Airscrew

Facts, opinions, pictures and fun

September 2019

https://northreppsmfc.com/

Many thanks Dave

Dave Wilcox has written the newletter now for four years. I know we will all want to thank him for making such an excellent job of it. He has the website and the mowing to do and would like a break, so I have agreed to take it on. My arm will go back into its socket before long.

Obviously I have my own ideas and will do things a bit differently but the aim remains to inform and entertain. One change will be that I will act as a roving reporter. I see many clever ideas at the field and elsewhere. In future expect me to take photos and interview you so everyone can admire and use your good ideas. The newsletter is quite widely distributed.

Please let me have ideas, photos and articles. I will write it up if you prefer. I know nothing about internal combustion (noise box) engines so I need your help with that. Failing that all the motor stuff will be electric. If you know someone who is not yet on our mailing list, but would like to read the newsletter, please ask him or her to send me an email at nmfcmailinglist@gmail.com or peter@peterscott.website

I am using different software from Dave so I need to be told if the newsletter does not open or read correctly. Please let me know. It will be a .pdf (portable document format) file as in the past. I have switched to the landscape page layout as technical articles often work better when set in wider columns. Let me know if this causes problems. It is quite likely that I will make adjustments as I go along so bear with me. One other change. The length will vary according to how much material turns up.

Those who know me will be used to my sense of humour. Don't get cross if I use sarcasm. It is all meant in fun.

Peter Scott

Chairman's chat

DfT/CAA

I am starting to write this the day after the BMFA and LMA released their latest update to this farce, which I feel is now comparable to a witch hunt of old. It is the 25th August 2019. I have to say I am as enraged at the actions of the Government in this as I am sure most of you are. I wonder how many of you now agree with me that there are ulterior motives at work here? More importantly I feel is how many of you are now prepared to make a stand and fight this injustice or just roll over and accept it?

We had an unheard of response of 11,000 complaints/concerns sent to the DfT, Baroness Vere and MPs regarding the proposals of Government. Due to this unprecedented high number of submissions the Government has had to be seen to respond, so they set up the Science & Technology Committee review of drones. The sole reason for doing this was so they could turn around and say, 'We have responded to the complaints of the populace'.

It seems however this is yet another smoke screen as they are pushing forward with their plans regardless. It seems that all of Europe, despite objections, have had a sensible reaction under the guidance of EASA to this with the Associations managing the registrations etc as dictated by common sense. Even though it will do nothing to combat or deter rogue/terrorist flyers from their paths. The UK, typically it seems,is being driven by totally tunnel visioned incompetents being controlled by the pound sign.

I think I have already proved in the last article that it is not a viable proposition for the Associations or the Clubs to register as Operators on our behalf as the goal posts would be moved and the bodies concerned stung accordingly. I believe the BMFA and Associations have made the right decision by deciding not to have any involvement of any kind in the registration and collection of funds. Our data in their possession is now protected under GDPR so if the DfT request it they should be told to go forth. The Associations have stated that it is down to the individual to decide if they register or not. Read this for yourself on the BMFA site, it is carefully worded and you need to read between the lines.

On the 28th August I went to see our MP for North Norfolk, Norman Lamb, to see if there was any update or light at the end of the tunnel. He was obviously guarded about what he could say on what has now become a fairly sensitive subject. The Committee report of which he was the Chair is due out in a couple of weeks. He did say that the report did not shine bad light on the general model flying fraternity. I asked if the Government would pay heed to his report and was told that they may, they may not. This confirmed to me my thoughts re a smoke screen.

I felt that I managed to put personally the feelings of our members and those of Clubs in general. I did point out also that they were slowly but surely killing the hobby as lots are leaving as a result of their actions and those remaining were being pushed underground and will continue to fly without registration which would bring other consequences due to the action and inflexibility of Government. He appreciated this and said this was a concern of the Committee when they were debating the limits of sensible levels. He did offer one statement that was very pertinent - we are hobby flyers standing against people looking to take a share of a trillion pound plus potential market. This I felt said it all.

