Tale Feathers

July 2013

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Hi Club Members
Back again with another issue of Tale Feathers. Thanks for all the positive feedback. It was much appreciated. The negative stuff got ignored as usual.

The usual Disclaimer:
Articles and comments by the Editor and contributors may not necessarily reflect the views of the Club Committee or even be Politically Correct; but will be published anyway.

HOUSEKEEPING

Please remember that this newsletter is a non-political information exchange and open forum for anybody to have their say.
Please email stuff to me, (a Word document preferably, any version), be it technical, human interest, Club stuff, building/flying tips or if you just feel like a bit of a rant. Photos (in JPEG format) are always welcome.
The AGM has come and gone for another year. There was a good turnout of members to vote in a new committee. Congratulations to them as we look forward to your enthusiasm steering the Club in the right direction for our collective benefit.

Health Warning

I regret to report that the curious practice of Bin Crawling (as revealed last Tale Feathers) is apparently contagious. Here's photographic proof that at least two additional Club members have been affected. Names not supplied in order to protect the guilty. Terribly sad, isn't it?

Bin Crawler in action

Rest assured that measures are being taken to ensure that this affliction doesn't spread any further. In the meantime, please open all bins with care in case a Bin Crawler is in residence.

STILL FOR SALE SECTION

1x Futaba 14 MZ Transmitter with Futaba 2.4Ghz module – 7 Years old fully functional and in working condition
1x Futaba R6014 2.4Ghz 14ch Receiver

1x Futaba 36 Mhz TX Module

2x Futaba R5114 36Mhz 14 channel DPS G3 receivers

3x Futaba R149 9 channel Dual conversion receivers
Futaba Double Aluminum Carry case

All electronics in perfect working condition, looking to update before going overseas.

Please contact via email bjtucker23@gmail.com

Ed comment: this is a great radio. Help promote the swing away from the Dark Side.

ALSO FOR SALE

90N Turbine, Kero start. Would suit a .75-1.20 size jet-type model 75" WS or up to 12kg/26.5lb weight.

(Ideal for a 1/6, 72" Panther. Ed)

Technical specification: EvoJet B-90

Thrust:	Nominal-9kg/19.8lb @165,000
Weight bare:	950 g = 2.1 lb.
Diameter:	91 mm = 3.6 inches
RPM:	Idle-48,000 Max-165,000 rpm
Exhaust gas temperature:	650°C - 750° C
Fuel:	285g or 10oz/minute Jet A1, Kero
Lubrication:	5% turbine oil in fuel
Maintenance interval:	160.000.000 revolutions / 25 h run time

Engine features:

Electric on-board starter with fully-automated start sequence via the mini-ECU

Completely internal EGT probe and Kero start igniter.

Single fuel line for start and run.

This is a brilliant little turbine of superior German design and construction, so the rated power is quite conservative. It features easy plug-n-play wiring with single fuel-line hook-up and starts very easily and reliably.
It is a genuine German EvoJet engine, not a cheap Chinese copy.

These engines run with zero vibration!

Box contains: Engine with starter, JETRONIC ECU, Data Display Terminal and programming unit, precision fuel pump, electric fuel valve, manual fuel valve, ample SMC 4 x 2.5mm clear polyurethane fuel tubing, alloy-body fuel filter, **safe** Li-Mn battery 3s 1100mAh, (charge as for Li-Po) fuel-tank clunk, cable set incl. switch with charge socket, engine mounting clamp, mesh FOD filter, comprehensive plain-English Operating Manual.

This turbine engine, with ALL necessary equipment, is new-in-box & has not been run or installed in an aircraft. If the buyer is new to jets, all assistance and advice will be given to set-up, test-run and check-fly the aircraft. A limited quantity of safe turbine oil will be available if required.

Price. AU$1,750. Will ship free within Australia in original shipping carton.

Contact: Ian on 0427 602 388 any time

Battery Tip: (courtesy of Tate's RC World)

HOW TO GET THE MOST FROM YOUR LIPOS

Try not to discharge your packs beyond 80% of their capacity. For example try to use only 1600mAh of a 2000mAh pack. This will keep the temperature down, prolong the life of your pack and may prevent the dreaded 'puffing-up', which is a prelude to a melt-down. Try not to fly until the "low voltage cut-off" kicks in by using a timer.

Funny Link of the Issue:
You may need to Double-click to open
(The site is safe to link to; no viruses.)

