Clear Dope

August 2025

The Chair — Derek Honeysett

I hope you are all well; welcome to the summer edition of Clear Dope.

The summer overall has been really good for flying with light winds and on occasions it's even been too hot! That said our scale day has been postponed twice due to high winds or rain.

During May we were granted permission to have six extra evening flying sessions at Thorney Island. Apart from the first one where we were rained off, we enjoyed those light winds and almost perfect flying conditions.

Those of you who have never flown at Thorney Island should really make the effort to come and fly here - please don't be put off by the extra rules. (These only apply as it's a military base.)

Jordan's Rafale

During the coming weeks we have the first round of our gliding competition, a scale day, and an aerobatic competition in memory of Peter Doe.

The scale day is not a competition - more of a scale fly-in where we will ask you which model flown you enjoyed the most. If you have a scale model why not come to Thorney on the 30th August and display your model. We had a really nice blue and yellow Twin Otter flying at Thorney earlier in the summer, could be one to watch.

Hopefully I will catch up with some of you over the coming weeks.

Editors notes

The next issue of CD is scheduled for early October.

May we point out that the deadline for submission of articles for the next issue is **30th September 2025**!

Articles may be sent in any format to:

fsdibden@gmail.com
robin.colbourne0@gmail.com and/or
editor@cadmac.co.uk

You might like to consider build articles, repairs, model reviews, 'I learnt about modelling from that' ... the list is endless. We look forward to hearing from you!

Best, Fraser Dibden & Robin Colbourne

A lunch to thank David Draper for his donation of the new Portshole mower was hosted on 12th June at Chichester Marina.

The first event at the Sidlesham Memorial Ground on 12th June was well-attended, and we look forward to using the site more often!

Congratulations to the following on passing their 'A'-test:

Chris Armstrong

Neil Monument

BBQ & Glider Competition Report

Derek Honeysett

The CADMAC summer BBQ and electric glider competition was held on Wednesday 17th July. Attended by around 30 members & wives, the weather held out for a very enjoyable experience. An arrival time of around midday was suggested, allowing for setting up of models and any test flights that were required. I was slightly late getting to Portshole and when I arrived Ian, Robin and Lorraine had the BBQ well underway. By the time I had assembled my model it was time to enjoy lunch. The BBQ consisted of sausages, burgers, accompanied by salads, dressings and cakes; once again, MasterChef Ian Carby excelled in arranging an excellent club BBQ with outstanding food!

Ian at the helm, ably assisted by Robin & Lorraine

After lunch came the gliding competition. Unfortunately we had a moderate breeze of around 15 mph, which put a few members off entering. However seven of us braved the conditions to see what times we could get.

The Pilot Briefing

The aim of the competition was to have a twenty second motor climb and then stay up for as long as possible, the twenty second motor run being included in one's time. We decided to fly four rounds, with the best three scores aggregated to give a total flight time.

A reasonably strong breeze from the South West meant that there would be no lift. The idea was therefore to hold the model into wind for as long as possible, then - making sure one had enough height to fly downwind - make a sharp final turn back into wind and hopefully land on the patch.

The first to go was Adrian with his Highlight 2M. This model went up like a rocket and after twenty seconds was a speck in the sky. After seeing this model go up like this I jokingly said "whoever comes second wins". Adrian achieved a score of 8 minutes 40seconds which was going to be hard to beat. George was up next with his Easy Glider, and managed a respectable 4 minutes 48 seconds. The rest of us followed, none of us really getting anywhere near Adrian's time.

Adrian with his Highlight

What transpired over the next three rounds was that the gliders went up quite well, but also came down quite well. Different techniques were adopted to try and stay up as long as possible: flying close to the stall, trying alternative areas of the sky, and even trying to get lift from the hedge - still having to remember the fast low downwind leg and sharp turn into land.

Although the conditions were not great for gliding, everybody who attended agreed that it was a great way to spend the afternoon!

I would like to thank Ian for organizing and running the BBQ and arranging the Portaloo, Robin and Lorraine for providing salads etc. and helping with the BBQ, Fraser for also taking his turn on the BBQ, my wife Alison for providing Lemon Drizzle and Cinnamon Cookies (complete with grass after the table blew over) and, last but not least, Neil for bringing the Chocolate Brownies.

Noting the scores

The scores for the gliding are as follows:

Note: best three rounds shown (and I really think we need to find a way of nobbling Adrian's glider for future competitions, maybe cutting the wings down or shortening his prop!).

Name	Model	Round 1	Round 2	Round 3	Total / Position	
Adrian Childs	Highlight	8.40	7.05	7.36	23m 21s	1st
George Gilchrist	Easy Glider	4.48	4.38	3.35	13m 1s	2nd
Derek Honeysett	Solious	4.13	4.02	3.53	12m 8s	3rd
John Brandhuber	Pheonix 2000	3.10	4.04	3.38	10m 52s	4th
Tim Kerss	Agressor	3.10	2.58	3.15	9m 23s	5th
Ken Smith	Radian	1.58	3.30	2.50	8m 18s	6th
Toni Reynaud	Radian	2.36	2.11	2.14	7m 1s	7th

Thorney Flying — Jeff Cosford

Several Portshole pilots have recently asked Derek and I about the procedure for flying at Thorney.

One of us will meet you on your first visit, to show you the way. At the barrier, your membership card will usually be sufficient to get you in, however the guard will sometimes consult the CADMAC list. To ensure that you are on the list, check with Derek at thorneyrep@cadmac.co.uk. He updates it from time to time. Also advise Derek if you change the car you have on the list.

If you are not on the list or not driving the listed car, you can sometimes obtain a temporary pass in the adjacent office so bring your driving licence.

Finally, Thorney currently has zero trainees but plenty of instructors. So it's the right place for weekend training.

New to Flying : Start here

Simon Woodhead

Beginners corner - Part 1: be legal and safe, not sorry

The first two Steps to years of fun and success

As your reading this article then you've succeeded in Step 2: you are a member of a flying club full of experts who can help you on your journey of fun and discovery!

So what happened to Step 1? Read on and discover.

Our hobby of RC flying has tremendous depth to cater for a broad spectrum of interests. BNF models - Bind And Fly is the quickest way to get started with a ready built model which just requires binding (Pairing) with your transmitter (Tx). All you need are batteries, a charger and of course a Transmitter if not included.