The requirements of the DfT etc do not come into force until November. The Associations are due to release further information in due course once they have managed to clarify certain points, so we really need to await this information before we make our minds up on our future actions.

Many thanks for taking the time to talk to Norman Lamb, Dave. The key issue seems to me whether we will have to register to keep our BMFA insurance cover. (ed)

Stories

We all like stories and aviation is full of them. Mike Harrall and Bob May will be sharing some with us. If you have stories to tell please let me know.

Congratulations

Well done to Marie Winter who proved her flying skills and safety knowledge and will be getting her solo certificate as soon as Dave has printed it. We look forward to seeing her burning up the skies.

Contents

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Copyright

Model of the month

There was no problem choosing the one for this issue. Mark Jordan is famous for his ducted fan warbirds. His latest model, the Sukhoi SU35 (Flanker-E) in desert colours, is truly spectacular. If, like me, you have seen the full-size fly you will know that it can do seemingly impossible manoeuvres and Mark is learning how to use the vectored thrust to do them as well. He is working on a flat spin. And now he has now mastered the cobra manoeuvre.

Photo: Graham Reeve

Genius: the autotag

An irregular column of genius ideas: number 1 - the auto-tag

Seen at the airfield was Keith Eldred's solution to the problem of placing the marker in the right place on spot landing competitions. For his ingenious mind, a large craft stick with a bent paper clip pushed through it and held in place by some tape is all it took. Those of you who have used it will know that it works perfectly. Those who like to heckle no longer have a leg to stand on. Here you see it in place on Keith's Bixler.

Benburo Bilge

This will be a column highlighting the wisdom being emitted from Parliament (see what I mean about sarcasm?). The Ben comes from 'Big Ben', the buro is as in the Russian politburo and the Bilge speaks for itself. This depressing item will be placed amongst more amusing things to avoid its worst effects. Luckily there is nothing to report this month. However there is an update on the latest from the CAA towards the end. Fetch the icepack, Cynthia!

RCSD

This is an abbreviation of Radio Control Soaring Digest. It has been published in the USA for many years by Bill & Bunny Kuhlman, who call themselves 'bsquared'. As the name suggests the theme is gliders and there are reports of meetings and models that will only interest glider nuts. However there are also many articles of more general interest about technical and scientific matters, and building techniques. You can read the back numbers

on https://rcsoaringdigest.com from 1984 to 2018, when it ceased publication. I'll be reprinting more general articles in the newsletter, together with a few just for the soarers. Bill and Bunny have generously given me permission to use the contents as I wish, with proper credit being given.

Climb and Glide Handicap

The handicap part of the Climb and Glide competition isn't working as I'd hoped. The problem is that only the first three placed flyers score points. People who are improving but not yet scoring cannot add to their handicap scores. I will go back over the results sheets and award four points for fourth, three for fifth, two for sixth and one for seventh. I hope that will make it work better and I will keep you informed about it. If it doesn't we will abandon the handicap competition for this year, and I'll see if I can think of another way to do it.

All of this has no effect on the standard Climb and Glide competition, which is running as normal.

The god of crashes

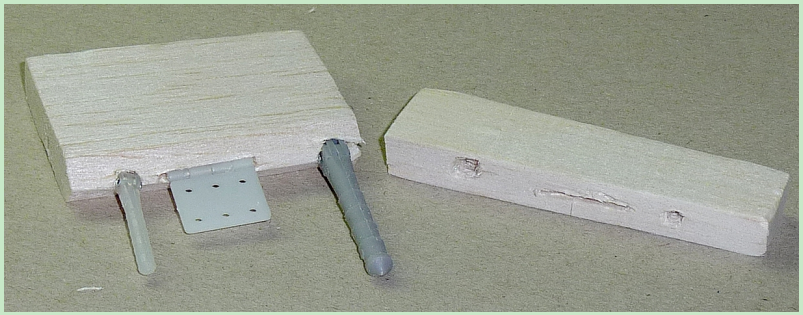
Did you see that Alex Whittaker (RCM&E) has named the god of crashes Prangus? He's the god we make regular sacrifices to.

