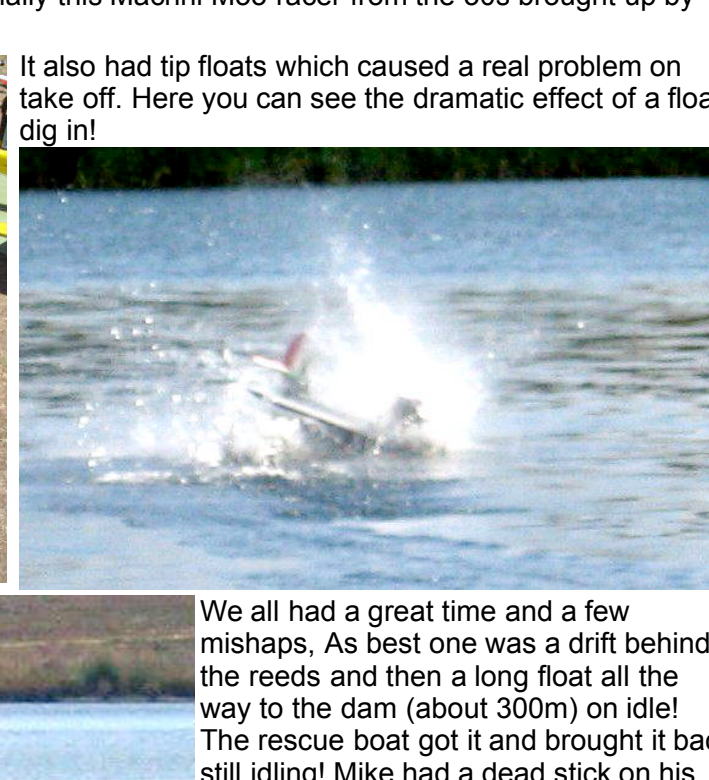


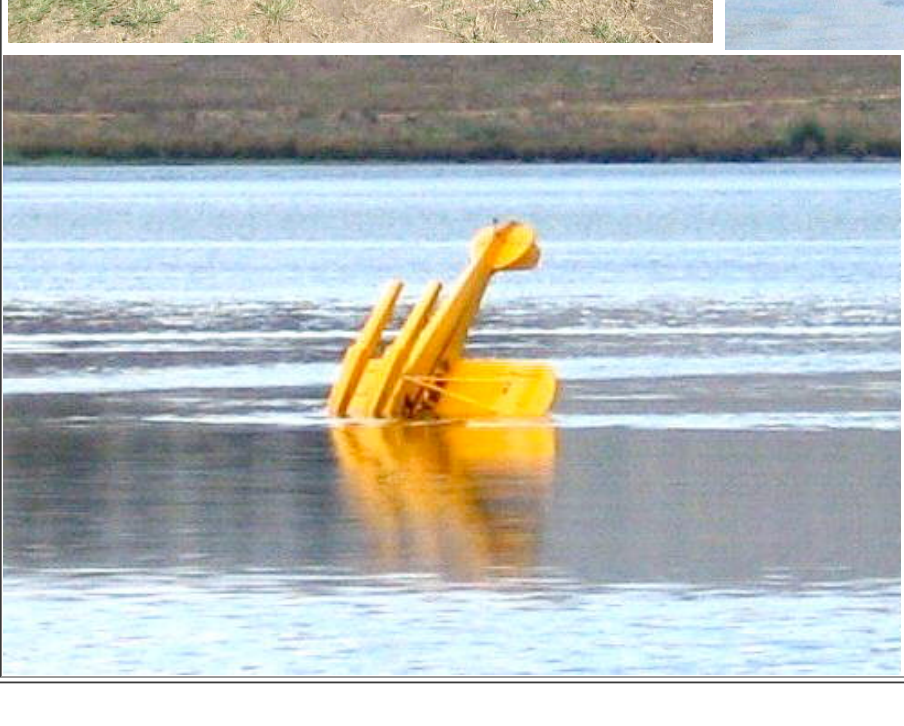
Graham put in a few flights with the Cub before coming in for a low "photographic" pass and disappeared behind the reeds! The resulting attempt to fly "out of sight" left him with a broken float.

As ever his Kingfisher looked and flew very well. Here he is on the ground and airborne.
There were a number of interesting planes there especially this Machhi M33 racer from the 30s brought up by Greg Lepp from Melbourne.



It also had tip floats which caused a real problem on take off. Here you can see the dramatic effect of a float dig in!