In terms of building your first model, Plug and Play (PNP) Expanded polystyrene (EPS) or EPO foam models which come almost ready built, or require just screwing or gluing together are an excellent first choice. Alternatively, (ARF) almost ready to fly models which require a small amount of modelling build expertise (servo and moving surfaces installation) to kits requiring the full spectrum of model building skills. More recently the ability to 3D print your model in plastic is coming within reach of many hobbyists. If you enjoy building or just want to fly then this hobby is for you.

Perhaps your interest lies in First Person View (FPV) fixed wing, or multi-rotor (Drone), or perhaps soaring with a glider or vertical takeoff with helicopters or fixed wing models like the Harrier jump jet. There is an enormous variety of model types to choose from thanks to light weight construction materials and smart electronics.

If you're a technical wizard then programming flight control boards via INAV or Ardupilot is for you as this gives you access to building your own drone or vertical and short take-off and landing (VSTOL) fixed-wing models. Alternatively, if all you want to do is fly then the off-the-shelf receivers have the core smart technology ready to use.

In terms of power, electric is by far the easiest way to start with using a traditional propeller or possibly the electric ducted fan (edf) which is an electric equivalent of a jet engine. For the more experienced or traditional then the internal combustion engine (IC) or turbine-fan engines provide a very realistic and more challenging experience. Perhaps no power at all with a slope souring glider. The choice is yours and it is considerable.

And then of course is the social side of our hobby. An opportunity to meet fellow aviators. We are a diverse bunch of people with a common interest. The sum of our combined knowledge and experience is enormous and we just want to share this with you, so don't be afraid to ask or take advice. The club's social activities are a tremendous opportunity to become involved so dive in and enjoy events that are fun and which introduce you to club members, their aviation stories and tips on equipment and avoiding catastrophe.

You will never fly alone.😊

But before we take to the air or select the kit, we need to understand and comply with the legal and safety requirements. This may seem a trifle dull but be assured our own safety and that of fellow pilots and uninvolved people- the general public are of utmost importance. Our hobby is only fun and rewarding if we remain free from injury and do not endanger full sized flying machines and the lives of their aviators, passengers and property of those of the general public on the ground.

So here we are at Step 1 : Be legal; safe-not sorry

Before you can fly or join a model flying club you will need to be registered with the Civil Aviation Authority (CAA), and have relevant third party insurance. The CAA is the organisation responsible for ensuring your safety and that other others whilst operating in the skies over the UK.

If you own a flying machine you are responsible for its airworthy status, how it is used and by who. The registration of yourself as owner is a legal requirement with the CAA and doing this will give you an Operator ID.

If you want to fly as well as own a flying machine then there is a legal requirement to pass a competency safety test. This will give you a Flyer ID number.

So here are the details;

1. **Operator Registration and IDs:**

* **Operator ID**: If your model aircraft weighs 250g (weight limit is currently under review by the CAA) or more, or if it has a camera (regardless of weight), the person or organisation responsible for it must register for an Operator ID with the CAA. This ID must be clearly labelled on your aircraft. You must be 18 or over to get an Operator ID. If under 18 , ask a parent or guardian to register instead. You can still fly provided you have a flyer ID (see below)

Cost £11.79 . Valid for 1 year

* **Flyer ID**: Anyone who wants to fly a model aircraft (that requires registration) must pass a free online theory safety competency test to get a Flyer ID. This test ensures you understand the basic rules of safe and legal flying.

You have two choices for the theory test of competency ;

Drone and Model Aircraft Registration and Education Service (DMARES). This is a free CAA test of 40 multiple choice questions that you can take as many times as you like . It is a general safety test for both fixed wing and drone craft and permits you to fly under the Open category (Provided that you and your model comply with the Open category rules). Cost is free, valid for 5 years

As an alternative…….

A more relevant test for most club members is the BMFA (British Model Flying Association) RCC test (Registration Competency Certificate). This test is recognised by the CAA as an alternative the the DMARES CAA certification . When you have passed this test the BMFA will obtain your Flyer ID from the CAA on your behalf. The advantages of taking the RCC test instead of the DMARES test is that you can fly under Article 16 rules (or under the Open category if you so wish) instead of the Open CAA category. Article 16 rules are more flexible than the Open category equivalent and more relevant to club flying. In addition, the RCC test can be uploaded to your BFMA personal account so that the Club you attend can have visibility of your legal status. Finally as the RCC test is focussed on Article 16 rules, you will not have to be retested on those questions when and if you take the BFMA certificate A flying competency test.

Insurance

If your model weighs less than 20 Kg then it is not mandatory to have third party insurance, but you would be silly not to do so. A £1M lawsuit for injuries and property damage does not make for a fun hobby.

Fortunately this is the easy part, as membership of the BFMA automatically provides you with this insurance and you will find that this requirement is mandatory for joining a flying club.

Cost for senior member is £49 per year.
Junior / students : £ 20 per year
Family juniors :£15 per year.

BMFA FLYING A Certification

The BMFA have their own non-mandatory (and not a legal requirement) training certification scheme. This is usually often obtained for self esteem to demonstrate that you have reached a particular level of flying ability . For our club however (and many others) the BFMA A certificate is required for solo flying without the need for an instructor / examiner to be by your side. I would recommend you take this test, as it will help you stay safe and keep those around you safe. It will also help preserve the life of your model and allow you to fly at the CADMAC flying sites without supervision.

So there you have it, the first and most important RC aviators motto: B**e Legal and Safe, not sorry**.

Next time we will discuss equipment and explore the second RC aviators motto: **Bigger, better, faster and more expensive** for the kit that gets you airborne and the kit that keeps you cool or warm whilst standing in the middle of a farmer's field for hours surrounded by cows!

Model Review: OMPHobby T720 Robin Colbourne

The first steps into the world of radio controlled flying have always been a frustrating business; not helped by the hardness of terra firma and grasping trees that snatch models out of the sky right in front of their unwary owners.

Around the Millenium, Parkzone started making the Firebird series of pusher electric models for beginners, which stopped delicate propellers and motor shafts being the first point of contact with the ground. A cartwheel arrival however, would slew the wing, causing the retaining bands to chew deep into the foam leading and trailing edges badly weakening the wing. In addition, the exposed monofilament control connections made hang-ups in trees not only very likely, but attempts at recovery prone to inflicting more damage.

When a work colleague, Alex, stuck his head in the workshop to say he was going out flying, Rob Lawes and I had our curiosity piqued. The arboreal adventures of Alex's small foam pusher model were already a source of much hilarity in the company, as on its first flight the boss had been the first to send it treeward. On its second outing it spent the best part of a week up in the branches, until bought down by gales, so this was clearly one tough cookie. Given its flying record to date, Rob & I were ready for some entertainment.

