BALLARAT RADIO MODEL FLYING CLUB Inc.

Web site: www.startek.com.au/brmfc Inc. No. A0001288M

NEWSLETTER – August, 2007

Committee 2007/2008

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The next meeting of BRMFC is to be held out at the flying field on Wednesday August 22nd 2007 commencing at 7.30PM. Please come along to the meetings and support your club and be part of the decision making process. Don't forget to bring a plate for supper.

Agenda Items for the next meeting

1. **ARF Scale Comp Sub-Committee Report**
2. **Working Bee**
3. **Field Maintenance**
4. **Club Fees**
5. **Helicopters at Field**
6. **Playground Equipment**

Points of interest from the last meeting

Extract of newsworthy items from the minutes of the last meeting. Note: Some events/activities may have concluded or been modified as circumstances change.

1. OS120FS motor (How do we best use?)

After some discussion the meeting decided to use the motor as a prize for the up and coming ARF competition to be held on October 28th. (The motor was donated by Roj's Hobbies last year for the event but the eventual winner kindly donated it back to the club.)

2. ARF Scale Competition Sub Committee

Gordon Hicks, Graeme Allen and Glenn White volunteered to form the ARF scale competition sub-committee. The committee has scheduled its first meeting for Wednesday 15th August at a venue to be determined.

3. Field Maintenance

Max Rowan advised the meeting of the following:

a) **Track in** – Need some gravel or road base to fill the holes and low sections. The raised gravel fill over the water pipe crossing the track near the entrance gate is getting cut up and quite messy at the moment. Fortunately the pipe is to go in a few weeks.

b) Spoke to Geoff Fisken recently. Geoff advised that he is quite happy with the clubs activities on his land and that the tree plantations expect to be harvested by the end of the year. That will certainly solve our turbulence problems with north winds for some time

c) **Strip** – Max pointed out that he has to join the tarps ASAP because the machine he has borrowed needs to be returned. Need a working bee in a couple of weeks. It was decided to call a general working bee for Saturday 18th August commencing at 10.00AM to address some of these outstanding jobs. As usual the club would put on a BBQ lunch.

d) **BBQ area** needs some maintenance.

e) **Toilet** walls need painting on the inside – particularly on the eastern wall adjacent to urinal. The door is jamming and several floor tiles near the doorway also need replacing.

f) **Outside light** – Rob Beardall has procured an outside light and will mount this ASAP.

g) The flight line position was discussed with a view to moving it further out.

h) **Access door** – Gordon raised the prospect of fitting a small access door to the shed. This has been suggested before but the meeting felt that there are higher priorities at the moment and it was put on the back burner.

i) Glenn to pick up container keys from Hugh.

4. Club Uniform – item acquisition

a) If you require flight jackets etc please contact Gordon Hicks on 0427 033 981.

b) Gordon advised that once the last cup with club logo engraved is sold he will look into getting some more made up.

5. Club Fees

The secretary advised the meeting that most members have paid their fees. However there are still a few outstanding. It would be appreciated if those who haven't paid would do so promptly or at least advise the secretary what their intentions are regarding their membership.

6. Fisken's block of land for sale
Max Rowan advised the meeting that the 5acre block of land that Fiskens have for sale would not be suitable for our needs.

7. Mid Year Club Dinner
Glenn White advised the meeting that he has booked for 20 at the Queen's Head hotel on Saturday 28th July. If you intend to go, please advise Glenn. *(PS. 17 members and partners had a great night out at the Queens Head – we should do it more often.)*

8. 2.4 GHz Frequency
It was pointed out while discussing the Commercial Instructor issue that our frequency control keyboard needs provision for 2.4GHz keys. David Howe offered to take board home and add provision for the 2.4GHz keys. *(David returned the keyboard the following Sunday morning. Since the meeting I (Secretary) have received an informative article on 2.4GHz by Mike Close – Chairman MAAA Technical Radio Sub Committee which will be included in the next newsletter and put on the notice board.)*

9. Haddon Club Request
Murri Anstis asked the meeting on behalf of the Haddon Club (Ballarat Aero Modellers) if they could fly at our field whilst their field is temporarily closed during lambing season. Our members were most agreeable and invited the Haddon club members to fly at our field.

VMAA News

Frequency Scanner – The VMAA recently purchased a Frequency Scanner. Murray Ellis is formulating a club borrowing procedure which will be distributed by the VMAA Secretary. *(Its need might by be short lived if 2.4GHz takes off – Ed.)*

Hard Surface at Twin Cities – There seems to be some difference of opinion between the VMAA, CLAS and TCMAC over maintenance and hiring out fees for the jointly funded hard surface at Albury. Hopefully this will be sorted out to the satisfaction of all parties.