Top tip: Gluing hinges

Haven't we all glued up the hinge joint when gluing hinges into trailing edges and control surfaces? There's nothing for it but to pry out the hinge and try again, usually spoiling our beautifully shaped edges. When hinges have ridges in them I have tended to use PVA rather than CA or epoxy. It tends not permanently to gum up the joints. After a momentary 'crack' the joint is usually free … ish.

In RC Soaring Digest I read an interesting tip. The idea is to put a tiny spot of oil on the hinge joint before gluing. This repels the glue. I thought I'd try it. However I didn't want to use ordinary runny oil because it might stain the wood, and we electric flyers don't like that. I thought I'd try the dry PTFE lubricant that I use for my bike chains. It goes on as a liquid but dries to a solid and of course is Teflon not oil.

I cut holes and slots into a couple of pieces of scrap balsa to fit a flat hinge and two round ones – the largest Robart and a small non-branded one. Here you see the arrangement. It is like a close fitting aileron with a V-shaped front edge and a square wing trailing edge. This is probably the most tricky one to do successfully.



Below is the lubricant I bought from a local bike shop. Using a narrow artist's paintbrush I put it on both sides of the hinge and worked the hinge to force it to penetrate. I wiped the surplus off with a paper towel, and left it to dry for a few hours. I sanded the hinges with fine sandpaper and finally wiped with meths.

Lubricant

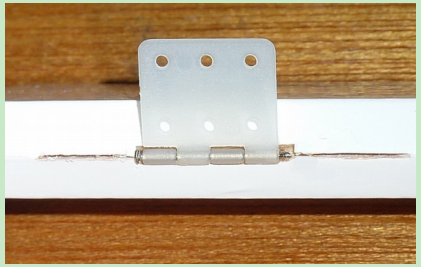
I used the usual, but not excessive, care applying the epoxy glue. Using a toothpick I poked some into the holes and slots and put a little on one side of the flat hinge and the bodies of the round ones. I wiped the wood surface with meths before inserting the hinges. I did the V-shaped side of the joint first and allowed the 15 minute glue to cure for an hour. There was bit of a click as I moved the hinges for the first time but the pivot parts of the hinges still moved freely. So far so good.

I then applied glue to the other balsa part as described above and pushed the two parts together very closely. I wiped off the small surpluses and again left it for an hour. Next day it all worked very smoothly. I think next time I use epoxy I will play even safer by using a cotton bud soaked in meths to clean out the recesses before inserting the hinges. Also I will not put any epoxy on the hinges, only in the holes.

I have now improved the method further. I decided that it's a good idea to cut V-shaped recesses in the hinge slots (pictues on the next page). I used the oil treatment again. Instead of epoxy I glued the hinges by dripping de Luxe Materials Super 'Phatic into the slots through a fine tip, and working it in with a toothpick. I did this three times. Then I cleaned the slot recesses with kitchen roll paper, before inserting the hinges. I did not put glue on to the hinges to avoid it being squeezed out into the recesses. 'Phatic takes 15 or 20 minutes to set. The surfaces flop easily under their own weight. This method works faultlessly and I will always use it from now on.

Recess

Hinge glued in



Peter Scott

Technology: FrSky telemetry

The FrSky (‘Free-sky’) telemetry system is the result of a complete rewrite in 2015. The more I use it and learn about it the more impressed I am. Setting up telemetry for such as lipo voltage, current, rpm, temperature, variometer, airspeed indicator, liquid fuel metering and GPS sensors is simple. However stopping there is missing the great strength and flexibility of the system. And by the way the devices are light and mostly very cheap. Generally speaking, where FrSky goes the others follow. If you want to learn more about individual sensors download my manual from the club’s website. For the record I use X8R receivers and Taranis X9D plus transmitters.