Darth Vader in the Canteen.html

HAPPY SNAPS-CLUB MEMBERS AND THEIR DOINGS

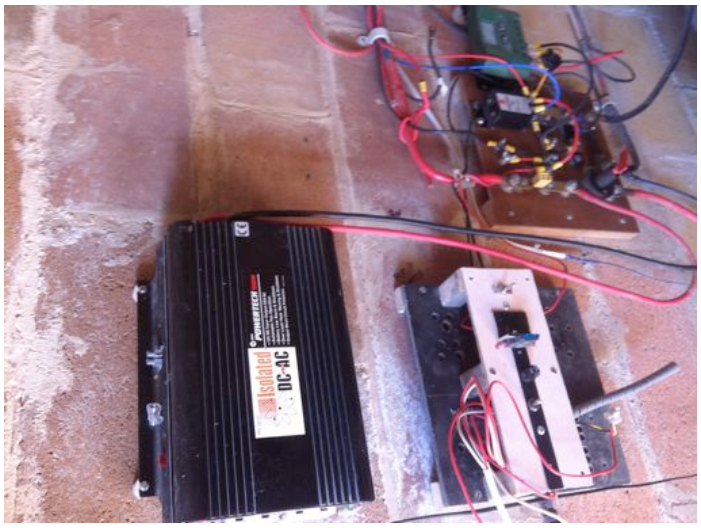
"I said, "Dad. You fly the foamie! I'll fly the Extra." Like, that worked really well! ---Jordan Kendall.

"Watch this, Jordo. First flick every time. You've gotta use four fingers and wear thongs...No, not that sort! The ones you wear on your feet!
Luke Broderick flicking, Jordan anchoring Extra.

Remy, our wandering correspondent has been at it again and offers these views of the Barossa club during a recent IMAC comp.

"A couple of photos showing the hangout including a nice outdoor pot belly stove, and the power system used to run a small microwave and fridge to support members. They had both solar and wind generator that fed 600 amp hour batteries and a nice inverter."

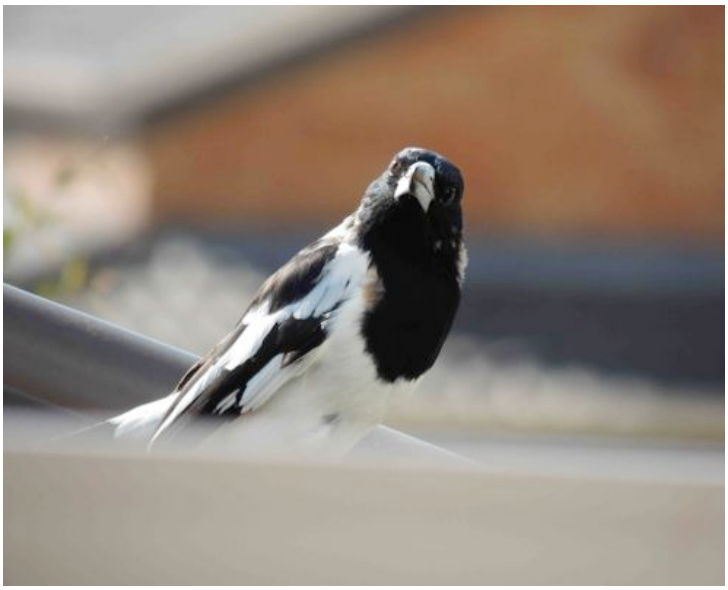
Clubhouse and pits. (*Like the grape vines!)*



Barossa Club wind & solar power set-up.

Chinese Aviation Philosopher, Confuse Us says;
Try to learn from the mistakes of others. You won't live long enough to make all of them yourself.

Try to stay in the middle of the air. Do not go near the edges of it. The edges of the air can be recognized by the proximity of the ground, club buildings, the fence, trees and power lines. It is much more difficult, painful and expensive to fly there.



*"What are you looking at, human? Don't you know who I am? Feed me **now** or die the death of a thousand pecks!"*
Butcher Bird demanding (and getting) free food with menaces!

TECH TALK

As promised last issue, I though we'd look at how aerofoils (as wings), can misbehave and more importantly, how to avoid any of that nonsense in the first place.

