

# *Flight Lines*



**Featuring:**  
**Snippets From the Zone**  
**The Big 2.4 GHz Debate**  
**All New RC Hotel-Corfu**



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February 2008



*The Quarter Scale Swift S4 of Kevin Barry at the Old Head of Kinsale*

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***On the Cover: 82" Super Chipmunk Converted to Electric Power  
from the Roundwood MAC***

***The Views expressed within are those of the individual contributors, and not necessarily  
those of the MACI Committee.***

# M.A.C.I. Committee 2008

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## Editorial

As you will see in two of the articles in this issue, there are a couple of concerns surrounding 2.4GHz systems. The first one is down to Futaba who issued a press release. This notification only affects owners of the Futaba TM-7 module and 6EX FASST systems, only a small number of which have been identified as having a problem.

I would encourage owners of these systems to visit, with some urgency, the website given in Safety Matters on page 16 to get the latest information.

The second problem is with the output of some of these systems not complying with Irish laws. The systems causing the problems are some of those which have been imported. Anyone who has, or intends to get, a 2.4GHz system should read the article in this issue on page 21.

Not long to go now before we alter the clocks and the balmy evening flying will resume, at least, here's hoping! Will you be rolling out those winter projects for their debut? Or will you once again be flying the planes that were so carefully (?) put in storage for the winter? If the latter is the case, please spend some time checking them over for airworthiness, and pay particular attention to the dreaded black wire syndrome. I know I seem to harp on about this every year, but it's only because a few years back I lost a favourite model to it.

You might have noticed the significant changes in the MACI Council members. I would like to take this opportunity to wish them a successful term of office in 2008.

This issue sees the return of the Events Calendar. If you are interested in any of these events, I would encourage you to visit the MACI website at [www.maci.ie](http://www.maci.ie) as this is likely to have the most up to date information.

Have a safe and successful 2008

*Chris Clarke*

# SNIPPETS FROM THE ZONE

## GERARD FEENEY RETURNS WITH MORE RANDOM RAMBLINGS...

Is it 2008 already? Bloody hell! I've been tied up with other matters recently, so I'd better waffle on about this, that and the other for the time being, in the absence of a specific 'Flight File'.

### COVER STORY

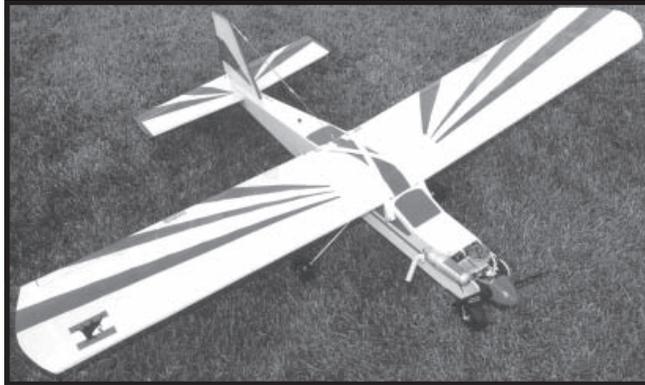
Regular readers may be aware of my strained relationship with ARTF R/C model aircraft. Their apparent glossy 'pre-packed' convenience undoubtedly entices many newcomers to initially cough up the dosh, and sometimes said newbies even venture as far as the flying field. Unfortunately the all-too-common crap instructions, often dodgy build/finish quality and hidden assembly-related ambiguities frequently succeed to both deflate and deflect many would-be aeromodellers, leaving countless

half-assembled 'instant aeroplane' specimens abandoned worldwide.

But, most of all, it's the unbearable soulless sameness of the colour schemes on the finished products that drives me mental! The idea of club sites populated by hoards of similarly-decorated ARTF 'clones', owned by a generation of dumbed-down 'aeromodelling-illiterate' individuals who don't know their empennage from their undercarriage, is a dreadfully depressing and uninspiring thought.



*Before: Padraic's Arising Star in its bog-standard factory finish.*



*After: Now sporting a Solarfilm/Solartrim décor scheme, Padraic's Arising Star was unrecognisable to many as the same aircraft.*

However, all is not lost – at least in my corner of Co. Roscommon. That R/C aeromodelling dynamo Padraic Cryan has broken the boring ARTF ‘look-alike’ colour scheme malaise by re-covering two of his instant aircraft in Solarfilm and Solartrim to create schemes that are different from the

rest of the predictable pack of pre-fab pretenders.

For those who don't know, Solarfilm is a long-established heat-shrink plastic airframe-covering film and Solartrim is its self-adhesive colour-matched counterpart. Using both these materials, infinitely varied and individualistic colour schemes can be created by people who become familiar with the required application techniques.

Padraic first re-covered his long-serving ‘Arising Star’ trainer. He carefully opened up and peeled away the existing covering with a sharp Number 11 scalpel and then refurbished the airframe with a classic, simple but effective scheme. The basic yellow Solarfilm base colour was overlaid by red Solartrim sunburst flashes and ‘cabin glazing’ to give a crisp, workmanlike effect.

Next on the agenda, his Irvine ‘Tutor 40’ airframe was a testbed for different shades of Solarfilm and Solartrim to get the feel for subtle application nuances between the colours.



*Before: Like zillions of others before it, Padraic's Tutor 40 initially wore the same boring factory-applied pre-printed self-adhesive covering skin.*

A f t e r excavating and peeling the factory-applied covering away as before, Padraic this time also primed the stripped airframe using dilute brushed-on PVA glue (one teaspoon of glue to one teaspoon of water, mixed up in an empty 35mm film canister). Padraic's modelling mate Dave Foley swears by this Solarfilm adhesion-improving hint and Padraic found that his film did indeed stick down better than before.



*After: Now the Tutor 40 has become a testbed for Solarfilm/Solartrim covering techniques, as well as taking to the air successfully again with its new horizontal tailplane.*

It's truly wonderful to see a relative newcomer taking such time and trouble to break away from the mass-produced mind-numbing pre-wrinkled 'Fablon finish' that typifies a sizeable proportion of the ARTF model aircraft genre. The fact that he's relatively inexperienced in the Solarfilm/Solartrim covering field makes his efforts all the more praiseworthy.

Padraic's ARTF model makeover prowess has drawn considerable acclaim and enquiry at the flying site. His models' true identities were a mystery to almost everybody and most people had no idea how he managed the 'transformation' – or indeed what Solarfilm and Solartrim are in the first place! Such reactions from modern so-called 'aeromodellers' makes me think just what a sorry state our beloved hobby/sport is in at present!

Padraic deserves kudos and praise indeed for his efforts to re-introduce proper 'model aeroplane-producing' techniques, which seem to be rapidly disappearing. He is now talking about building his first traditionally-constructed balsa and ply R/C model aircraft which would be decked out in a customised Solarfilm/Solartrim finish. If and when that happens, he will be among a select few who actually know how their aircraft is built and finished.