The telemetry sensors run on a bus system similar to S.BUS. They connect in a daisy chain using dual female servo-type leads that finish in a single SmartPort socket on the receiver. No hub is needed. Confusingly the same name, ‘sensor’, is used for both the real physical devices and the data they produce. What follows explains the real sensors and how you can use the data.

Real physical sensors (electronics)

These are the electronic devices. Each has an ID numbered 1 to 32. The default values can be changed using an S.BUS servo channel changer. You might never need to do this, but if for example you want to monitor the rpm and temperature of two motors and ESCs the second sensor must have a different ID.

Physical sensors produce one or more data. The system calls each datum a ‘virtual sensor’.

Virtual sensors (data)

There are actually two types:

- Data produced by the real sensors
- Data calculated from one or more other data

For clarity I will use the words ‘datum/data’ rather than the term ‘virtual sensor(s)’. Each datum can be reset individually using a special function and a real or logical switch.

1 Data produced by the real sensors – ‘custom’ data
Each datum has a name, unit and value. These are some of the ‘properties’ of the datum that can be changed using the **Edit**

function (more below). One datum can be displayed more than once, for example to display height in both metres and feet.

2 'Calculated' data

Amongst other things, data can be added, averaged or multiplied, and the minimum or maximum of up to four data can be found. To do this, on your transmitter you click **Add a new sensor**. This opens an edit screen. You give the data a name then set **Type** to **Calculated**. For example the motor's voltage multiplied by the current gives the power. Don't forget the calculated data are still called 'virtual sensors'. Editing is described later.

Using data

On your transmitter you can see data on one of the telemetry screens, hear it read out to you at chosen intervals or use it as a logical switch to trigger an action. You could even use it as an input, for example to change trim settings depending on airspeed or fuel level or opening an air intake grill to cool an overheating motor.

Editing a real or virtual sensor

On the screen that lists the telemetry sensors, you can choose **Custom** or **Calculated**.

The things you can edit are:

If **Custom** is selected:

Name: Change it if more than one of the same sensor.
Unit: Use this to select, for example, m or ft for height.
Precision: Sets the number of decimal places. Useful for when value is read out.
Ratio: Multiplier to use to get the correct reading, e.g. for a voltage checked by voltmeter.
Offset: Sets initial value to non-zero, e.g. for GAlt when airfield not at sea level.
Positive: ☑ Ignores negative values, e.g. no vario sound when sinking.
Persist.: ☑ This tells the transmitter to retain the value from previous sessions, e.g. Aspd+ to give maximum airspeed for that model.
Logs: ☑ This tells the transmitter to store the data stream on your memory card.

If **Calculated** is selected some are different:

Formula: Choose from **Add, Average, Min, Max, Multiply, Totalize, Cell, Consumpt, Distance.** (See more details below)
Source1 to 4: The lists will contain all of the data items currently in telemetry
Filter: ☑ By averaging, it smooths values that change a lot, e.g. lipo voltage
Auto Offset: ☑ This sets the initial value when reset or at switch-on.

Formulae explained

Add, Average, Min, Max and Multiply are obvious.
Totalize: This adds the sensor value to running total
Cell: The voltage of an individual battery cell is found using:
- **Cell Index:** Number showing position in cell series
- **Lowest:** Obvious
- **Highest:** Obvious
- **Delta:** Highest minus lowest voltage

Consumpt: mAh used. Uses current sensor data
Distance: Distance between the pilot and the model using GPS

Sensors with default IDs

This the full list on 17 November 2018

Air speed indicators (two – high and higher speeds)	10
Current sensor (40 & 150A versions)	3
Glow and petrol fuel monitoring	Not yet known
GPS	4
Lipo battery voltage sensors (three versions)	2
Brushless RPM and temperatures	5
RSSI and RxBt (built-in to the receiver)	25
Variometers (two versions – high and low resolution)	1