The model, a 28” span OMPHobby T720, was showing few signs of the abuse it had received to date. It came with its own transmitter offering aileron, elevator, rudder and throttle controls with an additional switch for 'normal' and 'sport' modes.

Soft Nose

A clip-on canopy of energy absorbing foam wrapped round the front of the fuselage, protecting both the model and anyone or anything it might meet. This canopy also gave access to the 7.4V 300mAh Lipo battery.

The wings plugged-on either side of the upper fuselage, with the aileron roots engaging with actuating arms transferring the drive to them from a servo buried in the fuselage. In a similar fashion, the two tailplane halves plugged on each side of the rear fuselage at the base of the fin, A pin on one elevator half passes through a loop on the end of the elevator pushrod and into a mating hole on the other elevator. If you are assembling the model for the first time, you also have to fit the three bladed propeller, retained by a screw passing from the spinner into the prop adaptor. As far as I can see, this is the only time a tool is used in the assembly.

Arriving at the long narrow field, with a row of trees on the left and a 10ft high scrub-covered embankment on the right, we were blessed with flat calm air but failing light. It was time to get airborne.

Wing Attachment & Aileron Drive

Alex had first go, and from a gentle push it was soon away at a rate of knots. Alex took it up to treetop height and just when we thought it would end up in one, he brought it round for a couple more circuits.

Passing the transmitter to me, I felt obliged to find the corners of the flight envelope. The stability system had other ideas though and kept me the right way up throughout. Once I found the sport mode I managed something between a spiral dive and a spin, however loops eluded me for some strange reason. As aerobatics seemed to be out for now, I tried a few gliding circuits, bringing it around so it passed about 6ft in front of us. On the third circuit Alex managed to catch it as it flew by.

SunnySky 1404 Motor

Rob had a fly, landing between us, then passed the transmitter back to Alex. Not helped by the gloom, Alex got a bit disorientated, putting the T720 into a tall hedge behind us. Fetching a long pole, he managed to knock it down the hedge a bit, shedding the wings and tailplane halves. By now at step ladder

height, we recovered the bits, and thanks to the clever design, the only damage was a small piece knocked off the spar stub, and that seemed to make no difference.

For a 300mAH Lipo, which I had had to recover* from being completely flattened after being up the tree for a week, we got a lot of flying on one battery.

The unwillingness to loop was almost certainly due to the M10x40 bolt 'passenger', added to the inside of the canopy for some reason.

For a first model, particularly for a youngster, the T720 is ideal. With its light (130g) weight, soft nose and pusher propeller, it is very unlikely to injure or cause damage. The clever knock-apart design means that 'arrivals' don't generally result in repairs or spares being required, and the selectable stability modes allow a beginner to progress to more advanced flying at the flick of a switch.

Best of all, with a price tag of around £85 and the only extra required being 4xAA batteries for the transmitter, it is the ideal present for a grandchild or nephew interested in flying but without necessarily having an experienced flyer available.

* To recover a fully discharged Lipo, charge it as NiMH battery until it reaches 3.6V per cell. Then charge as a normal Lipo.

Flying with SAMAC, Hertfordshire — Alan Cozens

We moved to Harpenden, Hertfordshire in September last year to be near our daughter, due to my wife's failing health and my advanced years. I had already found that Saint Albans MAC (SAMAC) had their Cole's Lane flying field very near my daughter's house, so I joined the club before I left Rowlands Castle. The club is small compared to CADMAC with about 50 members, with activities divided between field flying, gliding at Ivinghoe Beacon, and indoor flying.

Following the inevitable turmoil of the house move I was able to start some flying at Coles Lane in November and December. Everyone was very helpful and my reassembled Ranger 1.8 was check flown by Colin the chairman (and general driver of events) and flew well with little retrim. Thereafter and bearing in mind my lowly BPC status a senior member stood by me for a few flights, ready with advice and guidance.

The strip is available 7 days and conveniently SW/NE, smooth with fine grass on good soil, immaculately mown. Very kind to take offs, landings and propellers! See photo. The surrounding long grass is just that, so ideal for test glides or the off piste landings which were my speciality initially. All trees are at a safe range except for a line to the SE behind the pilots box. Luton is within about 4 miles so it is convenient to get good weather actuals from their METARS.

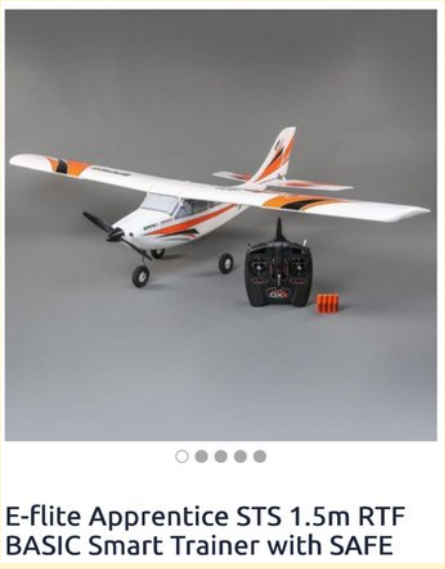
No sooner had I settled in with a few short visits and successful flights, the winter closed in, and the field took on an entirely different personality - cold wet and muddy. The car park became unusable except by 4 x 4. I came to realise that the club's activities had entirely shifted to indoor flying at a huge school gym building in Harpenden and this was most enthusiastically kept up throughout the winter. I visited several times but my activities centred on my care duties and DIY in the house. There was little or no field flying until April when we had 5 superb weeks and the field was then in perfect condition and a real pleasure to visit. On average there were about 4 to 5 members present so often I had the air to myself.

Currently I am waiting for a good day to fly my 1.5 m Thorney Pusher trainer which Derek successfully flew and trimmed out in August. Adrian then checked out my adjustments and I flew it twice without difficulty. Take off from grass may prove less than rapid due restricted prop diameters of the pusher format, but hopefully it will suit the trainer role.

Ken was right: Harpenden is a strange little town. It was built upon its single important feature: less than 30 minutes to the City by rail. So a dormitory town for the bankers, directors and fund managers, who seem to be the majority of the town's population. At least it results in some good restaurants !