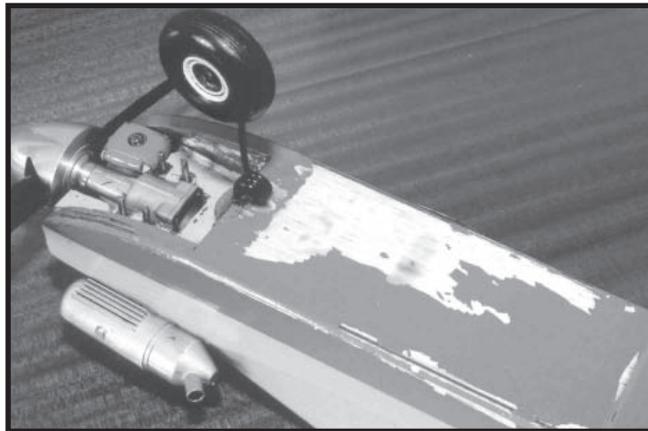
## FILM STRIP

During the ‘filming’ process Padraic discovered a novel method of removing lingering patches of unwanted original covering pigment still fused to the wood. First he softened each pigment patch with a heat gun. Then he placed a strip of brown parcel tape on top, and energetically pulled the tape away. This technique dragged the pigment from the grain leaving his timber clean and ready to re-cover again, he says. (That reminds me – I must make my bikini-line waxing appointment today...)

## GRAFT CRAFT

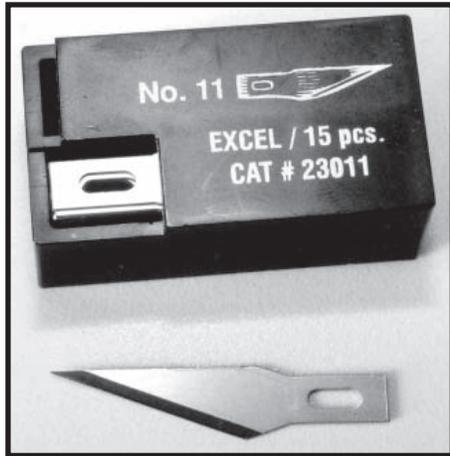
Alas, a rough pasture touchdown tripped up Padraic’s psychedelic-schemed Tutor 40 on landing, leaving half the horizontal tailplane smashed off and the fuselage side around the silencer hanging open. For most of today’s aeromodelling-illiterate generation that’d be that – it’d be time to give up or bin the model and get a new one. Not so for The Cryanster – he actually repaired the airframe!

The hardest bit – the broken horizontal tail removal and replacement – came first and involved some recycling techniques. After cutting away the entire stab using a combination of a Stanley knife, a keen Number 11 scalpel and razor saw, and then cleaning/rebuilding/levelling the fuselage-engagement slots with the Number 11 scalpel and scrap balsa strips cyanoed in place, a new horizontal tail was needed. Enter my own unused, uncovered twenty-year-old ‘Gangster 63’ stab! When donated to Padraic, he machine-sanded it to the required thickness and Solarfilmed it before epoxying it in place. Small gaps and the stab/fuselage transition edges were then sealed with epoxy fillets and film strips to give a remarkably well unified result.



*When redecorating a model, remove stubborn covering pigment using the method mentioned in the text.*

The 'unhinged' fuselage nose cheek was then knitted back in place onto carefully-applied epoxy beads, applied first to the exposed internal structure. The bonded wood was then filled and sanded around the crack lines to give an almost invisible result before the covering was re-done locally to match the main fuselage scheme. The model is now flying great again – and it looks even more unique with that new horizontal tailplane!



*Gerard's favourite Excel Number 11 scalpel blades are now available in handy dispenser packs.*

### **SHARP PRACTICE**

My favourite Excel Number 11 scalpel blades are now available in a handy dispenser pack. The compact plastic box contains fifteen blades and each one is easily removed as required. Get the blade packs now in all good model shops.

### **'MOUSED'-HAVE ACCESSORY**

Are you about to dispose of that well-worn mouse mat with the cloth surface partially peeling away? Don't! Economise on your aeromodelling hobby and save the planet at the same time by cutting down on waste and turning the mat into airborne radio gear and fuel tank packing. You can leave the cloth surface on if you wish and place this side against the airborne nicad/receiver/fuel tank, which still enables the custom-cut foam pieces to be lightly tack-glued with five-minute epoxy to the radio/fuel tank bay walls if needed. Use scissors and a sharp Number 11 scalpel and straight edge to cut the foam into the required shapes and sizes.

### **FALLING STAR?**

My SIG 'Four-Star 60' didn't fly in November as anticipated – far from it, in fact! Unfortunately, the finishing process descended into hell with a myriad of problems arising, which I won't go into here – I'll save the gory details for another article. Suffice to say that it'll be at least late February before the 'Star' is in the heavens over Ballybeg! At the moment, the three-tone Solarfilm scheme is finished and the pilot figure has been glued in place. The next step is to add the canopy, then sort out the engine and radio installation and, of course, the tail bits have to be stuck on. Quite a bit of work still to do! I shall just try to plough on and imagine a fine flight performance in the brightening spring skies of 2008...

## **‘TECH’ TWO**

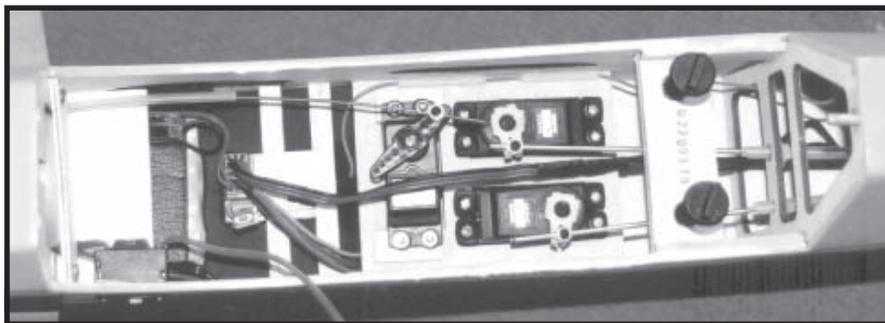
The brand-new top-of-the line Packard Bell computer I got in August 2007 to revolutionise my aeromodelling-related writing and photography has departed to the great virtual reality rubbish tip in Cyberspace! Right from the start it gave trouble, and had me heavily sprinkling the granulated Valium onto my food since that time with its despicable antics! The event that really made me book extra therapy sessions with my shrink was when the software for my new digital camera suddenly couldn't open, so all the model aircraft photographs were inaccessible in the Nikon Picture Project programme! Luckily, other photo-manipulation programmes installed on the system still worked, so I quickly saved everything to CDs and a memory stick.

After getting both its memory and hard drive replaced FOC, the heap of junk still wouldn't work properly with Windows XP Media Centre reinstalled, so at that point I threatened murder on the shop staff and now I have a new machine! It's the latest version of wot I had and, so far, it's behaving itself. However, I'm not putting any precious aeromodelling or Westlife photographs on it yet in case it crashes again.

Whadya mean – it was probably the Westlife pics that caused the first one to go belly-up? I won't even dignify that comment with a response!