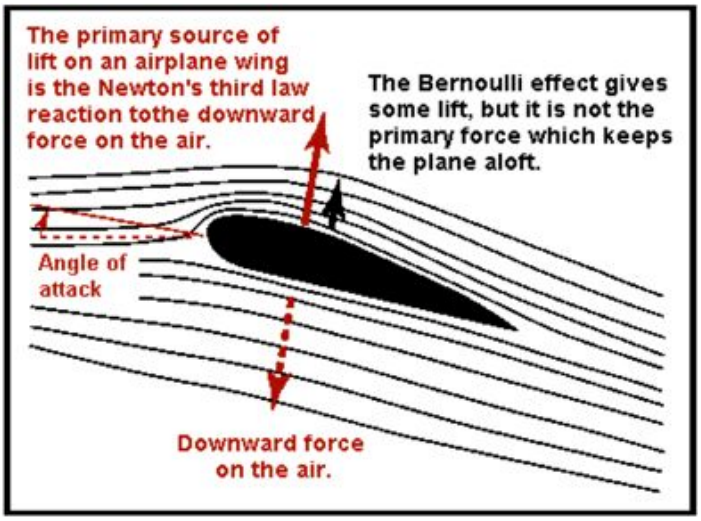


Fig.1 Showing the airflow around a typical 'foil during flight.

This illustrates the happy situation where the wing is operating within its Angle of Attack limits and airflow over and under it is relatively smooth.
The Lift generated equals Weight and the engine is still running well enough to overcome Drag so that the forward motion provides Lift, etc, etc…

Now consider the following diagram, *Fig.2,* where flow separation (with attendant drag increase) is shown for increasing Angles of Attack.

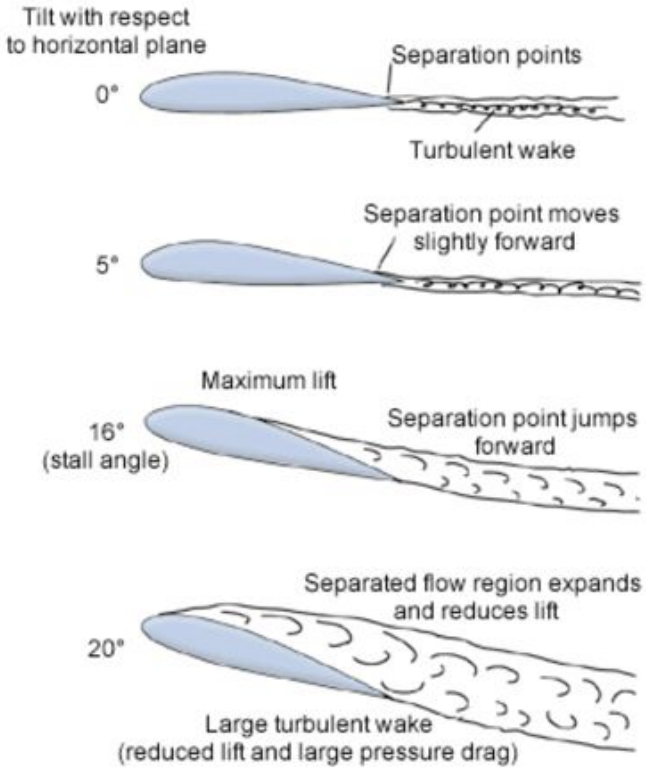


Fig. 2

0º--Little or no lift is produced. Airflow is smooth with the separation point right at the trailing edge. Drag is very low

5º--Some lift produced. Airflow is still very clean with not very much drag-inducing turbulence as the flow separation point is still well back toward the trailing edge.

1**6º--**Right on the stall angle for this average type aerofoil, which produces maximum lift. It also produces a lot of drag as the airflow separation point has moved a long way forward

20º--Well beyond the stall angle for this aerofoil. Overall lift has **decreased**, while drag has increased dramatically, slowing the airframe. The airflow cannot match the increased curvature of the upper side of the leading edge, causing it to separate immediately.

Note that up to and beyond the stall angle, lift is still produced by the smooth airflow under the wing. It is the massive increase in drag, however, that causes the airframe to slow rapidly at the stall angle, making the engine work much harder to maintain a constant height. This is a very unstable attitude to fly at and will quickly lead to a "departure from controlled flight" unless an excessive amount of power is available.

Stall Recovery

To recover recover from a stall, it is usually enough to centralise the elevator stick briefly, then carefully pull (not yank!) the aircraft out of the inevitable dive.
Recovery will be easy because the pilot caused the stall in the first place by hauling back too fast or too much on the elevator stick! Therefore, simply neutralising the elevator will reduce the wing's Angle of Attack, allowing it to 'un-stall' and the model to fly. Almost instantly!
A stall won't be the fault of the model, the radio or the bloke standing beside you.
It's called 'dumb thumbs' and we all suffer from this malady occasionally.