Safety – A member of WPMAC (Western Port Model Aero Club) was recently hit in the face by a broken spinner resulting in a cut lip and broken tooth. *(Another reminder of how safety conscious we must be at all times. No idea what size engine/prop/spinner was involved. It would certainly have ruined his days flying – Ed)*

New Models seen at field

Sunday 29th July. At long last, the day arrived for Russell's 1/3 scale Cessna 150 to get its heavy model flight certification. Minor modifications were made to the nose leg (shortened) over the last couple of weeks to allow model to sit at the right attitude on the runway thus preventing a possible premature take off. Murri Anstis being the heavy model inspector was given the honor of piloting the Cessna for its test flight.

Murri did a couple of high speed taxis and it was still debatable if the 65cc engine was putting out enough power. Russell thinks the motor will improve once it is fully run in. The grass was wet and there was a light crosswind from the south but not enough to effect a model of this size. On the taxi runs there appeared to be enough power so Murri decided to bight the bullet and go for broke.

After taxiing back to the very end of the runway (the runway behind is not of much use) Murri turned the Cessna around and opened the taps. The big Cessna needed all the runway (and some), lifting off with not much of it to spare. As soon as it lifted off it was obvious there was no power in reserve. Murri climbed the Cessna out gently to gain height and made a couple of minor trim adjustments.

There is no getting away from it – these large models do look realistic in the air and when flown in a scale like manner are hard to pick from the "real one" (full size).

Hugh McCormick (the original builder), Murri Anstis (the pilot) and Russell Aggett (the proud owner) can be seen here moments after the Cessna 150's successful test flight.

Murri flew the Cessna around for several circuits putting the model through its paces and it basically flew like a large trainer – very stable.

The motor was probably only putting out 85% of its power and could have been losing some as well, so after half a dozen or so circuits Murri decided it was time to bring it in for a landing.

Murri didn't deploy the flaps which caused the Cessna to float on a bit further than expected, wings were kept level and it was a soft touch down towards the end of the runway. The Cessna rolled of into the paddock but with such big wheels no damage was done.

Murri had no hesitation approving the flight permit (presumably for non-aerobatic manoeuvres).

The Cessna was flown again that day. Russell wanted to take it home and give it a good going over before its next flight.

On Sunday 12th August Russell brought the Cessna out to the field for its second flight. He had done some work tuning the motor as it seemed a lot smoother and pushing out a few more revs. After taxiing the Cessna down to the east end of the runway Russell hit the go button and the big Cessna tracked down the runway, but again only just reaching flying speed before the end of the runway in fact the terminal speed was reach half way down the runway.

When the Cessna rotated Russell climbed it out a bit too steeply and was fortunate enough to get the nose down before all flying speed was lost. Once the model leveled out and a bit more speed gained it flew very nicely.

Again the Cessna looked very nice in the air, but once Russell gets used to flying models of this size and weight in a more scale like manner they'll look even better.

Russell flew it around for several circuits trying the model out. Once it had altitude it was quite safe to pull the power back. The Cessna showed no signs of tip stalling and was very stable in the air.

The big moment came for the landing, the first approach was way too high so a go around was called for. There was a bit of a fright when the throttle was pushed forward; the motor gave a couple of coughs before it picked up. The second approach was much better but still a little bit fast, model touched down mid way along the runway not leaving enough room to pull up without running of the end. But all in all Russell did a good job with the flight. Congratulations Russell well done!

We asked Russell for some background info on the Cessna and here 'tis. *Its a Cessna FA 152 Aerobat, length is 2400mm, wing span 3560 mm or 12ft, weight is 23.48 kg. The motor is a CRRCPRO 65cc swinging a 22x10 prop. The kit is designed by Ernie Egan of SA, it was built by Hugh McCormick, and he had it for a few years, and I bought it off Hugh. Well most members of the club got to see this big beast fly about 2 weeks ago and were quiet impressed, I was rapt as it took me a bit over a year to get this aircraft up to flying stage. But I am now in the market for a 70cc up to about a 100cc just to have a bit more power in reserve, so if anyone knows were I might get one please let me know.*

Club Fees

Most of the members have paid their fees and those who have paid will have received your MAAA card.