## **MODEL SERVICE**

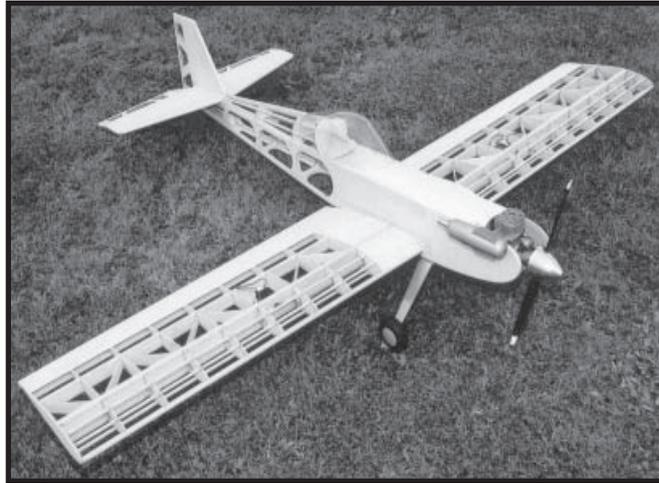
After my stating in the last issue that the mail order service of some post-W.J. Owens model shops left a lot to desired, I am happy to report that I've since had a good experience in that area. The shop in question is Liam Broderick's 'Model Heli Services' and I shall be using it again.



*Pieces of old foam mouse mat make good padding for the radio and tank bay.*

Unusually, the nicad in my Multiplex Cockpit tranny crapped out, so I contacted Liam to see what replacement batteries he had in stock. He had indeed got the latest Ni-Mh Multiplex Cockpit tranny battery, and I ordered that along with a jar of Balsaloc and some catalogues using my credit card. The stuff arrived next day and I was delighted, both to get the new battery for my favourite make of radio gear – and with the speedy service he provided.

I intend to order more Multiplex radio gear stuff from Co. Clare (especially batteries, as the new tranny power-source has fabulous endurance) in due course when I'm more sorted, but for now I'd just like to thank LB for the much-appreciated fast mail order service.



*After a relatively uneventful build, the covering/finishing stage of Gerard's SIG Four-Star 60 ran into trouble. Read more about the trials and tribulations in a future issue, but for now here's a peek at the airframe.*

## **DOUBLE DATE**

Thanks are also due to both David Furneaux and W.J. Owens who, without fail, send me nice aviation calendars at Xmas each year. David's been sending me 'high-flying' calendars for yonks while Willie has been doing the same thing for a somewhat shorter period of time. The gesture is much appreciated chaps, and I hope you will continue to do so in the years to come.

## **OVER DONE**

Right, I'll stop as it's beginning to sound like an Oscar acceptance speech! I'd better get back to the damn Four-Star 60 to try to get it finished. Wish me luck!

*Gerard Feeney*

# V-Mar X-Stick

I bought the V-Mar X-Stick kit from Sussex model centre a few weeks ago, and put it together, as you do. No problem here. Not much to do, just join the wings, stick on the tail feathers, add the rest of the flight pack and off to the field.

Now let me set the scene, Tipperary model flying club family barbecue day, field looking good, area for spectators set up, couple of flight's under our belt's before the crowd turn up. Lunch time and everybody enjoying the barby.

Time for some flying. It's a tad windy but flyable, so off we go to the strip. First up is Brian flying a black horse harrier second up Gary, (me), flying the V-Mar X-Stick. First flight of this model. Took off, trimmed for straight and level flight....looking good....she's handling the wind OK. First loop and the glue joint where the wing is bolted to the fuselage fails. Wing flutters down, fuselage keeps going.

As luck would have it I was flying away from the spectators so it wasn't a problem, but as the wing separated from the fuselage it had ripped the antenna from the receiver, so no control what so-ever.

After picking up the pieces I went to the clubhouse for a cuppa and a bit of stick from the lads about the "Monday morning produced" V-Mar kit.

I phoned the guys at Sussex model centre the next day, and explained the goings on of the previous day. They sent a new kit that day to Ireland. Top mark's to Sussex model centre....this is what you call customer service.

So the moral of the story is....check all glue joint's on ALL ARTF's or they will really be ARTC (almost ready to crash).

***Gary Brahan***

IRL 3172

**MODEL AERONAUTICS COUNCIL OF IRELAND**  
**ANNUAL GENERAL MEETING**  
**13th OCTOBER 2007**

**Changes at the top**

The highlight of the meeting was the election of a new President, Chairman & Secretary General namely Kevin Barry, Philip Hughes & Mick McEvoy respectively. Kevin Barry paid tribute to the outgoing President, Capt Joe Dible, for his untiring work for MACI over the last eight years.

**Location of Meeting.**

Due to the unexpected closure of the Montague Hotel, the location of the meeting was switched to the revamped Killeshin Hotel, the home of MACI Council meetings for over 20 years. The attendance at 22 was disappointing considering our total membership numbers of 811.

**Chairman.**

The meeting was efficiently chaired by Josh Carroll due the absence of John Beasley who was abroad.

**Secretary General's Report.**

Kevin Barry said that he was lucky to have Liam Butler supporting him as he is the best treasurer that MACI ever had. Major events which took place during the year were the Irish National Championships, the Triple Crown Aerobatics Competitions (Radio Control and Control Line), the X3D Helicopter Competition and Jet World Masters International Competition at Enniskillen. The unsettled weather conditions limited flying during the year. The acquisition of the 2.4 GHz channel was a major achievement.

**Treasurers Report.**

Liam Butler said that funds were down compared to this time last year and reminded everyone that the subscriptions have remained unchanged for over five years despite inflation. Membership numbers have been static for the last year or two at just over 800. No auditors were elected this year as it is proposed to have the books audited professionally.

**Radio Control Scale**

Eamonn Keenan said that there were three successful Fly-Ins during the year. Only a small proportion of the existing clubs support competitive flying.

**Radio Control Helicopter.**

P.J. Harte reported that five rounds of Heli-Challenge Trophy competition were run off with David Nolan the overall winner. The 3DX Ireland competition was also a great success. Only a small number of novice fliers are active (about 5 or 6).

**Gliding.**

About 20 took part in the National Fly-In at the "Graves of the Leinstermen", Killaloe. This replaced the National Championships this year because of lack of support for the latter.

**Control Line.**

The Control Line Nationals took place at the Laois & District MAC flying site at Portlaoise with a record number of entries. The F2B Aerobatics competition was won by Maurice Doyle.

Stu Holland won the Veterans' Combat Competition at the British Model Flying Association National Championships; it is 40 years since he first won the FAI F2D Combat Championship at this event!

**National Aero Club of Ireland.**

John Molloy reported that they executive committee is making a big effort to have the FÈdÈration Aeronautique Internationale General Conference take place in Ireland in 2008. A delegation is at present attending the 2007 Conference in Greece.

**FAI International Aeromodelling Commission (CIAM).**

Capt Joe Dible attended the CIAM Plenary meeting on 23 & 24 March 2007 in Lausanne, Switzerland. He noted that their magazine the "CIAM Flyer" is now distributed electronically and is of an excellent standard. It may be downloaded from the FAI Website.

Electric powered flying of all types is now the flavour of the month and is growing in support around the world.