Control movements in SAFE Mode

Tim Kerss



As most of you will know, most E-Flite RTF models these days come with Spektrum receivers that incorporate the SAFE (Sensor Assisted Flight Envelope) mode which, when selected, limits the bank and pitch

angles, and will return the model to level flight if the controls are released.

It's an impressive system that, in extremis, has got even the most experienced flyers out of trouble when they have lost control or orientation; Jon from "Two Brothers RC" being just one example. However, I'm very conscious that gyros and self-leveling systems have been a hot topic of late!

That said, one should bear in mind that SAFE can be used by a pilot when attempting the Basic Proficiency Certificate (BPC). However, for those who do have SAFE fitted to their models, one phenomena that is not well understood is that, when engaged, the control throws during a ground check can be significantly less than expected. If, indeed, you have noticed this, I found the explanation below in an RC Groups thread that provides the explanation. Hopefully, it will be of interest!

"Why are the control throws limited in SAFE self-level mode"?

This question comes up a lot. When you change the receiver to a flight mode where SAFE self-level is not active, your control surfaces will move quite far, as expected. But if you change to a mode where self-level is on, then the aileron and elevator controls don't move nearly as far. Why does that happen?

The big thing to understand is that when self-level is active, your stick input is not moving the roll or pitch control surfaces directly. Instead, you're asking the receiver to reach and hold a certain angle relative to the bank angle limits. For example, if you hold your stick 50% of the way out from the centre, the receiver will look for an angle that's about 50% of the bank angle limit. That's why the mode is called "self-level/angle demand".

That means the bank angle limit is a big factor. Increasing the bank angle limit will give you a little more response from the stick, as the receiver will have to move the control a little more in order to get to the desired angle. On the flip side, the bank angle limits are there to make sure you don't get the plane to angle you're not comfortable with. You want to find a balance there. For EDFs, it's common for people to set those bank angle limits very high (in the 80's), or else the jet won't turn anywhere near fast enough in self-level mode. On other planes, turning with just aileron may be too slow and limited by the bank angle limit, although adding some rudder to the turn will speed it up considerably. SAFE self-level taught me to make coordinated turns with both aileron and rudder! That's an alternative to increasing the bank angle limits.

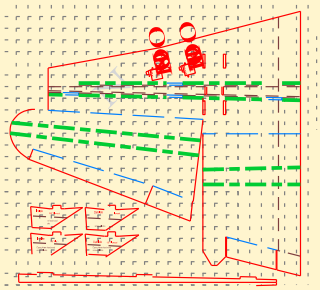
The next variable is the SAFE gain. The higher the SAFE gain, the more aggressively the receiver will move to reach that desired angle, which is another way you'll get more control throw for a moment. If you raise the SAFE gain too high, the receiver will move the control surface so far, so fast, that the plane overshoots the desired angle, in which case it will have to move back. If you see oscillations like that after raising the SAFE gain, turn the gain back down a little bit.

Finally, when you are analysing elevator movement, you also have to be aware of the SAFE throttle-to-pitch mix settings. If you have either the low or high mixes enabled in the F-Mode Settings, then that will be a factor as well. The mixes will add elevator input when the throttle is below or above a certain point (the threshold settings on the mixes.) When the throttle stick is at zero, the low mix will be enabled and adding input, which is one reason the elevator may move just by flipping from one flight mode to another.

So, there you have it; every day's a school day!

The Modeller's 'Circle Of Life'

Fraser Dibden



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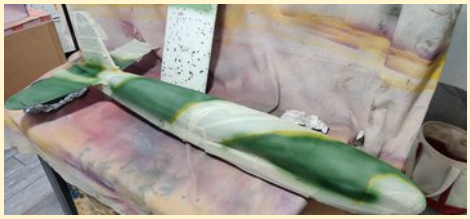

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Rather than posting a conventional 'build' article, I thought that it would be more fun to take a tongue-in-cheek look at the Modeller's "Circle of Life" - aka "**Build, Fly, Crash, Repeat**" - while looking at construction techniques.

The model in question is (was?) my scratch-built 54" DH98 Mosquito. The Mosquito wing has an awkward shape; it has 2 sections with different chord lengths, and both inboard and outboard sections are highly tapered. This makes modelling the wings from either balsa or foam (hot-wired) a very fiddly process.

By contrast, constructing the wing from foam board is quick and easy. The picture sequence shows the progress from plans, cutting out the foam board shapes, through folding and gluing the wings to shape.

The fuselage was formed from a foam board crutch (or core), with a polystyrene top & bottom attached, carved & sanded to shape.

The more intricate shapes (nose, nacelles, spinners) were sanded from denser PIR foam (the stuff in the middle of 'Recticel' insulation boards available at B&Q and other retailers).

All except for the foam board wing surfaces were covered with brown paper and PVA; Acrylic paints were sprayed for the colour scheme, with 3 coats of clear varnish over the top.

Unusually for me ;-) the Mosquito met its demise in a head-on mid-air collision with an EDF; as you can see from the final picture, there was a lot of confetti!

And so the cycle continues … I have already printed new plans …

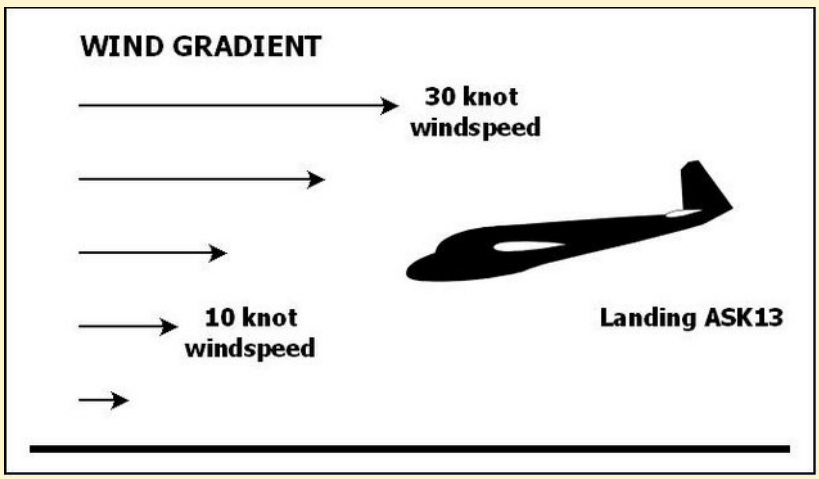
Wind Gradient

Robin Colbourne

When it's windy have you ever noticed how you fly a nice circuit and everything is going great until either the final turn or a few feet off the ground in the last stages of the approach? Maybe you've also noticed how in flat calm conditions, everything is so much easier? You have discovered the wind gradient. Now to find out what it is, what causes it, why it effects models so much and what you can do about it.