Again as per usual there are still some members that for one reason or another have not paid their subscriptions. This makes so much extra paper work and work for the Secretary and Treasurer who have to coordinate payment to the VMAA.

As of next year all members are going to be encouraged to pay their subs on or before the 1st July not as we have been accustomed to doing by paying by 31st July.

If it is of any assistance the installment plan can be re-introduced allowing you to pre pay for the coming year.

The installments are paid to the club Secretary and what ever has been pre paid is deducted from the coming years subs meaning you don't have to dig so deep come July.

Crash Report

Believe it or not nothing to report. Where are you Lawrence?

Tips & Tricks

Please see the article *The Status of Evolution of 2.4 GHz* further on in this newsletter. It was distributed with the last VMAA meeting minutes and I found it interesting, informative, easy to understand and well worth the time it takes to read. (Reprinted with the author's permission.) Spektrum have a web site for their equipment. Go to http://www.spektrumrc.com/DSM/Technology.aspx

Events

Night out at the Queen's Head Hotel– Saturday 28th July

It was suggested that the club hold a mid year social get together. After tossing around a few venues it was decided to try the Queen's Head Hotel in Humfray Street North. We made a booking for 20 and we had 17 members and partners turn up.

One member was so anxious and excited they turned up a week early – that's how good our nights out are!

The food was excellent and very competitively priced – well that's probably why we went there.

It was a very enjoyable night and good to catch up with members on a social level.

Not sure if Graeme (aka A1) is shielding the flash or giving me the finger. Must be the flash! Looks like everyone is enjoying their meal – we should do this more often.

Working Bee – Saturday 18th August

Max held a working bee on Saturday 18th August starting around 9:30AM running right through until at least 4.00PM. We had a pretty good turn up of members and managed to get to get a lot of jobs done. As usual the club supplied a BBQ lunch which was cooked by Glenn.

We hardly saw Nick all day; he was in the toilet block painting. In fact at lunch time we had to send out a search party to find him.

Here's a list of the jobs that were tackled.

- **Toilet block** – Matt Porter and Nick Katsikaros worked tirelessly all day painting the inside walls. Looks really good now. Paint was peeling of the eastern wall and it took a fair bit of rubbing down to prepare for painting. We all know what that's like!
- **Tables** – Noel Findlay, Graeme Allen and Roger Carrigg built four model assembly tables. Roger and Graeme (aka A1) managed to work together all day without killing each other although it came close a couple of times. Noel cut out all the parts which went together like a "Mecano" set.
- **Wood Pile** – Glenn and Roger tidied up the wood pile and erected a make shift fence around it to keep it safer. Much of the timber has nails in it and was quite dangerous particularly to small children.
- **BBQ** – Max fitted some flashing between the roof over the BBQ area and the north side wall to stop rain getting in.
- **Outside Light** – Rob and Matt Beardall fitted the recently acquired outside light above the garage door. (We will be able to see on meeting nights.)
- **Mowing** – Glenn mowed the field including the center triangle and the compound area while Len Astbury went around the edges with the whipper snipper.
- **Runway Tarps** – Max and his band of helpers sewed the tarps together. Quite a job laying them out and folding up again.
- **Floors** – Len Astbury mopped the floors in the shed and kitchen area.
- **Entry Track** – Max brought out some more road base to fill pot holes in the track.

Graeme (aka A1) is politely giving Noel some advice on building techniques!!!

Graeme and Noel are working a little more harmoniously here.

Len mopping the shed floor assisted by Nick. (Or are they being held up by the mops.)

Max, Rob & Matt Beardall, Matt Porter and Peter Evans stitching up the tarps. Apparently there was some difficulty getting the machine to work but that was soon overcome.

I think the members who turned up to the working bee enjoyed their day out even though it is work. You have to make a bit of fun out of it, after all that's what our sport/hobby is all about.

We always put on a BBQ lunch at these events to make it a little more enjoyable and encourage members to participate.

After all the work was finished Len brought out his LA Special for a few flights. Here we see Noel at the controls. Noel hasn't flown a model for quite some time but thankfully is back working flat out on his Bristol Bulldog.

Coming Events

VFSAA Round 7 – State Field

Several of our members are planning to attend round 7 to be held at the State Field on Sunday 26th August. If you haven't been to the State Field it is well worth the trip and it only takes an hour and a quarter from Ballarat. You might as well go and see where some of your $$$ are spent (Via your MAAA/VMAA fees). All pilots are welcome; you don't have to be a member of the VFSAA to fly in this competition which is for scale models whether built up or ARF.