**MACI Affiliation Fee change.**

It was decided to increase the annual Affiliation Fee to €75.00.

*John J. Molloy.*

# Roundwood Model Aero Club

It has been a year since I introduced RMAC to you, the reader, and also half a year since giving an update. So I thought I would put quill to parchment again and give a further update of the progress that has been made to the RMAC field. As I reported in my first article, runway 08 has now been increased in length, (what? Yes we have numbered the runways thanks to Oliver O'Rielly), and connected to runway 04. With more seeding and fertilizing we have thickened the grass in one year which would have taken two to three years unseeded.

While further clearance and more ditches have improved the whole area, (it goes without saying that more seed and fertilizer has been added).

The club has bought an electric generator, (diesel driven), which has been housed and wired in by Paul Duffy, so we now have lights, heating and power for all the things that one has in a workshop and kitchen. It has also allowed the members to charge their in-flight batteries without having to carry heavy lead acid cells around or flatten car batteries.



*The Lake*

This brings me nicely to let you know that electric flight is really catching on, (you thought I was going to say 'taking off' didn't you?). We have three members already flying electric powered, (LiPo driven), planes, and another three frantically building. The 'in plane' appears to be Sebart's Katana S50E, (fast and aerobatic), the first up

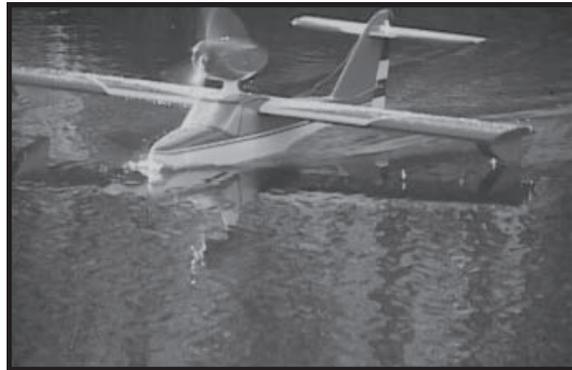
being Fred Harno's, whose expertise has inspired others to obtain the same. For those interested, Fred, (0872934812), has contacts with Hacker and Emotec.

A lake has been dug by Jim Cullen and yours truly, (with forks, spades and wheelbarrows), which is quite large, (approximately 160 feet by 60 feet), and is deep enough for yachts with 9 inch keels. This has attracted a few pilots; (6 so far), to obtain a boat of some type to sail when the wind is too strong to fly.

I myself have purchased a 'Top Model' ARTF seaplane called 'Sallagov' which has a 59 inch wingspan and is electric powered, (the same as my ATS Sport). Unfortunately the lake is a little short, (or am I a bit chicken?), for take off so stage 2 of the lake is being dug to increase the length by another 40 feet, (well I didn't have anything else to do).

To those of you interested in nature, the lake has produced a lot of trout and a pair of heron. We are waiting for Spring to see if we can attract water fowl and possibly have some nesting on the island.

The club had their Christmas lunch with most members attending and I believe everyone had a good time, (no one has complained so far). This took place in the Coachhouse in Roundwood, which was also the venue in 2005 and 2006.



*Top Model 'Salagov' Seaplane*

This year we are hoping for good weather so that a lot of flying can take place. Although we are tailing off on the work being carried out on the field, some maintenance will still need to be carried out to keep the site in prime condition.

I have been greatly impressed by the condition of the runways after the large quantity of wet stuff that fell from the skies over the last few months, and there has been a lot of flying taking place in that time. Still, there are a few more ditches needing to be dug, to further improve the areas where the last lot of trees have been removed, and also some more seed to be sown.

The club is hoping to be able to run sort of scale/fun fly-in this year, (date to be decided), so keep your ears and eyes open for an announcement. Anyone interested in having a look or a flight at our field is welcome, (MACI insurance required). Come on up and have some fun.

Happy landings.

***Bevan Moore***

01 28215304

# Safety Matters

**Happy New Year** to you all, I hope that this year will bring plenty of nice-weather weekends for us model aeronauts to enjoy!

Since it's the time of year for it, I think that it is well worth mentioning the value of giving your models, both new and old, a thorough check over. It's amazing how many little flaws can cause the loss of, or damage to your model, and how easy it is to overlook them or simply dismiss them during the quick check over of the aircraft upon arrival to the chosen flying site. Indeed, many model flyers in their eagerness to get air over the wings and rotors of their creations either forget to or don't bother checking the airframe for airworthiness. A simple mistake, which has been the cause of many an aircraft to be re-kitted!

I'm not going to waste space repeating what has already been printed, but I will let you know that I have previously published a fairly in-depth article in the April 2005 edition of Flightlines on the subject of checking your model and by the time you read this, it should also be available on the MACI website, under the Safety heading. If you cannot access this information from the above sources, let me know and I will arrange to get you a copy. Give it a read; it may help to prolong the life of your models. Also, if you're about to air your latest creation, please don't forget to put your MACI number on it!

## **Futaba**

I have received some information relating to Futaba radio equipment, that a small number of units may be faulty. Futaba have issued an advisory on this on their website about this which is entitled "Service Advisory" on the Futaba home page. The full address for the article is;

<http://2.4gigahertz.com/techsupport/service-advisory-tm7-7c-6ex.html>

The problem refers to certain 2.4Ghz radio sets: the Futaba TM-7 module and 6EX and 7C FASST systems. They state that a small number of these systems were incorrectly coded. If any of these faulty units were to be used simultaneously, this may lead to interference between them.

There are full details of serial numbers etc. on the website, so if you have one of these sets, please check the site, and contact your Futaba dealer if you suspect that you may be affected. Futaba state that they will replace any faulty units free of charge.

I have been informed that at least one of these sets has been found to be faulty in one of our affiliate's club sites here in Ireland, so please do check your set if you own one of the above mentioned models.

### **27Mhz**

There is a growing number of Ready-To-Fly model aircraft around these days, both fixed wing and helicopters. Unfortunately, there seems to be a large number of these being imported here, which have been produced for use in other countries and the radio equipment included is on 27Mhz, 40Mhz or others. MACI would like to remind members that only frequencies between 34.050Mhz FM and 35.300Mhz FM, and also the 2.4Ghz band are legal for the control of model aircraft within The Republic of Ireland. The 27Mhz and 40Mhz bands are reserved for land and water based models only. Likewise, the 35Mhz band is for model aircraft and should not be used for land or water based models.

As the 27 and 40Mhz bands are illegal for use in model aircraft, MACI insurance will not cover these machines. All affiliated clubs have the right to, and should, refuse the use of these machines on their flying sites.

It should be remembered though, that some, especially new-comers, may not be aware of this law and they may be very put-off or annoyed when they learn that they cannot use the 'present they got for Christmas from their partner' . . . or the machine they 'have just forked out a couple of hundred Euro for' . . . or whatever. You get the idea. Try to be tactful when you break the news and try to give them some positive help with their dilemma rather than just saying "No, you can't fly that here!" After all, we all had to start somewhere and there's little enough interest and support in our sport as it is without putting people off.