What is wind gradient?

Imagine standing on a bridge over a river and throwing sticks into the water. The sticks near the bank drift slowly down-stream, whilst the ones in the middle, in the faster flowing water, drift faster. Friction from the banks and the river bottom slow down the sticks near the bank, whilst the sticks midstream are in virtually un-hindered flow. The ground is the river bank, and the sky is mid-stream, you can ignore the other side of the river.



What causes it?

Now visualise the wind blowing across your landing area. The air closest to the ground is virtually static, whilst each progressive layer above it is moving slightly faster than that below. Upwind ground features such as trees, hedges and buildings all work to slow the low level wind down, exacerbating the wind gradient and creating turbulence.

If your model is trimmed to fly at just above stalling speed, as it descends into the slower moving air, it will lose airspeed and is likely to stall.

Why does wind gradient affect our models so much?

Because we fly a model by what we see rather than looking at instruments in a cockpit, we can only judge its airspeed by what we see from the ground, the wind we feel and by knowing to what speed we have adjusted the elevator trim for steady flight.

In the final turn, the downgoing wing will enter the slower moving air first. In addition it is turning on a smaller radius and flying slower than the upgoing wing . Thus the downgoing wing will stall first, causing the model to spin into the ground. Because we operate much closer to the ground than full-size aircraft, our models turn in the air with a much greater rate of change of wind gradient.

The Solution

Turns

Wind gradient increases closer to the ground, so a low final turn higher means a greater difference in airspeed, wingtip to wingtip. This might not matter much on a small, highly-loaded power model, but can make a big difference on a 12ft span thermal soarer.

Perhaps surprisingly, the amount of height lost in a steeply-banked small radius turn can be less than in a wider shallower turn, so keep the speed on and don't dawdle in your final turn

Preparation for landing

Either add a few clicks of elevator down trim on the downwind leg or keep a bit of forward pressure on the elevator stick until you start the final flare. Adding down trim when heading downwind may appear counter-intuitive, as the model will already be at a high groundspeed although the airspeed will be whatever you have trimmed it to be.

Your approach speed for a safe landing will be governed by the maximum predicted windspeed. As an example from gliding, full-size gliders such as the ASK-13 use 1.3x stall speed as the normal approach speed, (which in this case is rounded up to 50 knots), plus half the estimated gust speed as the safety factor in windy conditions. So with 30 knot gusts, the approach speed is 50 + (30/2) = 65 knots. It is common to have to steepen the approach (push the nose down) to maintain the airspeed as the ground approaches.

Back with your model, keep the gentle down-elevator pressure on until you are about a fuselage length from the ground, then very gradually ease the nose up a couple of degrees above horizontal, converting remaining speed into maintaining that height and attitude. As the speed bleeds off, the model will settle into a (hopefully) perfect landing!

You are aiming to touch down on the mainwheels, never the nosewheel, otherwise your model will bounce back up into the faster moving air, gaining energy, until it runs out of momentum and stalls back on to the ground in an

uncontrolled and most in-elegant arrival. With taildraggers, aim to keep the model off the ground as long as possible, until it runs out of lift and settles onto mains and tail simultaneously.

If you are flying a powered model, keeping some power on the approach is another way of giving yourself some margin. It is worth bearing in mind that if your model's propeller is rotating more slowly than the speed required to give any thrust, it is actually acting as a big circular air brake. A few clicks on the throttle will correct this.

In windy conditions when its straight down the runway at Thorney, I like to start with a faster, steeper descent further back, then fly under power at about a 4 feet up, finally closing the throttle so the model touches down right where I want.

At Portshole, where the tree is an extra hazard, consider doing a higher downwind leg followed by 'S' turns on the base leg to lose height. 'S' turns have the advantage that you are only a ¼ turn from your final approach, and you can do them virtually on the upwind edge of the patch. Make sure that the profile of your model never crosses that of the tree, otherwise your model is more than likely to end up in it.

Side-slipping is another more advanced method of achieving a steep, controlled approach, but we'll leave that to next time.

Taming the Paramotor

Tim Kerss

As I revealed in a previous edition of Clear Dope there are certain RC models that spike my imagination, and I feel compelled to dabble with the unusual. One such model was the Auto G2 autogyro, which was by far the most frustrating model that I have owned. But, without question, the most ungainly is the HobbyKing Paramotor. My fascination in this aircraft lay, not only in the difference in structure to a conventional aircraft, but in the way that it sedately plods around the sky.

However, the sedate performance and looks mask the fact that to get it flying properly has required a good deal of patience, as well as trial and error.

The kit had languished in the hangar for some years, but having decided that it was "now or never", it was dragged out a few weeks ago for final assembly.

I won't go into detail about the construction, or theory of flight. Suffice to say that a gondola containing a motor, ESC, two servos, and battery is suspended by an array of lanyards below a 2.4-metre span "wing sail", akin to a kite-surfer's kite – hereafter artistically referred to as the "chute", "sail" or "canopy".

Lift and descent are controlled by engine thrust, and steering is achieved by pulling brake lines that are attached to either side of the sail's trailing edge. Pulling the left line increases the drag on that side, and the machine duly turns left – and vice versa. The steering controls are entirely independent; in other words, unlike on a conventional aircraft, there is no upward movement of the right servo when the left goes down. If the control stick is pulled back centrally then both servos are activated together, applying symmetrical braking; an action that is only carried out to collapse the chute after landing.