Excess power overcomes aerodynamics

Anyone who has flown or watched the antics of a 3-D style model will appreciate that any aerodynamic nuisances like stalling, can be easily overcome by applying more power. Excess thrust will take over from wing lift and the model will fly at very nose-high angles, supported almost totally by the propeller.

Creating a stall

Some may not be aware that **any** design wing is quite capable of stalling at **any** speed and in any attitude or configuration.
The previous words and diagrams clearly show that if a wing is rotated beyond its stall Angle of Attack, the airflow is disrupted, drag increases dramatically and the wing stalls.

Abrupt manoeuvers

This can happen at high speed if the elevator is large enough and the pilot is rough enough. Any **abrupt** increase in the A of A caused by a large elevator deflection could stall the wing causing immediate loss of controlled flight. (Dynamic Stall)
This loss of control can look quite impressive, with the model usually executing several flick or snap rolls. If close to the ground, it's all over, Rover, but if you have some height, throttle back, release the elevator, then return to level flight.

Dynamic stalling and G-loading

High-speed stalls can also be caused in a tight turn with high G-loadings. Stall speed varies proportionally with G-loading and ranges from zero kph at zero G, (during a push-over from a climb) on up to wing-shredding G-loads. As G-loads increase, so does the stall speed because the aerofoil is only able to support the increased weight of the airframe

by holding a higher angle-of-attack.
These high G-loads are also responsible for bending/breaking wing joiners and wing panels with the obvious catastrophic results. Best avoided!

Stall prevention

- Don't fly too slow, particularly at low level
- Don't jerk on the elevator stick
- Don't pull too hard on the elevator in steep turns

Stall speed

It is good practise to find out how slow is too slow for each model, by stalling your model at height under controlled conditions. If you're not comfortable doing this, get someone who is experienced at test flying to do it for you while you watch and note very carefully the speed at which it stalls and (more importantly), how it behaves at that moment.
Most models will at least drop the nose as lift is lost and usually one wing will drop as well.
If up elevator is held too long, the stall will quickly develop into a spin with a steep nose-down attitude and rapid rotation.
Note: In a true spin, the elevator will need to be full up keeping the wings fully stalled and the vertical speed will **not** increase beyond a certain point no matter how high you start.
However, if the model is not stalled to start with, a spiral dive will develop during which the vertical speed will build up very quickly to wing-shedding speed.

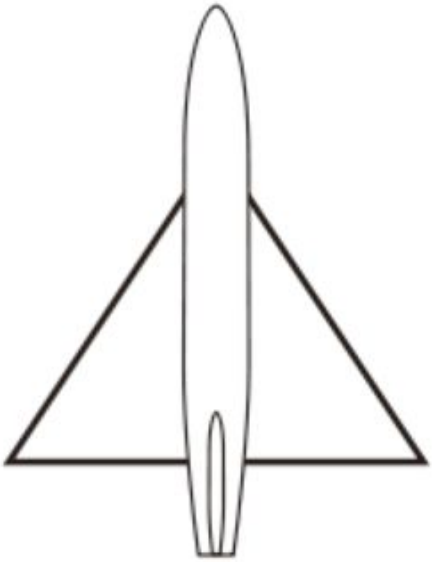
Spin Recovery

As previously mentioned for stall recovery, just centralise the elevator stick, pause a moment, then apply opposite aileron to stop rotation before easing back on the elevator to recover to level flight.
Watch carefully in recovery mode that the model doesn't enter a spiral dive.
In a spin, only the rudder and elevator will remain functional, the ailerons are stalled and are momentarily useless. Don't play with them. Ease off the elevator to let the wing un-stall before anything else.

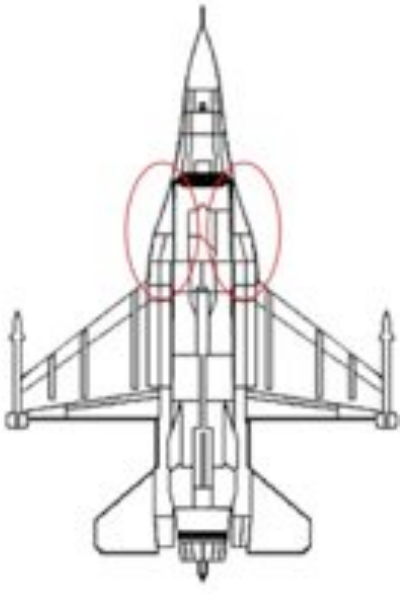
Stall Avoidance devices

Some aircraft are more resistant to stalling than others by design or have built-in devices to delay stall onset.