Sensor hub with sockets for even more compact sensors for:

- Fuel Gauge
- GPS
- Variometer
- Lipo Voltage
- Temperature
- Power Supply
- RPM Sensor
- Triaxial Accelerometer ID: All not yet known

FrSky Neuron ESCs

FrSky has just released a new range of electronic speed controllers for up to 6S batteries. Called Neuron, they come in 40, 60 and 80 amp capacities with 50% more burst current. They have a voltage adjustable 7A SBEC. The reason they are mentioned here is that they have built-in telemetry sensors for voltage, current, RPM, power and temperature which plug into the receiver SmartPort. I'll review one when it arrives.

SP2UARTs

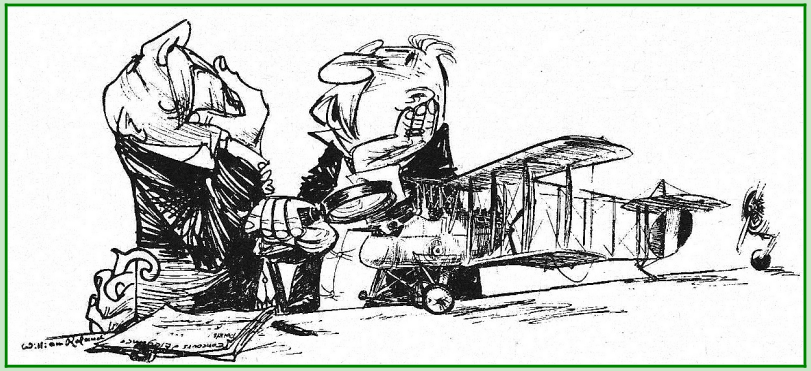
SP2UART devices are like modems. You need a pair, one connected to the Rx and the other connected to the read/write device. They can transmit and receive analogue and RS232 serial data at up to 9600 baud (that takes you back a bit doesn't it?) but usually at no more than 300 baud. Yes 300 bit/s. I could imagine it being used in robotics but I can't yet see a use in model aircraft. When I come across a practical application that I understand enough that I can describe it, I'll let you know The data they produce are called A3 to A6.

A3/A4 SP2UART host	ID = 6
A5/A6 SP2UART remote	ID = 7

Insiders

The Insiders is a group of indoor flyers who gather at Stalham Sports Centre roughly once a month for a three-hour flying session and a good mardle. There is no membership fee and each session costs £6 for flyers and £2 for spectators. Models are mostly free-flight though ultra-lightweight radio control is allowed if you build the model yourself and wait till the airspace is free. Three of the country's top indoor scale modellers, and the BMFA's free-flight expert, go there. Don't let that put you off as everyone is welcome and we are very friendly and willing to help you get started. Building and trimming these lightweight free flight models give you new skills and understanding of flying. I won't fill this newsletter with more detail. To find out more, and see some pictures, go to peterscott.website/flying and open 'Indoor flying' and 'Pictures from flying events'. Next meeting is Saturday 14th September at 19:00.

And for the scale enthusiasts: judging



'How many eyelets did we have in our flying boots in 1917, Albert?'
(Aeromodeller magazine November 1960)

Ticks

I hope you all remember that I put some yellow, plastic tick removers in the caravan first aid box. The growth of nature conservation areas and deer populations has resulted in a rise in ticks and Lyme disease infections. I have just discovered that the ticks are not like the large ones I prise out of my cat. They are dark and very small – about the size of a poppy seed. They climb onto you when you go through tallish vegetation, and then hide in body creases, dig their teeth in and suck your blood. They can also cling to your clothes and get onto to your skin later. Lyme disease is horrible, especially if you don't treat it straight away. Only a quarter of people get the rash so it is easy to confuse the early symptoms with mild flu. Luckily for us most of the possibly 8000 cases a year are in Scotland followed by the south west and south central.