The VFSAA put on these competitions to encourage modelers to get into scale modeling. These competitions are usually fun days and a chance to get together with modelers from other clubs. If you have a scale model you are more than welcome.

If you would like further information or directions contact Glenn or Roger.

Mammoth Scale – Shepparton

Don't forget Shepparton is only 4 weeks away. If you intend joining us there you will need to get a wriggle on if you need accommodation as Shepparton is heavily booked this time of year.

ARF Scale Event – Yendon

Another reminder. If you are planning on competing in our ARF Scale event to be held on October 28th now is the time to organize a plane and get some practice in. It looks like the prizes will be well worth winning this year. The advertising flyer will be out very soon.

Event Calendar

August 22nd	**BRMFC Meeting.**
August 26th	VFSAA Round 7 – State Field.
September 15th/16th	Mammoth Scale – Shepparton.
October 28th	ARF Scale Event – Yendon.
Nov 10th/11th	VFSAA Rally, Round 9 – Albury.
Nov 24th/25th	Hamilton Display and Swap meet.

That's all for now. Good flying.
G.W & R.C.

Garage Sale by Ted Rivett – Phone 03 5334 7953, Mob: 0409 321 956

Aircraft

- Mid wing aerobatic 1750mm span, tricycle U/C, Webra 61 front intake side exhaust, with tuned pipe. Ex condition.
- Piper Cub 2000mm span – needs some work. Suit Webra 61 with muffler.
- Squirrel 1650mm span aerobatic rear intake, rear exhaust. Fitted with OS 61 with mixture control fitted and Rhom tricycle retracts. Engine is ABC fully enclosed pipe.
- Squirrel 1650mm span aerobatic front intake, rear exhaust partly enclosed. Fitted with OS 61 with mixture control fitted and Rhom tricycle retracts. Engine is ABC fully enclosed pipe. *(Both Squirrels were used at World Champs)*

Engines

- OS 61 ABC, rear intake, rear exhaust with mixture control and pipe adapter.
- Webra 61 ringed, front intake, side exhaust with mixture control – suit the Piper Cub above.
- Rossi 61 ABC, front intake, side exhaust with mixture control – just run in.
- OS 61 front intake, rear exhaust – no carby.

Miscellaneous

- Assorted tuned pipes and headers.
- Zinger props – 11x7 to 11x7.5
- Top Flyte 11x7 prop & other bits and pieces.

If you are interested in any of this equipment contact Ted and make an offer.

Stop Press! Rick had his new Percival Gull out at the field on Sunday 19th August to show the members. No doubt we'll have more details in the next newsletter.

Rick's new Percival Gull made its debut at the field on Sunday 19th August. Glenn can be seen in the background trying to start the Zenoah 62cc in his Cessna 195. Glenn's in the market for a powerful starter.

The Status of Evolution of 2.4 GHz

By

Mike Close - Chairman. MAAA Technical Radio Sub Committee

Introduction

Radio sets that operate in the 2.4GHz band of frequencies are now available and several have been accepted for use by the MAAA. Inevitably this means that we will see more and more of them in use at model flying fields. There is no doubt that the spread spectrum technology in this equipment, now used for the control of model aircraft, is very exciting and it is likely that over the years it will become the norm, whether on the 2.4 GHz, 900MHz, 5.8 GHz bands or any other band where it may be legal to operate. The safe use and operation of the technology for model aircraft is an evolving activity.

Manufacturers are justifiably proud of the products that they have invested a lot of time and money in developing, and of course each pushes the advantages of their versions in what is a very competitive market. However, they do not necessarily fully know or disclose the impact or interaction of their product on other equipments that are available, and indeed it may be a fact that no one has a total overview. One thing we do know, is that an out of control model aircraft can be very dangerous and so it is wise to be cautious while there is any doubt as to the operational safety of the various technologies.

There are some popular misconceptions about how the technology, as applied to model aircraft control, operates. One misconception is that Australian Standard for the 2.4 GHz equipment is the same standard that applies uniformly everywhere in the world. Another major misconception is to say that over two billion of these equipments can operate at the same time and there is no possibility of interference. This is different to a statement that that there is negligible possibility of another transmitter actually controlling your model.