- Delta-wing plan form. The sharply raked leading edge and usually generous wing area make this design highly stall resistant. It will stall, but at very high Angles of Attack and just tends to mush down. The drawback is that at high A of A, the drag is also very high so that on approach, quite a lot of power must be used to prevent an excessive descent rate.



A wing with swept leading edges and leading edge extensions or strakes will also have very benign stall behaviour and tolerate high A of A manoeuvers. FA-18 Hornet, F-16 among others. The main purpose of the leading edge extension is to create a powerful vortex across the upper wing surface that allows the stall angle of an airfoil to be increased quite dramatically.



My foam Stryker, a swept flying wing with leading edge extensions and stalls with no wing drop. If held in a stalled condition, it descends vertically at zero forward speed in a flat attitude.

Leading Edge Slats

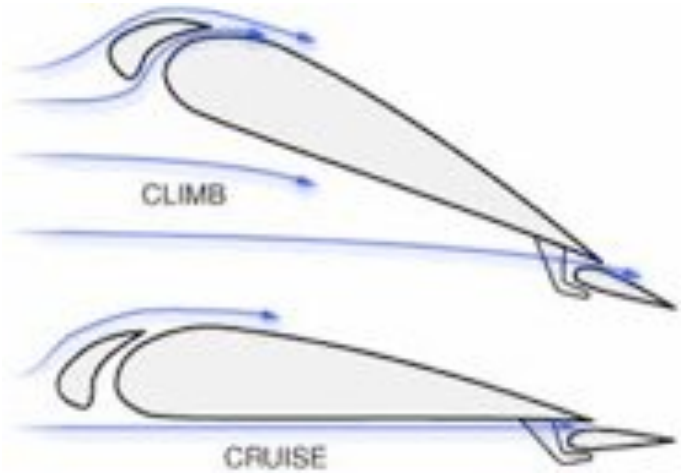


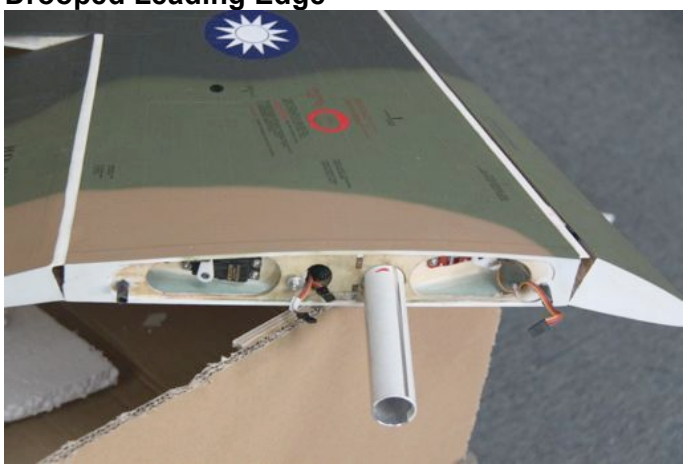
Fig. 3-Fixed slats

These devices, when fitted to or incorporated into the leading edge, are most effective at maintaining the smooth airflow across the leading edge and the wing's upper surface at higher-than-usual Angles of Attack.
This in turn lowers the stall speed with only a small penalty in top speed.
They work well on models, although are rarely seen except for scale models. They are mostly used on such diverse, full-scale aircraft such as;

- Tiger Moth
- Fieseler Storch
- NA Sabre Jet
- ME109
- All modern swept-wing jet airliners

They may be fixed, auto-deploy or manually deployed.

Drooped Leading Edge



Leading edge droop on right, with flaps on left. Wing root of Skymaster 1/5 scale F-104 Starfighter jet.

As shown in the photo, this combination of LE droops & TE flaps can turn a high-speed aerofoil into a docile, heavily under-cambered, high-lift pussycat.
This turbine Starfighter is 3.5m long, weighs around 20kg, has the wing area of one panel of a Boomerang, yet manages to slow down to land at about Boomerang speed.

Product Report--Deluxe Materials Ezi-Kote

I have been using this resin to laminate lightweight 'glass cloth on balsa-sheeted surfaces for my ¼ scale Zero project.
It is a one-part resin that has virtually no smell, is fast setting, easy to sand, safe on foam and best of all, water clean-up.
Being a thin, laminating resin, it wets out any weight cloth very easily and is very economical. There is no mixing or shaking involved; just use it straight out of the bottle.