The second from the left is the most dangerous. We are not at risk on the grass areas beautifully mown by Dave. We might be when we go off into long grass or woodland bracken to collect a stray model or bits. I imagine that the insecticide sprays on the crops ensure there are no ticks there. I normally wear shorts and Fitflops, so I now have trousers and shoes in my car to change into for retrievals, with trousers tucked into socks.

Spot the fault

Four 20 kgcm digital servos are connected to a full-size 2.4 GHz receiver. It is powered by a fully charged 4.8V NiMH battery. The servos are tested in turn and all function perfectly. However when all are exercised at once, the servos in the tail, which have 70cm 26awg extension wires, start to behave oddly. They jitter and do not follow the sticks properly. What is the problem and what is the cure?

Answer in next month's newsletter. If you want to tell me before then, and get a glowing mention in the next issue, send your answer to peter@peterscott.website. No prizes, just glory.

If you have a problem or fault that you solved please let me have it for the newsletter, with the solution. If you have a problem that you haven't solved we could try putting it on here to see if anyone knows how to fix it. These are of course modelling problems not personal ones.

Caption competition

Photo with permission from RCSD

The picture actually shows Erik Utter holding Philip's ankles for an airplane retrieval from Table Mountain, Eastern Cascades, Washington, 2014. Photo by Chris Erikson RCSD June 2017

My first try: From the vertical CAA official, 'OK, you win, model aircraft aren't drones.'

You can do better. All entries to me at peter@peterscott.website.

The threat from bird drones

The recent downing of a Russian airliner near Moscow has alerted the CAA to the need to bring the threat of birds under control. Therefore birds have been reclassified by the European Union as drones, in the same way that carrots were classified as fruit to allow the Portuguese to continue to make jam from them. All birds will now have to register with the CAA, though the means of payment is as yet unresolved. They must take a test in avianship to ensure that they understand the new height limits and the areas into which they must not fly, around airfields and inhabited areas. They are now banned from seeking chips in seaside resorts. The Natural History museum and Chris Packham have submitted objections to the plan, saying that birds have always flown freely and the plan will not improve air safety. The objections have been noted and will be ignored in the usual way.

Manoeuvre of the month

Starting next month I will include an item describing a manoeuvre, and explaining how to do it. The first one will be the Sausage.

CAP 722B

Dave kindly sent me links to the latest bumfodder from the CAA. Thanks Dave! Any accountant will tell you not to bother reading the accounts. They can be made to show any numbers you want. What you should read are the notes at the back of the accounts that explain what the numbers mean. There were three CAA documents. I tried to read the first two but my brain nearly exploded. However the third was quite useful, being in effect the notes at the back of the accounts. It appears to mean that the BMFA, LMA, BARCS etc will have to prove themselves competent to assess pilots and to have training schemes to meet criteria, over which they might have no say.

Pilots will be tested for both theoretical knowledge and practical flying skills. Ivan Jordan did the online theory assessment to be allowed to fly in France and said it was big and not easy. The document lists a huge range of things to know. Much is not relevant to us. I have therefore listed only those things that are. However I could be wrong and we might need to know the lot. As this is an EU matter it is likely to prove completely over the top and pointless. If you read the list of flying skills, again pruned, you will see that they are not onerous. The A certificate and our rules regarding full-size and other hazards more than cover them though of course up to now the A was not a requirement only an achievement to be aimed for. It might be the case that the BMFA will have to report on our competence. Or not. The breadth of the theory stuff is new to us.

One thing struck me strongly. Is an exemption to be given to children or those with problems with reading and writing? These people could not be expected to answer a long verbal test but could still be safe pilots. We discourage young people at our peril.

My annotatations below are shown in *italic.*I reversed the order of the document and put the practical stuff first.