This article will endeavour to further explain about the use of 2.4 GHz for models, but is not intended to replace the need to read the MAAA Policy, MOP 058. This covers the use of equipment in this band for the control of model aircraft. Anyone using, or thinking of using this type of equipment should carefully read and regularly check the MAAA Web page,

http://www.maaa.asn.au/mop/policy/MOP058%20-%20Policy%202%204%20GHz%20EQUIPMENT%20-%2008%20July%202007.pdf, for updates. *(Just go to http://www.maaa.asn.au/mop.html and click on MOP 058 under Policies)*

Technology

At the time of writing, the MAAA has accepted three technologies, and the equipment using them, subject to some conditions which are in the MOP 058. All three systems operate in very different ways. Other manufacturers are almost certainly developing their own products. Until these products are on the market we will not know how they operate, but there is every chance that they will be using proprietary, but different, techniques. Until any new product is listed in the MAAA MOP as 'Accepted', its use is not authorised for MAAA activities. Obviously, the MAAA tries to evaluate new products as quickly as possible but often we are not provided with a sample, or much information, until the equipment is available from an Australian distributor. We then need to consider if the equipment is suitable for model aircraft use, as there are radio control implementations of 2.4 GHz technology which are not. We also need to determine how the equipment will interoperate with existing 'Accepted' equipment, and, if necessary, to enable appropriate restrictions to be applied to enable "safe" operations at our flying sites. Accepting equipment only means that the MAAA has done some evaluation and has not found any significant problems which cannot be overcome; it does not mean that no problems will appear as more experience is gained in the actual use of that equipment.

As a result of discussions with the various manufacturers, the MAAA has technical information that is not available to the public and which has been provided on a confidential basis. Obviously it cannot be put in an article such as this. In some cases too much technical information may just confuse readers, so it has been kept to a minimum anyway. Anyone who seeks more information can always look at manufacturers' information or other sources that are in the public domain.

The acceptance of the Spektrum DSM2 *(Digital Spectrum Modulation)* system, like the other technologies whose description follows, is not limited in principle to a particular product, but rather to the acceptance of the general implementation in the manufacturer's radio products that use that system, except where the manufacturer places their own restrictions on its use. The Spektrum DSM system, which is very similar to the DSM2, differs in some technical details, and is only recommended by the manufacturer, and accepted by the MAAA, for Park Fliers. After switching on, a Spektrum system looks for two frequency channels that are not in use from within the whole of the band. When it finds two channels it starts to transmit on these frequencies. The receivers then lock onto them and the link is established. If it does not find two clear frequencies then the transmitter does not radiate and the complete receiver system is locked out and control is not possible. The system uses at least two separate receivers and antennas to provide alternate radio paths to improve the robustness of the link. Once locked on, the equipment operates on these frequencies no matter what external effects are present until it is switched off. The next time it is switched on, the equipment goes through the same process and may well select different frequencies.

The Futaba FASST *(Futaba Advanced Spread Spectrum Technology)* system uses a totally different operating concept. It does not consider what any other equipment operating in the band is doing. This system changes frequency very rapidly and in less than a second will have operated several times on every part of the available 2.4 GHz frequency band. The receiver tracks the changes of transmitter frequency so it maintains what appears to the user as a continuous signal. It uses two antennas at the receiver and the receiver uses the better of the two signals by monitoring what is happening on both. Every FASST set operating will be hopping across the same frequencies in what is called a pseudo random basis. Of course at times it will hop onto a frequency which is being used, either by other FASST equipment or any other type of equipment. The section on interference describes the impact of this type of operation.

The Xtreme Power Systems technology, XtremeLink, is different again. In some ways it is similar to the DSM systems in that upon switching on it looks at the specific frequencies on which it operates to determine the best one available. It then transmits on this single frequency. The big difference between this and the other systems described in this article is that it monitors the performance of the radio link. This is achieved by having a combination transmitter/receiver in both the ground unit and in the airborne unit on the model. If the signal quality deteriorates to the point where the link might become marginal, for what ever reason - internal or external, the system changes to another frequency, if one is available, that will provide better communication at that point in time.

Interference

Based on experience of the radio systems that we are used to, it may appear surprising that these 2.4GHz systems do operate together, as they also do with the many other users of the 2.4 GHz band including cordless phones, computer wireless local area networks and many other domestic and industrial applications. That is not to say that the usage is without limit and the author understands that in some parts of Hong

Kong and Taiwan the 2.4GHz band is totally unusable for anything, even with severe limitations, due to the large number of users attempting to communicate using it.