Anyway, I hope this has been of help. As always, if you have anything safety related to share or ask, contact me at [safety@maci.ie](mailto:safety@maci.ie) or by the contact details inside the cover of this Flightlines.

Remember – Safety does matter.

Happy and safe flying,

Gary Hooper  
Safety Promotions Officer.

# IMPROVE YOUR FLYING SKILLS

## Introduction To Aerobatic Flying For The Sports Pilot (Not Necessarily Competition Flying).

The Irish Model Aircraft Aerobatic Association (IMAAA) is proposing to hold 1 Day Seminars throughout the country. Coaching/training for these seminars will be provided by the country's top Aerobatic Pilots. If your club is interested in hosting one of these seminars please contact Dave Foley on 086 2662501 or email [davefoley63@hotmail.com](mailto:davefoley63@hotmail.com).

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## MODEL HELICOPTER CLINIC

This will take place 8th March at Carron MFC Co.Tipperary.

All MACI members are welcome.

On the day we will be helping all standards of Pilots on Helicopter, Radio, Engine, gyro and governor set up. If there is anything you need to know about helicopters you will find out on the day.

We will also offer Buddy box training so if you finding it hard to get to the next level maybe this is what you need.

So join us for a fun day out.

Any questions? I can be contacted on 087 2129083 or [pjharte@gmail.com](mailto:pjharte@gmail.com)

***PJ Harte***

Model Helicopter Secretary



***Fees for Year starting 1/04/2008***

		€
<b><i>Renewals</i></b>	Seniors	75.00
	Spouse or Partner	30.00
	Junior	30.00
	Family Senior	75.00
	Family Junior	20.00
<b><i>Family</i></b>	Full adult fee plus €20 per junior living at the same address Junior membership to apply to 18 years or younger only	
<b><i>New Members and lapsed members over 3 years</i></b>	Apr 08 to Sept 08	AS ABOVE
	Oct 08 to Dec 08	30.00
	Juniors, Spouse or Partners after Sept 08)	15.00
	*Jan 09 to Mar 09	AS ABOVE
*The full fee for following year giving up to 15 month's membership.		
<b><i>Non Insured Members</i></b>	Senior	25.00
	Junior	13.00
<b><i>Club Affiliations</i></b>		40.00

***Liam Butler***  
***Hon. Treasurer.***  
***M.A.C.I.***

## F3A Masters Schedule 2008 - 2009

<b>No.</b>	<b>Maneuver</b>	<b>K</b>
	<i>Take Off Sequence</i>	
1	Immelman Turn - Split S (Same shape as a Double Immelman)	4
2	1/2 Rev Cuban 8	2
3	Slow Roll	5
4	Stall Turn	2
5	Top Hat	4
6	1/2 Loop (Exit Inverted)	2
7	Triangle Loop	5
8	Figure 9	3
9	Stall Turn with 1/4 Rolls	4
10	Humpty Bump Pull Push Pull, 1/2 Roll Down	2
11	4 Point Roll	5
12	Half Square Loop, 1/2 Roll Up	2
13	1 Outside Loop	4
14	2 1/2 Turn Spin	3
15	Cuban 8, 1/2 Rolls	4
16	1/4 Square Loop on Corner (Exit Inverted)	3
17	45 Degrees Down, 2 of 4	4
	<i>Landing Sequence</i>	
		60

# The big 2.4GHz Debate

During the last MACI council meeting on January 29<sup>th</sup>, several questions were raised regarding the use of spread spectrum radio and the 2.4GHz ISM band. Some questions were raised regarding the specifications to which this equipment must comply to be suitable for use in Ireland. There were also questions regarding the suitability of the technology, the functional advantages with respect to 35Mhz to weigh up the benefits relative to any risk. There were also questions raised regarding the sale of radio control equipment in Ireland in general and the obligations and requirements for distributors and retailers.

Having investigated the technical aspects of spread spectrum radio technology and the use of this, particularly on the 2.4GHz ISM band on behalf of MACI, I will now try to collate the important facts. What follows here is three fold. It is an explanation of the basic technology with accepted definitions. It is a technical description of the limits that we are bound to operate within and the basis of these limits and it is a summary of these in the context of our use, in other words, my attempt to answer the questions posed at the meeting.

Firstly, I guess it is useful to understand even in a superficial fashion how these systems do for us what our crystals have traditionally done so here goes, from a lay man in language I can handle... Spread spectrum (SS) is defined quite simply as:

***spread spectrum:** modulation technique in which the energy of a transmitted signal is spread throughout a large portion of the frequency spectrum.* <sup>[1]</sup>

To you and I this means that the information that we are sending from our transmitters is distributed in some pre-determined fashion across a wide band of the radio spectrum, in our case between 2400 – 2483.5MHz. There are a couple of different ways that this is generally effected, the more popular, DSSS and FHSS defined as follows:

***direct sequence spread spectrum modulation (DSSS):** form of modulation where a combination of data to be transmitted and a known code sequence (chip sequence) is used to directly modulate a carrier, e.g. by phase shift keying.*

*NOTE: The transmitted bandwidth is determined by the chip rate and the modulation scheme.* <sup>[2]</sup>

This basically defines systems that can build a network of virtual channels across the available band width and assign some system to use one or in fact several of these channels to carry the data.

***Frequency Hopping Spread Spectrum (FHSS):*** a spread spectrum technique in which the transmitter signal occupies a number of frequencies in time, each for some period of time, referred to as the dwell time.

*NOTE 1: Transmitter and receiver follow the same frequency hop pattern. The number of hop positions and the bandwidth per hop position determine the occupied bandwidth* <sup>[3]</sup>

This system differs from DSSS as a pattern of hopping and dwells is established whereby the data is sent on a virtual channel for a given time period, for example, 20ms before the system jumps to an other pre-determined virtual channel etc.. The logical assumption of a FHSS system is that a large volume of redundancy is allowed for in the protocol for crashes and non receipts, so hopping on and off busy channels has no net ill effect on the data transfer as a whole.

OK, this is sounding a little complicated already, time then to bust the jargon open a bit! In reality, instead of occupying a narrow channel of radio spectrum like we do on each of the 35MHz frequencies, the transmitter, or in the case of a busy flying field, all the 2.4GHz transmitters will scatter packets of data anywhere between the already defined limits, 2400 – 2483.5MHz. The key is the predetermined way that these packets are scattered between a particular transmitter and its paired receiver and the security features that uniquely identify the relevant packets to the particular paired devices.

In the case of the traditional 35MHz system the receiver crystal determines the limits to what the receiver can, for want of a better word, hear. In theory this is only the transmitter commanding it as nobody else is on this channel... or are they? We know what happens when somebody does accidentally stray on to this channel. There is simply nothing to identify the commands from one transmitter over the other.

Either of the protocol's, DSSS or FHSS or in fact a hybrid mixture of both will be the basis of the pre-determined pattern used to distribute the packets of data heading to our aircraft. The precise pattern is determined when the system initializes and can be clever enough to see who else is using the airwaves and how the system would best avoid these other users. Thanks to this, in operation, the receiver knows precisely where to look for, and precisely when in real time to check the radio spectrum to find its own data. Furthermore, the code to de-cipher the data in each packet is unique to the paired equipment. In fact, the end result of this is that one 2.4GHz radio is universally oblivious to any other device. It simply does not or cannot be "interfered" with, as we know it.