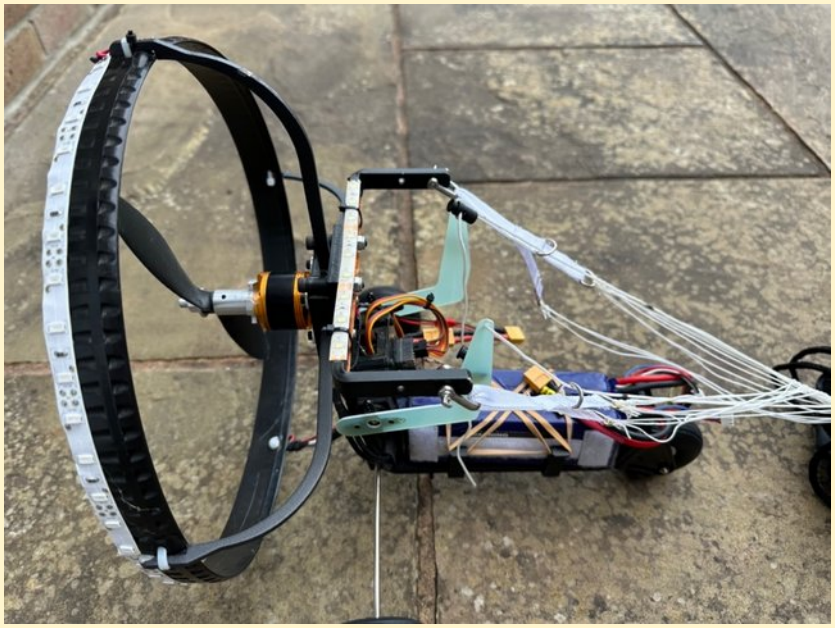
Although it sounds simple, getting the servos to act independently and in the correct sense is actually quite complicated, and requires specific programming on the transmitter. Luckily, the Internet is full of nerds who have done this already, so all that I had to do was follow the step-by-step instructions given on an RC Groups thread for my Spektrum Tx.

Getting airborne:

I'm sure that a lot of you have already seen the comical videos of the initial attempts to get the Paramotor into the air. This is by far the most challenging aspect of flying this model, and my eternal thanks go to Robin, Fraser and Declan for their persistence and willingness to help out in this quest.

The recommended technique for launching the beast is to swing it over one's head, filling the canopy, and to release at apogee with about half throttle set. In practice this is a lot harder than it sounds because the sail will invariably fly off to one side, rendering a launch impossible. In the event, all my successful launches to date have started with a take-off roll with the chute supported in the flying position (as shown in the photos above).

I assembled the model exactly in accordance with the instructions, which were very specific about setting the length of brake line (649mm to the top of the D ring that secures the supporting lanyards). However, when it came to the first launch attempts it was apparent that this was too short; the brake lines were pulling the trailing edge down too far, and the kite simply would not fly. Subsequent experience showed that the lines needed to be set longer and that the best way to ascertain the correct length was to "fly" the canopy as a kite in a steady breeze (thank you Robin!).



The assembly instructions required the brake lines to be tied to the servo-powered steering arms with a knot but, in practice, this proved to make fine adjustments to the length very time consuming and imprecise. My solution was to fit a "toggle lock" to each line which, with correct feeding of the cord, allowed fine adjustments to the length with just the press of a sprung-loaded button. Also, in spite of the restrictive throws imposed by half movement of the servos I programmed a trim band which allowed fine tuning of the brake line length once airborne.

With progressive fine tuning the model became easier to take off with the chute supported above the gondola. However, I have yet to master the technique shown by some on YouTube whereby the chute is laid out behind the cart and self-lifts during the take-off run!

Flying:

The first point to note is that this is most definitely a model to be flown in calm conditions. Its cruise speed is remarkably slow (just a few knots), and it is easy to find yourself making little or no progress into even a light headwind! Moreover, as Fraser and I found out, the canopy is virtually unmanageable for launch in a moderate wind, and turbulence risks collapsing the canopy once in the air.

However, the most important factor once in the air is throttle control. The gondola behaves exactly like a pendulum below the sail, and high-power settings, or a sudden thrust increase can have disastrous results. These can throw the entire model out of balance, causing violent oscillations. If the chute subsequently collapses the model will tumble to the ground.

There are many examples of this phenomenon on YouTube. For this reason, take-offs are performed at just over half throttle and all subsequent power changes should be smooth.

When power is increased the gondola swings forward, the sail's angle of attack is increased, and the model will climb. However, the increased drag results in a reduction of forward air speed. Conversely, when power is reduced the gondola lags the chute; the model descends, and the resulting reduction in angle of attack means that the airspeed increases. So, rather ironically, the best method to achieve forward motion over the ground is to initiate a descent.

My first flight was carried out using a single 3S 5000mAH battery, which gave a great duration, but the model seemed very susceptible to turbulence and the resulting "gondola wobble" threatened to destabilise the chute. Ideally, the canopy needs to be "loaded" to keep it inflated, and a little research revealed that the recommended gondola weight to achieve a stable flight is about 2 Kgs. Experimentation found that this was achieved by mounting not one, but two, 5000mAH batteries into the frame. Yes, it feels heavy but, sure enough, the subsequent flights were a lot more stable.

On the subject of "wing loading" there is one scenario in which high power is useful. Differential braking can lead to instability in level turns and, to that end a tight turn with power applied can alleviate this problem. The centrifugal force applied by the gondola pulls on the chute and keeps it inflated. Also, the resulting spiral dive is the closest thing to an aerobatic manoeuvre that the model can achieve. Rumour has it that loops are possible, but that's not something that I'd want to try!

Landing is a non-event. The low forward speed means that the model stops very quickly, and as soon as touchdown is achieved, the full symmetric application of braking collapses the chute. The only danger is that the sail's lines could snag in the propeller, so it's important to ensure that the motor has stopped.

Summary:

As a model the Paramotor is certainly not everyone's cup of tea. It's loaded with frustrating challenges and, once airborne, has a slow and limited flight envelope. That said, it is a unique model, and punting around the sky in calm conditions can be a very therapeutic experience.

If you are interested, the Paramotor Version 2 is now available. HobbyKing claim that it has a more efficient chute than the earlier version featured here which, supposedly, makes it easier to launch(!); also, LEDs come fitted as standard to enhance the evening flying experience.

Is it worth the £140 price tag for the kit? That would be for you to decide.

DEFCON… three and a quarter

Simon Woodhead

We can't all be astronauts or fighter pilots but many of us dream of being so. I have always been fascinated in flying something fast, furious and unstable, essentially a weapon of mass or self destruction. In my early years of RC flying the well known and loved Cub, a high wing trainer was a lethal weapon in my shaky hands. Then I progressed to the War-birds. I'm flying my fourth Spitfire with great pride. The first three lie buried in some for-eign field but the latest has fortunately survived my desire to be an Ace Pilot. So what could be more unstable, faster and more furious than a Spitfire in a death spin wing-tip stall?

It has to be a Cruise missile. A quick Internet search revealed my weapon of choice.