The third document: (pronounced without the ‘h’)

Unmanned Aircraft System Operations in UK Airspace – National Qualified Entity CAP 722B

First edition CAP 722B, July 2019

The aim of this document is to lay down the requirements that must be met for an organisation to be granted an approval by the UK CAA as a National Qualified Entity (NQE) in the Full or Restricted category under Article 268 of the UK Air Navigation Order 2016 (ANO).

National Qualified Entity NQE – A person or organisation approved by the CAA to submit reports relating to pilot competence in operating a small unmanned aircraft. *This presumably will be the BMFA etc.*

Small Unmanned Aircraft SUA - Any unmanned aircraft, other than a balloon or a kite, having a mass of not more than 20 kg without its fuel but including any articles or equipment installed in or attached to the aircraft at the commencement of its flight. *Does this include freeflight models?*

With regard to the assessment of remote pilots, UK NQE applicants will be required to demonstrate their organisation’s ability and procedures to train and assess the competence of remote pilots, based on a theoretical knowledge examination (subjects and areas that are to be assessed are set out below) and a practical flight assessment. This requires procedures to be

present. I*t is be hoped that the BMFA will be allowed to decide what they are and to leave it mostly in the hands of the clubs.*

Practical matters

I can't see that there is anything that we do not currently do.

Operating Procedures

Pre-Planning: *How can you pre-plan? You plan. Der! It's as meaningless as pre-order.*

Site assessment:

- Establishing a safe operating environment
- Hazard identification & Risk assessment
- Mitigating measures
- Site Owner's Permission

Situational awareness:

- Location
- Airspace
- Aerodromes
- Obstructions
- Public right of way
- Communications
- Operating alone
- Liaison with Air Traffic Control

Security:

- Public access to aircraft and control,
- Other security considerations as required.

Each area defined in the table above (Remote Pilot Theoretical Knowledge) must be examined in sufficient depth to establish that students hold a sufficient level of understanding of the topic to be able to determine the intent and methods of compliance, and how this relates to their own intended operation. Attention should be made to how problem/ emergency scenarios are addressed. *Will the subjects be restricted to those relevant to model flying?*

Pre-Flight Actions

- Mission planning (to include meteorological checks), airspace considerations, and site risk-assessment.
- Aircraft pre-flight inspection and set-up (including flight controller modes and power-source hazards).
- Knowledge of the basic actions to be taken in the event of an aircraft emergency or if a mid-air collision hazard arises during the flight.

In Flight Procedures

Maintaining an effective look-out and keeping the aircraft within Visual Line of Sight (VLOS) at all times to include at all times;

- situational awareness of location in relation to other airspace users
- meteorological conditons
- obstacles
- terrain
- uninvolved persons

Performing accurate and controlled flight manoeuvres at representative heights and distances.

- Take-off.
- Climb and descent from level flight (Multirotor, Helicopter and Fixed Wing) .
- Turns in level flight (Multirotor, Helicopter and Fixed Wing).

- Speed control in level flight (Multirotor, Helicopter and Fixed Wing).
- Approach and landings (Multirotor, Helicopter and Fixed Wing).
- Actions after failure of a motor/propulsion system (Multirotor, Helicopter and Fixed Wing).
- Evasive action (manoeuvres) to avoid collisions (Multirotor, Helicopter and Fixed Wing).
- Real-time monitoring of aircraft status and endurance limitations.

Flight under abnormal conditions:

- Deal optimally with a partial or complete power shortage of an engine of the unmanned aircraft system while ensuring the safety of third parties on the ground.
- Manage the unmanned aircraft system flight path in abnormal situations.
- Manage a situation when the unmanned aircraft system positioning equipment is impaired.
- Manage a situation of incursion of a person in the zone of operation, and take appropriate measures to maintain safety.
- Manage the exit from the operation zone as defined during the flight preparation.
- Manage the incursion of a manned aircraft into the zone/ area of operation.