Right then, “same channel” interference is a thing of the past, which we can now accept. What our systems do hear is a lot of background noise when the band is busy. I like to think of it as dozens of conversations taking place in different languages, but all in one room. Understandably, even though the words mean nothing from one conversation to the next, it becomes increasingly hard to hear and hence understand your own conversation as the room gets busier! Specifically in the case of Spread Spectrum R/C, the volume of information sent by each radio, even with the vast quantity of redundant information sent “just in case”, still permits more people to fly in immediate proximity to each other than we are ever going to see in pretty much any normal situation.

In fact, the most rigorous real life test of this technology happened by chance last year at the IRCHA helicopter fly-in, Muncie, Indiana, USA. There were 720 pilots registered to fly at the event with a mere 150 pilots impounding 72MHz gear. All the other registered pilots flew within regular flight line constraints, on 2.4GHz without any acknowledged problems and no 2.4 transmitter pound!

In a perfect world, this is it and there is no contest then. Well in real life, it is rarely this easy! There is indeed a negative side to 2.4GHz. The wavelength of the higher frequency radio signal is more easily absorbed than the 35MHz we have until now used. It is perfectly OK for our use once we have clear line of sight to our model, avoid encasing our receiver antenna in metal or carbon fibre structures or fly behind distant trees or water! While these are only examples off the top of my mind and none of these is critical to the operation of SS radios on 2.4GHz, they do tend to attenuate the signal to some degree so will impact negatively. Allied to this is the fact that the 2.4 ISM band is free for bluetooth, networking and in fact any other technology to use, then the question is one of how busy it has to get before our R/C systems just can't cope?

OK, have I gone off on a wild tangent explaining how the technology works? Well, I hope not. I personally do not wish to say to you that you should cast away your existing radio gear no more than I am likely to say one brand or SS protocol is better than the next. Nor am I going to say that the new technology is flawed. It remains for each individual to weigh up all the contributing aspects, pro and con and decide for your own situation. Somebody slope soaring with one or two others with them, I guess it is hard to justify. Somebody flying in busy contests, locally and overseas, maybe the situation is different?

Technically then, what does any system have to do to be suitably compliant with regulations here in Ireland? Our insurers have specified that we may fly on any R/C system that is deemed suitable for use in Ireland by the **Office of the Director of Communications Regulation (ODTR)**. As one might expect from an organization with such a grand title, the requirements are quite specific.

It is a requirement that any system operating as a “Wideband data transmission system” within the 2400–2483.5MHz ISM band must comply with the **Radio and Telecommunications Terminal Equipment Directive**,<sup>[4]</sup> (R&TTE) more specifically with the conditions of **ETSI EN 300 328 (2003-04)**<sup>[5]</sup>. Here I am again going to refer externally for definitions and technical limits as follows:

## **4.2 Modulation**

*The manufacturer shall state the modulation characteristics of the equipment to be tested. For the purpose of deciding which level of power density applies to the equipment, the present document defines two categories of equipment: equipment conforming to the stated characteristics of FHSS modulation (see clause 4.2.1) and equipment not conforming to these characteristics. The latter category includes equipment using DSSS modulation (see clause 4.2.2).*

### **4.2.1 FHSS modulation**

*FHSS modulation shall make use of at least 15 well defined, non-overlapping channels or hopping positions separated by the channel bandwidth as measured at 20 dB below peak power. The dwell time per channel shall not exceed 0,4 s. While the equipment is operating (transmitting and/or receiving) each channel of the hopping sequence shall be occupied at least once during a period not exceeding four times the product of the dwell time per hop and the number of channels. Systems that meet the above constraints shall be tested according to the requirements for FHSS modulation.*

### **4.2.2 DSSS and other forms of modulation**

*For the purposes of the present document, other forms of modulation which do not satisfy the constraints of the specification given in clause 4.2.1, shall be considered equivalent to DSSS modulation. Systems using these other forms of modulation shall be considered equivalent to DSSS systems and shall be tested according to the requirements for DSSS modulation.*

## **4.3 Technical requirements**

### **4.3.1 Effective radiated power**

#### **4.3.1.1 Definition**

*The effective radiated power is defined as the total power of the transmitter.*

#### **4.3.1.2 Limit**

*The effective radiated power shall be equal to or less than -10 dBW (100 mW) e.i.r.p. This limit shall apply for any combination of power level and intended antenna assembly.*

### **4.3.2 Maximum spectral power density**

#### **4.3.2.1 Definition**

*The maximum spectral power density is defined as the highest level of power in Watts per Hertz generated by the transmitter within the power envelope.*

#### **4.3.2.2 Limit**

*For equipment using FHSS modulation, the maximum spectral power density shall be limited to -10 dBW (100 mW) per 100 kHz e.i.r.p.*

[6]

As such, any compliant system will by virtue of this definition and having been tested to confirm this, will be awarded the **CE** mark. In addition to this, the only other mitigating factor specified by ODTR for local compliance is that the power will be limited to a maximum of 100mW e.i.r.p. in total. In plain and simple English, we are compliant and free to use any system that carries this mark and has a maximum power of 100mW. Again I apologise if I appear to have included more information than necessary, the above however is for us, **the key words** from a 36 page technical document.

Several people have asked me what is the significance of the (!) symbol after the logo found on some equipment. This simply stated indicates that a user adjustable setting exists within the equipment that may permit the user to exceed locally (or nationally) set parameters. The equipment is otherwise compliant with the R&TTE definitions and limits as defined for use by the European Parliament / Council. This for example is used I believe on some equipment that may be destined use in France as the power setting may be reduced to comply with the local French regulations or indeed increased beyond these limits.

What should we look for when we go to buy a system? In answering this question, I point out that the following applies to any radio control equipment on any portion of the radio spectrum, purchased in Ireland or for use in Ireland. Firstly, there should be the magic mark. You should also look at the packaging and documentation, which **must specifically state** that the system is suitable for use in Ireland. This is a universal requirement for any importer, distributor or retailer and applies to any equipment. In fact it is a condition that you must observe if you import any radio equipment into the state personally. Web purchasers please beware! For any doubters or chancers, the definition is plain and simple:

*3. Member States shall ensure that the manufacturer or the person responsible for placing the apparatus on the market provides information for the user on the intended use of the apparatus, together with the declaration of conformity to the essential requirements. Where it concerns radio equipment, such information shall be sufficient to identify on the packaging and the instructions for use of the apparatus the Member States or the geographical area within a Member State where the equipment is intended to be used and shall alert the user by the marking on the apparatus referred to in Annex VII, paragraph 5, to potential restrictions or requirements for authorisation of use of the radio equipment in certain Member States.<sup>[7]</sup>*

To summarise then, is any of this effort worth while? Are we trundling into a minefield blindfolded? Are these systems going to replace what we have used for years? Well having made an effort to read on this subject over the past couple of years and having observed the market develop and evolve, I would have to say yes, no and maybe! There are sufficient specifications defined that once we understand and pay attention to the points above when purchasing, then it is worth it for those who can benefit from the positive points.