AeroJTP run by a Rene Rosentraeger and Marc Veenendaal sell a Micro – cruiser , AKA cruise missile-just what I need. In fact they sell the 3D print file, so armed with my brand new 3D printer what could be a better choice for my first aeronautical print project. The instructions recommend using light weight PLA, but I prefer to use Aero ASA as this plastic has greater strength, temperature and UV resistance specifications. So a couple of conversa-tions later with Marc in Australia gave me the correct settings for the filament on a Bambu X1 C printer and a-printing I did go. A few hours on and this is what I got .

Micro-cruiser with wings folded inside fuselage body. The missile and wing release mechanism is just visible on top of the model. Non-ducted fan power plant at the blunt end

Blunt end showing non-ducted fan and elevon control surfaces

The missile measures 58 cm long, 11 cm deep and 47 cm wingtip to wingtip. Slightly bigger than I was imagining. One little disappointment: no war-head. If anyone has any ideas for suitable ordinance, please let me know - must be conventional as Amazon doesn't sell Plutonium 😊. There are 2 versions of the missile. I chose the non-ducted fan version with a 14 minute endurance flight time - that should be enough to get the adrenaline flowing.

Pointy end where the warhead should be with wings unfolded

A little point that troubled me is that the wings look a trifle small and the fuselage resembles a submarine. Last time I checked, submarines don't fly too good. Pushing these vaguely worrying thoughts aside I steamed ahead with a launch plan. The instructions show launching from the wing or belly of another plane at about 100 feet !. The wings unfold and away you go!

I am the proud owner of a B24 Liberator bomber of the American air force. A perfect choice as a launch platform. Not many people know that the B24s were carrying Cruise missiles in the Second World War 😊. Disappointingly, a quick check with my measuring stick revealed a problem. The missile was too deep to fit beneath the fuselage, and too heavy to go on the wings. The same problem with my AMR 60 Precision aerobatics bi-plane. So plan B will be a ground launch with a hand-held catapult as an alternative to altitude and speed. Good plan eh?

I pride myself with my flight plans and this was no exception:

Grip firmly 3D printed catapult in right hand, attached to a length of bungee cord.
Missile held in left hand attached to bungee cord
On launch- drop catapult and retrieve Transmitter from ground
Fly missile for 14 minutes before gently returning to earth
What could possibly go wrong!

On that fateful day with safety glasses, bright yellow hard hat and Wellies- Safety Reps you would have been proud of me, I trundled across the field with only the cows for company.

I pulled back missile and bungee cord to the max - Missile away! At least I saw the pointy-end with the no-war-head accelerate to near the speed of light, tracing a beautiful parabola across the pale blue sky, eventually descending to earth and coming to rest in a large puddle – glad I brought the Wellies. To my horror the remainder of the missile, the blunt end with battery, receiver, non-ducted fan etc was still attached to my left hand. NASA would have been impressed with the speed and precision of the separation and Elon Musk would have smiled at the timing of the R.U.D -Rapid Unscheduled Disassembly.

Lesson learnt : Catapult launches put a considerable strain on the airframe - Use more glue!

So, plan C. This is going to be a hand launch with the help of a trusty fellow aviator. Back to the same field with the same cows. I'm sure I overheard on of them saying " Ok chaps gather round, this is going to be entertaining . I've seen pigs fly better than this two legged beast."

Without further delay and expectations high

Three- two-one, release.

Apogee : 3 metres
Distance travelled : 5 metres
Flight duration 2.5 seconds- not quite the 14 minutes I was hoping for.

The two of us stood staring at the tangled mush of plastic sticking up almost vertically from a strategically placed cow-pat. Out of the corner of my eye I thought I saw a pig in flight and from the far side of the field a mooing chuckle.

Lesson learnt: Lift needs big wings and submarines don't fly

Never, ever give up : Go bigger, better, more powerful and more expensive : Plan D is back to plan A . We're going to launch from beneath a suitable flying machine. AeroJTP have just the very thing, a twin engined 70 mm X 2 ducted fan jet with full thrust vectoring and enough spare lift capacity to take 3 of these cruise-missile beauties. One little problem: Portshole airstrip isn't man enough, we gonna need a bigger runway with tarmac.

Thorney I hear you cry - an excellent choice, fabulously long runway and we're going to need every inch.

Did I hear a sharp intake of breath from the Thorney Rep'. Rest assured Sir have no fear, Simon is here. A cosy chat and a couple of risk assessments later and we'll be good to go.

I can almost see the Newspaper headlines:

CADMAC chairman and base commander in cahoots to deploy cruise missiles from Thorney military base
NATO chief " Up in arms "
Putin retaliates and sends cruise missiles to Cuba
Trump resigns

Don't you luv it when a plan comes together?

Lucky I got BMFA insurance 😊

2025 Diary Dates

For the most up-to-date details, please check the CADMAC website.

August	Thursday 7th	Goodwood	Evening fly-in
August	Saturday 9th	Thorney	Gliding Competition
August	Thursday 14th	Fishbourne	Light Flight & Electric on the field
August	Sunday 24th	Thorney	Aerobatic Competition (Peter Doe)
August	Saturday 30th	Thorney	Scale Competition
September	Thursday 11th	Fishbourne	Light Flight & Electric on the field
September	Saturday 13th	Thorney	Army Families Day
September	Thursday 18th	Trundle	Evening fly-in
September	Saturday 20th	Thorney	Gliding Competition
October	Thursday 9th	Fishbourne	Talk by Jon Porter from Microaces
October	Thursday 16th	Trundle	Evening fly-in
October	Saturday 18th	Thorney	Gliding Competition
November	Sunday 9th	Thorney	Remembrance Gliding Competition
November	*Wednesday 12th*	Fishbourne	Talk by Chris Foss
December	Thursday 11th	Fishbourne	AGM

Important upcoming dates to remember:

Goodwood Flying Evening 7th Aug

Fishbourne 14th Aug

Scale Comp 30th Aug

CD Brain Teaser: How did this happen? Jeremy Stuttard

In the last issue of CD, you may remember that this photo of a Radian nose section was included, and the question was asked :'How did this happen?'

The following is a list of the answers that were suggested by a number of members on WhatsApp:

Robin:-

"Jeremy asked us to explain why the Radian XL pictured in CD decided to emulate an oil tanker off Australia, so I'll kick off by speculating that one of the propeller blades didn't unfold, and the out of balance gyroscopic forces caused the failure. "

Tim:-

"Agree Robin; looks like a high shear force to me. One prop fell off when run up, or a loose motor perhaps. Failing that, mice in the attic? "

Ken:-

"That's probably what happened to my Pik-20 I had fitted it with a new untried carbon prop which gave up causing the unbalance to rip the motor out. One day in years to come someone will find it and wonder how it got there!"