Demonstration of the ‘return-to-home’ function (where fitted) following deliberate (simulated) control-link transmission failure. Fixed-wing aircraft may demonstrate an equivalent procedure that results in a suitable automated, low-impact descent and landing. When demonstrating this function, the student must also demonstrate how collisions will be avoided. *It seems we will not be required to include impossible or dangerous ‘return-to-home’ radio control functions in fixed-wing. Full fail-safe will suffice judging from the above. Maybe that will be a requirement for fixed wing radio control systems so banning 35MHz and simple transmitters.*

Post Flight Actions

- Shutting down/making-safe the aircraft.
- Post-flight inspection and recording of any relevant data relating to aircraft general condition, aircraft systems, aircraft components and power-sources and controller functionality.

Theoretical knowledge

We might be asked about these, or a lot more.

Specific airspace types:

- Flight Restriction Zone (FRZ)
- Aerodrome Traffic Zone (ATZ)
- Control Zone (CTR) gliding/parachuting sites

Airspace reservations:

- Danger Areas
- Prohibited Areas
- Restricted Areas
- Temporary Airspace Reservations

Obtaining information/approvals:

- UK Aeronautical Information Publication (AIP)
- Aeronautical Information Circulars (AICs)
- Notices to Airmen (NOTAMs)
- Whom to contact

UAS Operations:

- Visual Line of Sight (VLOS)
- Segregated Airspace

Airmanship and Aviation Safety

Flight Safety:

- Avoiding collisions
- ‘See and Avoid’ with respect to manned aircraft and other air users.

Perception:

- Distance
- Height
- Speed
- Awareness
- Planning
- Go/No Go decisions
- Overflight of people, crowds and gatherings
- Congested Area operations
- Flights at night (During hours of darkness)
- Remote Pilot logbooks *New for most of us! Perhaps the club’s sign-in sheets will serve?*

Medical fitness:

- Alcohol, drugs, medication
- Medical restrictions

Outdoors and lone working:

- Effects of weather
- Depth perception
- Blind spot

Aircraft Knowledge:

- Basic principles of flight: Fixed-wing, rotor and multi-rotor
- Command and Control: *Probably not relevant to our control systems*
- Datalink frequencies/spectrum
- Manual intervention/override
- Flight control modes.

What do you think?

And all that just so we can fly toy planes. The flying rules are what we already do. The theory stuff is only partly covered at present by the club’s induction and supervision and the post-test A and B questions. Here be dragons!

These links should work:

CAP722: Unmanned Aircraft System Operations in UK Airspace – Guidance & Policy

CAP722A: Unmanned Aircraft System Operations in UK Airspace – Operating Safety Cases

CAP722B: Unmanned Aircraft System Operations in UK Airspace – National Qualified Entity

BTInternet

Sorry to sully this newsletter with a cuss word! Messages that I send out to BTInternet users from my normal emailer usually bounce back. I am informed that I have been sending spam. Clearly the algorithm for spotting spam is clumsy, like most things that BT does. I don't know whether it is the length of the mailing list I use, or the fact that addresses are hidden by setting them as a 'blind carbon copy'. I can't know. BT's help page is full of initials and instructions that are utter gibberish to me and I have worked with computers for many years. I have now set up a gmail account called nmfcmailinglist and will send from there in future. Your email address will of course still be hidden from view.

Sources

Spinners: Finding the right spinner for larger scale models can be difficult. Sarik Hobbies sells a range of metal spinners and prop nuts at about £25. These are for their own kits but detailed dimensions are listed and there are good photographs to check the profile. It is possible you might find the correct size for your next project. I found exactly the one for my Mosquito. They are not cut out for the propellor so you can use them for multi-blade props as well.

https://www.sarikhobbies.com/product-tag/spinners-prop-nuts/

Sales

Don't forget, if you have modelling items for sale let either Dave or me have the details. They will get a listing here then go on the website.