Is this a technical minefield that requires “further education” to qualify us to buy or use the radio gear? Definitely not, if it has the markings and documentation as I have described then you may purchase away and commence battle with the (usually deficient) manuals!

What does the future hold? Well I wish I could tell! It seems that some manufacturers know and have known for a long time that perhaps the 2.4GHz ISM band is not the most “technically ideal” part of the radio spectrum for flying model use but, I have to say they have none the less reacted to market demand and put innovative and technically superb systems into the marketplace. Finally, which system will survive in the long term? I believe the answer to this question lies in how universally we all adopt the new technology. On this call we must vote with our wallets.

**Garry Keogh**

**IRL – 1830**

**Sources**

- [1] ETSI EN 300 328 V1.4.1 (2003-04)  
*Electromagnetic compatibility and Radio spectrum Matters (ERM); Wideband Transmission systems; Data transmission equipment operating in the 2,4 GHz ISM band and using spread spectrum modulation techniques; Harmonized EN covering essential requirements under article 3.2 of the R&TTE Directive*
- [2] ETSI EN 300 328 V1.4.1 (2003-04)
- [3] ETSI EN 300 328 V1.4.1 (2003-04)
- [4] Commission for Communications Regulation: Document 02/71R
- [5] Commission for Communications Regulation: Document 02/71R
- [6] ETSI EN 300 328 V1.4.1 (2003-04)
- [7] DIRECTIVE 1999/5/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL

# All New RC Hotel - Corfu

So, how did my visit to the RC Hotel come about? It started with me spotting a good friend, in England, (who I had lost contact with about forty years ago), in the RC Model World. John had just won a competition in the magazine, so I contacted them and they put us in touch with one another. With a trip to the UK already planned, a reunion was organised. This turned out to be quite an emotional meeting.



*'Friends re-united'. John on the right.*

With John being the person who taught me to fly all those years ago, the conversation soon changed from catching up on present family circumstances to model aircraft. At some point in the conversation, the RC hotel was mentioned and John's wife Carole suggested that John and I should go there together. No further arm twisting was necessary and the wheels were set in motion.

After a few e-mails to Spiros at the hotel, a week in October was arranged and the planning began in earnest. With no flights available from Dublin to Corfu on the dates we wanted to go, flights were booked from Birmingham. This was

added to with the necessary ferry crossing.

All of the arrangements were made, and paid for, on the internet. My, how times have changed!

Everything went smoothly, and a beautiful sunny October evening saw us approaching Corfu airport, or was this the local flying club's runway? A textbook landing saw us safely on to what has to be the shortest commercial runway in Europe?

Watching the queues being formed by people waiting to board the coaches, it was very pleasing to see my name being held up by the taxi driver that Spiros had organised for us. A shortish drive saw us at the hotel to be taken to the door of our accommodation by the driver. Next it was down to the bar/restaurant area to be greeted with a welcoming drink by the owner, Spiros Tsellas and his wife Rula.

The first thing that became apparent was how welcome we were made to feel, not just by the staff, but by all of the other modellers and their partners as well. I cannot recall another 'holiday' where all of the other guests introduced themselves and wished us a good time. A quick reminder, (apart from the extra heat), that I was not back home in Ireland, was everyone pointing at me, or should I say pointing at the preying mantis on my shoulder, what a start!



*Yours Truly at the Bar/ Snack Area with Pool & Accommodation Blocks in the Background*

We had decided that we would be staying on a B&B basis, but we needed food and so we joined the rest of the guests for the evening meal. The extensive choice of dishes on the menu, and the quality of the food, dictated that we would not eat outside of the hotel for the rest of our stay. And so to bed.

A 9:00 am start to the flying dictated that an 8:00 am breakfast was taken. Once again the food was superb with virtually anything you wanted and as much as you could eat. I suggest that you should take at least one pair of shorts a size larger than normal.



*Choose Your Weapon.*

On then to the excellent and well stocked and equipped hangar/workshop, filled to the rafters with all kinds of aircraft, from trainers to warbirds, from electric powered to IC, and helicopters?.....Raptors galore.

Next we were given instruction on everything that was expected from pilots to ensure everyone's safety, very reassuring. So let's choose a model and go fly.....not so fast, for your first flight at the hotel Spiros accompanies you to the flight line and judges your competence to fly the models.

Introductions were then made to Joe Anderson, the main flying instructor at the hotel. Joe is from Scotland but is now living in Corfu. Because of his origin he has been given the nickname of Jockadoupoulos.



*Preparation and Observation Area Complete with "Judges"*

OK so I'm going first. I chose an Extreme Flight electric Yak, (I have their Extra 300). It was strange to have a few nerves jangling but I completed a couple of instructed circuits and a good landing. Spiros was happy enough and told me to carry on flying. As he turned to walk away he asked me if I wanted to take out the optional insurance to which I said I did. So, line up into wind, open the throttle and up, up and away into a clear blue sky, this is how model flying should be. Gain height in a tidy circuit, turn back into wind and oh s\*.\*, no control response. A 45 degree dive could only have one result. So, I had managed to crash on my first flight, before Spiros had even walked back to the hangar area.

The walk back to the hangar area, (and the other modellers), carrying the damaged plane was embarrassing to say the least. The good news was that it was repairable, which meant that I would not forfeit my insurance. It would mean, however, that I would be spending some time at the workbench.

Next to fly was John. A perfect flight and landing.....no problems whatsoever. Just as I expected.

More flying, (incident free), took us up to 1:00 pm and a break in the flying for lunch, (bar meals and snacks), and siesta's. After lunch I declined the siesta and returned to the workshop and started repairing the Yak.

Flying resumed at 5:00 pm, (ish), and continued until dusk. A warm evening and little or no wind gave idyllic conditions which were exploited to the full. No crashes!

Back at my modern, well appointed room, a welcome shower was taken and then it was down for dinner. The dining/bar area is a very nice place to be, particularly with the model magazines and even aircraft on the walls. The table layout ensures that everyone mixes.

Yet another fabulous meal was consumed, (beware of the superb deserts). After dinner we found out what really turns Spiros on....table tennis. As reigning champion, (so he says), he takes on all comers and with a little help from the liquid refreshments, an enjoyable night was had by everyone.



*Time to 'Tuck In'*

Our second day at the hotel dawned with temperatures once again in the mid twenties with a light breeze. Breakfast, good flying, lunch and then, for me, finish repairing the Yak. A detailed crash investigation had revealed that the cause of the problem was a faulty receiver, which was replaced. The start of the evening flying session saw me test flying the Yak. Everything checked out fine so line up on the runway, open the throttle and away she went, a lovely climb out without needing any trim at all, but wait, why is the elevator not responding?....I managed to close the throttle and let it do it's own thing. This time it came down into a bush and got away with only slight damage.

Soon repaired, again, (the problem was found to be a faulty servo), Spiros test flew her with no problems at all. I did not fly her again, but others did, very successfully.