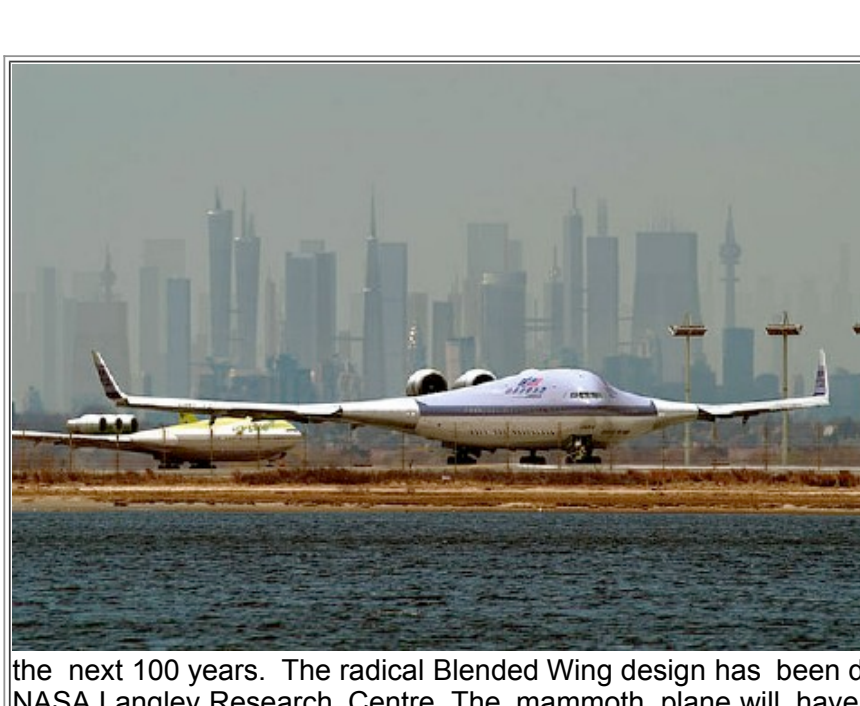


We all had a great time and a few mishaps, As best one was a drift behind the reeds and then a long float all the way to the dam (about 300m) on idle! The rescue boat got it and brought it back still idling! Mike had a dead stick on his last flight of the day and the resulting hard landing (yes – water is hard!) pulled a float off. And this poor bugger did a perfect landing with a very light 1/3 scale Cub only to have the wind blow it on it's back. Ah, the joys of flying off water! Why don't you join us next year?

Report by Mike Minty

MAKE YOURSELF COMFORTABLE ...

Ladies and gentlemen, this is the captain speaking. Firstly I would like to thank you for flying Mandarin Airlines. As we taxi out to the runway please make yourself comfortable ... and for those of you sitting on the right side of the plane please look to your LEFT!!

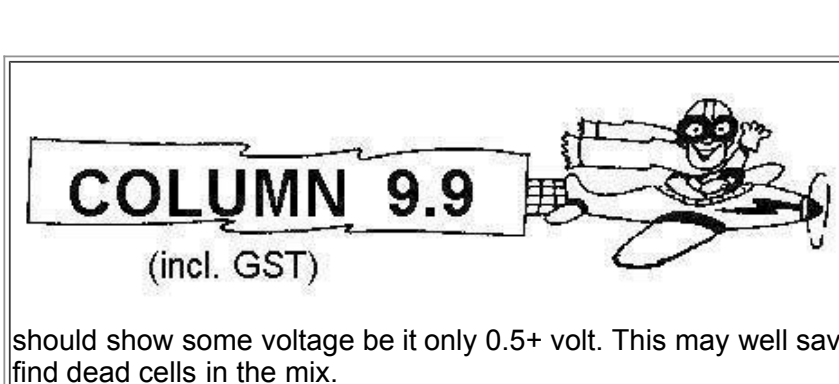


Boeing Blended Wing 797

It's a beauty look at this new aircraft...guess Boeing are not going to be outdone by the French A380.
Boeing intend to take on Airbus with (1000 seat) giant 797 Blended Wing plane
Boeing is preparing a 1000 passenger jet that could reshape the Air travel industry for the next 100 years. The radical Blended Wing design has been developed by Boeing in cooperation with the NASA Langley Research Centre. The mammoth plane will have a wing span of 265 feet compared to the 747's 211 feet, and is designed to fit within the newly created terminals used for the 555 seat Airbus A380, which is 262 feet wide.
The new 797 is in direct response to the Airbus A380 which has racked up 159 orders, but has not yet flown any passengers and is beset with problems. Boeing decided to kill its 747X stretched super jumbo in 2003 after little interest was shown by airline companies, but has continued to develop the ultimate Airbus crusher 797 for years at its Phantom Works research facility in Long Beach, California

The Airbus A380 has been in the works since 1999 and has accumulated $13 billion in development costs, which gives Boeing a huge advantage now that Airbus has committed to the older style tubular aircraft for decades to come.
There are several big advantages to the blended wing design, the most important being the lift to drag ratio which is expected to increase by an amazing 50%, with overall weight reduced by 25%, making it an estimated 33% more efficient than the A380, and making Airbus's $13 billion dollar investment look pretty shaky.

High body rigidity is another key factor in blended wing aircraft, It reduces turbulence and creates less stress on the air frame which adds to efficiency, providing the 797 a tremendous 8800 nautical mile range with its 1000 passengers flying comfortably at mach .88 or 654 mph (+-1046km/h) cruising speed another advantage over the Airbus tube-and-wing designed A380's 570 mph (912 km/h)
The exact date for introduction is unclear, yet the battle lines are clearly drawn in the high-stakes war for civilian air supremacy although it can be assumed that the airlines hope that the competition between the manufacturers continues and that no single manufacturer achieves a monopoly on the market (which may explain why the airlines are so patient with Airbus in spite of the failure in delivery of the A380 on time and the unresolved problems).



George Ward tells how he was recently caught out after purchasing a well known and reputable brand of tagged batteries and he suggests that you take a multimeter to the point of sale and check the batteries you intend to buy. If the battery/s register zero volts they are **Dead And Gone** and will not charge up; even non-charged batteries should show some voltage be it only 0.5+ volt. This may well save the effort of making up battery packs only to find dead cells in the mix.

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