Fraser:-

"Must have happened whilst getting the model out of the car."

Eamon:-

"Looks to me like too powerful battery or wrong prop :-(
Pulled nose off of the model"

Lee:-

"Good call on the teaser Eamon. I thought the ESC leads might have been missing their connecting ends?"

Ray:-

"Teaser- it's an E-Flite model and fell apart as usual?"

Robin:-

"Regarding the Radian, the nose fell off mine too. I'm sure if you asked E-Flite they would tell you its not a failure, its a feature."

There were no suggestions on Facebook, apologies if there was and I missed it.

This is how it happened

I launched the Radian XL, about 10 seconds into the power climb there was a loud noise which only lasted a second. The noise stopped when the front of the fuselage, containing the motor, fell to the ground. The rest of the glider flopped down like a leaf; although I still had radio control, with the rearward Center of Gravity I could not control it. It 'landed' without further damage.

From this photo you can see the cause. E-Flite had used a plastic saddle/ yoke for the folding propeller which broke, shedding a propeller blade. The out of balance gyroscopic forces then ripped the front of the fuselage off the rear.

I was using the recommended 3S LiPo and the E-Flite fitted motor, ESC, Prop.

The saddles/yokes on folding propellers are usually metal on aircraft of this size.

Robin gets the accolade for being nearest with his suggestion, since Tim has the same aircraft I had warned him about this failure.

After gluing the fuselage back together with reinforcement I fitted an Aeronaut folding prop assembly. The Aeronaut prop drive was too short to fit the Radian so Alan Cozens turned me a longer one (see photo).

CD Quiz: The Wall – September 2025

Readers familiar with 'Only Connect' on TV, will need no introduction to 'The Wall'. If you've not seen it, the way it works is the grid contains four sets of words. In this case all are aviation related. Group four sets of four words together to complete the wall.

Maverick	**Jester**	**Goose**	**Viper**
Cougar	**Hellfire**	**Mallard**	**Wolfman**
Bone	**Hawkeye**	**Aardvark**	**Slider**
Sidewinder	**Panther**	**Warthog**	**Genie**

June 2025 'Clear Dope' - The Wall - Quiz Answers

The objective of the quiz was to create four sets of four words that have a model or full-size aircraft connection.

Group 1 – STOL models with big wheels			
			
Timber	Tasman	Husky	Bigfoot

Group 2 – EDF jets			
			
Marlin	Viper	Futura	Habu

Group 3 – SR-71 Blackbird related			
			
D-21 (Drone)	(Project) Oxcart	(Lockheed) A-12	(Lockheed) SR-71

Group 4 – Aircraft built to win races			
			
Tsunami	(DH-88) Comet	Nemesis	(Travel Air) Mystery Ship

CADMAC at Goodwood 2025

Thursday 7th August

Thursday August 7th is the date for your diaries; CADMAC's annual pilgrimage to Goodwood Airfield for an evening of model flying. Always popular with members of the club and the Flying Club alike, please come along and enjoy this unique opportunity to fly on such a large site, or simply to watch and take in the atmosphere.

As usual, wives, partners and families are welcome to attend, and refreshments will be available in the Aerodrome café.

Finally, if you have a buddy box and trainer, please bring it along as our colleagues in the Flying Club really enjoy the chance to experience "real flying"!

Tim will keep you posted on timing and arrangements (including weather decisions) near the time via email, Facebook and WhatsApp.

A date not to miss!

Arun & Chichester (Air) Enthusiasts Society

AirACES

www.airaces.org.uk

Patrons – Sqn Ldr Richard (Dick) Kharegat RAF (Ret'd) – ex Vulcan, Victor, B52 Pilot
Sqn Ldr Rod Dean RAF (Ret'd) – ex Hawker Hunter Pilot and Display Pilot

PRESS RELEASE

Monday 18th August 2025 - 1845 for 1930 hrs
Boxgrove Village Hall, PO18 0EE

"Flying the Vulcan – A Personal Perspective"

Presented by Sqn Ldr Joe Marsden

Flying higher than airliners at nearly the speed of sound, manoeuvring at 5 times the force of gravity, and under radar at heights lower than a church tower – Sqn Ldr Joe Marsden burned 1,000 gallons of fuel per hour in iconic Vulcan bombers and flew through nuclear fall-out. He has a wealth of facts and anecdotes of his 29 years in the RAF during the Cold War period. His talk will concentrate on the Vulcan – illustrated by photographs and film clips to show its capability.

Joe will briefly cover the history of the Vulcan but mainly talk about the personal aspects of flying this famous aircraft. He will cover responsibility of the crew members, and preparation of the various roles in which he was involved, without missing the more light-hearted aspects of the job, in a journey which took him from Cyprus to test Russian response. In all Sdn Ldr Marsden flew 34 different Vulcan aircraft

AirACES is an aviation talk society, providing its members with regular talks, given by experts in many different fields related to the world of aviation.
VENUE – Boxgrove Village Hall, The Street, Boxgrove, Chichester, PO18 0EE
6.45 pm for 7.30 start. Members £5, Non-members £10 and under 16s FREE.
Doors open at 6.45 no pre-booking, no reserved seating

For further information about AirACES, please see www.airaces.org.uk
Email: airacesuk@gmail.com or call Air Aces on 07423 670703

Safety Corner

One thing that many of us take for granted is **checking your model before every flight**. Often we assume that because the model flew well last week, it will be fine. Or we might check it the night before, again assuming that it will be fine tomorrow.

What's wrong with this picture?

Although both elevator halves moved during a control check, in fact the RH pushrod had cracked whilst getting this model out of the car. The pushrod initially remained loosely in one piece (hence moving the elevator), but snapped as soon as slight pressure was placed on the elevator while checking it's security. Fortunately spotted before flying!

What's wrong with this picture?

Another area that we often overlook is the **control check**: we 'waggle' the sticks, see that the surfaces move, and assume that all is good. In the picture above, the ailerons are in fact reversed. This has been made harder to spot because the view is from the front of the model. 'How could this happen when she flew perfectly fine last week?', you ask. Easily done: when mounting the wings at the field, L & R aileron servo leads were mistakenly connected into opposite channels in the receiver.

Far better to stand behind the model, and vocalise in your head 'left – right' while you check that the control movements are in the correct sense.

Some pictures from The Trundle in May 2025

Your CADMAC Committee

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