*Joe, left, and John in Training Mode*

John was looking to improve his helicopter skills and so he booked some lessons with Joe. John was very impressed with Joe's skills as a teacher and indeed his patience, which gave very pleasing results.

My own attempts at heli lessons were less successful. I fly on mode 1 and found it very difficult. This is another story.

The remainder of the holiday was spent flying, making new friends, eating, drinking and sunbathing, but not necessarily in that order. We even managed a couple of excursions, which Spiros arranges. One was a trip into Corfu town and the other took us to a mountain village with spectacular views, and to an ancient monastery.

I cannot praise the RC Hotel enough. The set-up that Spiros has achieved at his new venue does indeed fulfil everything that the aeromodeller could want, from beginner to expert. Super choice of models to fly, good company expert tuition, great weather, new friends to make, excellent accommodation and of course the superb food.

I suppose the critical question is would we go again? That's a no brainer, we'll be there again later this year. Why not join us?



*The Complex taken from the flight line. Accommodation blocks on left, bar in centre and preparation areas right.*

For more information on the hotel go to [www.rchotel.com](http://www.rchotel.com) or contact Spiros at [Spiros@RChotel.com](mailto:Spiros@RChotel.com)

**Chris Clarke**  
EI 3304

# Events Calendar 2008

For latest information go to [www.maci.ie](http://www.maci.ie)

## Sunday March 2nd

F3A Aerobatics Judging & CD Course. The Killeshin Hotel, Portlaoise, 11:00 am  
Brian Carolan 087 6501284

## Sunday March 30th

Grant Capell Memorial Fly-in & BBQ. Letterkenny MFC  
Seamus O'Donnell xarirl@iol.ie

## TBA

Shannon Control Line Fly-in Venue TBA  
Dermot O'Flynn 0877949555

## Sunday April 20th

Cork MAC Glide-in Cork Area  
Ralph McCarthy 087 8322791

## Saturday & Sunday April 26th & 27th

Jet Fly-in Midland MFC  
John Beasley 086 2597975

## Saturday April 26th

Heli Challenge Trophy Round 1 Calary  
Gary Keogh 086 4067684 or [heli.challenge@gmail.com](mailto:heli.challenge@gmail.com)

## Saturday May 4th

Scale Association Fly-in Curragh  
Steve Quigley 01 6241209

## Saturday & Sunday May 10th & 11th

Munster Champs RC Aerobatics Cork MAC  
Niall O'Sullivan 087 2949640

## Saturday & Sunday May 10th & 11th

Leinster Glide-in Mount Leinster  
Joe Doyle 086 6032598

**Saturday & Sunday May 17th & 18th**

Midlands Scale Competition Boora Parklands  
Alan Humphrey 087 2487354

**Saturday May 24th**

Scale Association Fly-in Portlaoise  
Steve Quigley 01 6241209 or Des Pearson 0502 47522

**Saturday & Sunday May 24th & 25th**

Tipperary Champs (F3A) Carron MFC  
Gordon James 086 8269840

**Friday, Saturday & Sunday May 30th & 31st & June 1st**

3DX Ireland (Heli) Carron MFC  
P.J. Harte 083 3320006

**TBA**

Scale Fun Fly Cork MAC  
Tom Barry 021 4667385

**Friday, Saturday & Sunday June 6th, 7th & 8th**

International F3A Aerobatic Championships Romilly-sur-Seine (France)  
pascal.blauel@wanadoo.fr

**Sunday June 8th**

Scale Gala Model County FC  
Dessie Owens 087 2220824

**Saturday June 14th (Sunday June 15th Rain Day)**

MACI Annual Glide-in Shannon  
Joe Doyle 086 6032598

**Saturday & Sunday June 14th & 15th**

Leinster Scale Championships Portlaoise  
Steve Elster 086 2653332

**Saturday & Sunday June 21st & 22nd**

Leinster Aerobatics Championships Longford MFC  
Dave Foley 0862662501

**Sunday June 28th**

Heli Challenge Round 2 Midlands MFC  
Dave McIntyre 0868132415

**Saturday & Sunday July 5th & 6th**

Triple Crown England

**Saturday July 12th**

Scale Fly-In Portlaoise  
Steved Elster 086 2653332

**Saturday & Sunday July 19th & 20th**

South Leinster Championships (F3A team Trials) Model County FC  
Brian Carolan 087 6501284

**Saturday July 26th (Sunday 27th In case of rain)**

Wicklow Champs Calary  
Bob Finley 086 8323730

**Saturday & Sunday July 26th & 27th**

Glider Tow Midlands MFC  
Andreas Balsinger 086 8147891

**Saturday & Sunday August 9th & 10th**

F3A Nationals Championship Galway MFC  
Paul Houlihan 087 2359558

**Sunday August 10th**

CMAC Heli Hover Cork MAC  
Philip O'Brien 087 2771418

**Saturday August 23rd**

Scale Association Fly-In Portlaoise  
Steve Quigley 01 6241209

**Saturday 23rd to Sunday 31st August**

European Aerobatics Championships Calcinatello di Calcinato (Italy)  
www.fiammaero.it paola@fiammaero.it

**Sunday August 30th**

Heli Challenge Trophy Round 3 Galway MFC  
P.J. Harte 083 3320006

**Sunday August 31st**

Autumn Fly-in & BBQ Letterkenny MFC  
Seamus O'Donnell xairirl@iol.ie

**Saturday September 6th**

Scale Association Fly-in & BBQ Calary  
Steve Quigley 01 6241209 or Gary Keogh 086 4067684

**Sunday September 7th**

Island Slope Rebels Glide-In Mount Leinster  
Joe Doyle 086 6032598

**Saturday & Sunday September 13th & 14th**

Autumn Aerobatics Activity Cork MAC  
Nial O'Sullivan 087 2949640

**Saturday & Sunday September 20th & 21st**

Irish Heli Nationals Carron MFC  
P.J. Harte 083 3320006 or heli.challenge@gmail.com

**Saturday & Sunday September 20th & 21st**

Irish Scale Nationals Portlaoise  
Steve Elster 086 2653332 or Des Pearson 0502 47522

**Saturday & Sunday September 20th & 21st**

Irish Control Line Nationals Portlaoise  
John Molloy 087 2378186 or Des Pearson 0502 47522

**Sunday September 28th**

Scale Fly-In Curragh  
Steve Elster 086 2653332

**Saturday October 4th**

Scale Association Fly-In Calary  
Steve Quigley 01-6241209

**Date in November TBA**

MACI AGM 2:00 pm The Killeshin Hotel, Portlaoise  
Liam Butler 087 2451524

*The next MACI Council meeting will take place at on April 1st at the  
Killeshin Hotel, Portlaoise at 8:00 pm prompt.  
Contact Liam Butler 0872451524*



*Tommy Collins with his Hercules and two future pilots  
Richard O'Keefe and Sean Collins*



*Kevin Barry's 4.2 meter DG 1000 setting up for landing at the  
Old Head of Kinsale*



*The RC Hotel Guvnors - Left to Right - Joe Anderson, Spiros Tsellas  
and Guest Instructor Duncan McClure*