It can be spread over large areas with a squeegee, or on small areas by just dipping a brush straight into the bottle.
There are no worries about trying to estimate how much resin to mix up; if the job needs a bit more, just apply what you need, straight from the bottle!
If you tip out too much, just scrape the excess back into the bottle! Being a bit tight, I've done this often with no problems.
There's absolutely no waste unless you like to splash the stuff all over the workshop! As I build in a small bedroom, this stuff is perfect for me.

At 20º to 22ºC, working time is about 10/15 minutes and the stuff will have set/dried nicely after 30 to 40 minutes. At this point, it can be sanded or painted and as there are no waxes released, there is no need to acetone-wash the surface before painting.
Normal 'glassing technique works fine, but without the need to worry about mixing ratios or too much or too little brew made up.
The resin is milky in colour, with a consistency like thin oil, but dries/sets clear and hard.
Brushes, scrapers and fingers wash out easily and completely in water.
The cost from Christian Traders (here in Oz) is $25

for 500ml. This compares favourably with epoxy two-part laminating resin, especially when there is no waste at all from the one-part brew.
Tested and highly recommended.

Radio Tech Tip (thanks to Steve Sutherland)
JR #1
A lot of JR TX owners may already know this but.....

Pale or faint screen on a JR Transmitter.

I got my JR 36 MHZ transmitter back from a friend recently. After fully charging the battery, I switched on only to find that the display on the screen was only fully visible for about 1/2 second, after which went really pale, to the point that it was unreadable.

After a Google search using "*JR transmitter pale screen*" as key words, I found what I was looking for in a JR website.

On the bottom right of the screen, there is an icon "DISP CONT" which is the display contrast, right next to the rotary selector.

All you have to do to change the display contrast is switch the power on, click to select the contrast icon, then simply roll the rotary selector until the display becomes visible.

(You do not go into either "Function" mode or "System" mode to make the adjustment. It's right there at normal turn-on)

Over time, I've noticed a few JR transmitters with pale screens. I suppose they could have been deliberately set like that to save power, I think it's just as likely that the rotary selector has been inadvertently rolled after the set has been turned on.

JR #2
Here is another JR story...
Cut-out switch reversed

JR transmitters have a cut-out/timer/trainer switch on the upper, rear RHS of the case.

In two models (one now deceased) I had a situation where for some reason the cut-out function stopped working. In fact, the opposite happened with the motor speeding up to about 1/2 throttle when the switch was activated. Fortunately, nothing bad happened.

I tried everything in the way of reversing functions etc but nothing worked.

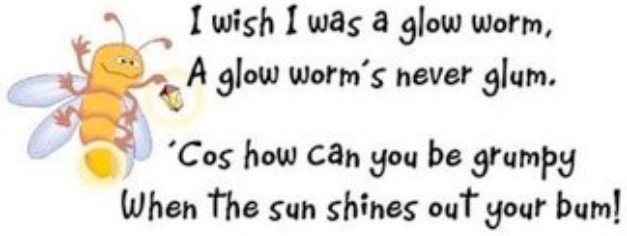
More or less out of desperation, I erased the model memory for the model (after noting down the trims etc) then re-entered everything and BINGO, cut-out switch working normally again.

(*You guys will insist on using those dark-side radios! Ed.)*

Another radio tech tip
As wonderful as 2.4GHz radios are, there is always a down side. Installation precautions are listed in the instructions that came with your whiz-bang radio and **naturally** have read them carefully!
The higher frequency of 2.4 GHz gear has a much shorter wave-length than that of 36 MHz, meaning that it has problems passing through dense material like metal engine parts and carbon-fibre reinforcing. (That's why Futaba has two Rx antennas and JR has up to eight if all the remotes are used)

What may not be realised is that rain is quite good at absorbing the 2.4GHz signal, meaning that if you choose to fly in light, misty rain, your Tx signal could be reduced enough so that the Rx could lose contact. Given that it takes several seconds for a 2.4 GHz Rx to re-bind to the Tx after a dropout, you may find your flight abruptly terminated.
Moral: Don't fly 2.4GHz in the rain!!

Thought for the Issue.
(As supplied by she-who-must-be-obeyed who declared that this whole thing was getting way too blokey and needed a more feminine touch. I said B.S… and that's when the pain started.)



Tale Piece.

So that's it for now. I've waffled on a bit much as usual, but there must be something of value hidden in there. Maybe? Hope so or I'll get the sack.
'Till next time,
Straight Take-offs & Soft Landings.