In technical terms, spread spectrum technology is designed to work simultaneously with other encodings and avoid direct collisions through complex algorithms that include randomization of the transmission times and encoding changes. Sorry this is bit of a mouthful but what it means is that the systems are designed so that more than one system can operate on the same frequency. Again this does not mean the numbers are limitless. As more transmitters access the same frequency, whether with the same or a different implementation, transmission collisions will occur more often and in technical terms this is seen as an increase in the noise floor. This does not mean that at some instantaneous point in time the systems will stop working. What happens is that the speed of control response will slow and this may be difficult to identify until there is an urgent control requirement. This is of course more critical to the control of a model aircraft than it is, say, for the time to download something from the internet. The impact of this collision issue on the different technologies in use is not the same and it is not possible to know whether the next brand of equipment, with a different implementation, will be better or worse.

For this reason the MAAA has placed a limit on the number of 2.4 GHz radio systems that can be used simultaneously at 10. With the currently accepted equipment, 10 is slightly conservative and is caused in particular by the impact of systems that use hopping technology. It is always possible that, when the use of this band for model aircraft has stabilized, this limit may be reviewed. This limit is one of the reasons why the MAAA requires that a frequency control system is used for this band, even though actual frequencies cannot be specified. The other reason for the MAAA, and also the AMA, (the US equivalent of the MAAA) requiring the continuing use of frequency control is that the discipline of always using a key, or equivalent, helps to avoid mistakes by individuals. It maintains the confidence that the number of keys inserted is still equal to or greater than, the number of transmitters in use; a check that is still mandatory for control of the 36MHz and the other frequency bands that are used.

Legal Requirements

In Australia it is a requirement of the Radio communications Act 1992 that all radio communications equipment, including model aircraft transmitters and receivers, operate in accordance with the relevant technical standards, and where relevant the class licences. Whilst it is true that 2.4 GHz is used in many countries, the requirements for its use are different in different countries. These standards cover not only the specific frequency band but also the power output, spurious signal levels, EMR, EMC, environmental conditions and other technical parameters which are not usually specified in model radio control datasheets, and for which it is impossible to expect the average user to determine. In many instances the Australian Standards are more onerous than those that apply in other countries. The author has been shown an individual slot car that is legal in the USA but which does not comply with the Australian EMC requirements, and in fact badly interferes with an electronic lap counting system.

The Radio communications Act is administered by the Federal Australian Communications and Media Authority (ACMA) and they will impose severe penalties on anyone who uses equipment that does not comply and who causes interference to other users. The Australian C-Tick compliance system requires that the responsibility for compliance of equipment that is either manufactured or sold within Australia is taken by either the manufacturer or the distributor. A C-Tick compliance mark applied to any equipment indicates that the importer or manufacturer has made a declaration of conformity that the equipment complies with the mandatory obligations under the regulatory requirements, holding the appropriate test reports to the applicable standards. This is subject to audit by the ACMA.

Without this compliance mark the Radio communications Act places the legal responsibility on the user to ensure that the equipment complies with the applicable standards and holds supporting documentation. The fact that similar equipment may be sold in the Australian market with a compliance sticker does not guarantee that all equipment of that type or brand complies. As was stated earlier in this article, the 2.4 GHz specifications vary across most countries of the world and there may be internal hardware or software differences that are not indicated externally. These build standards may also change with time. The legal requirements are complex and can easily be misinterpreted. Whilst investigating this issue, the author found some apparent anomalies and these were only clarified by asking very specific questions of the ACMA. It is known that others have asked more general questions and received different responses, and these could have lead to operating illegally.

The only reliable source for an individual to obtain information on the compliance status of equipment without an Australian C-Tick compliance sticker is likely to be the original equipment manufacturer. However, what is acceptable is a matter on which the final arbiter would be a Court of Law. While the individual user must assume responsibility for documentation, model organizations, such as clubs, which have embraced the 2.4 GHz technology, should also consider their position regarding members who do not have C- Tick compliant equipment. The MAAA Insurance Policy does not have a specific exclusion clause, and so would still respond to an injured party in the event of any insurance claim that was found to involve equipment that does not comply with the Australian standards. However the insurer always has the option to institute court proceedings to recover his costs in the event that an insured party had not acted responsibly.

Summary

The following is a summary of the specific requirements of MOP 058. Everyone interested in operating 2.4 GHz equipment for model aircraft control is strongly advised to refer to the actual document regularly both for more detail and to check for updates.

- Only technologies and/or equipment that have been 'Accepted' by the MAAA may be operated under MAAA Procedures.
- A keyboard system, preferably similar to the system used for the other frequency bands, shall be maintained for 2.4 GHz.
- Only 10 off 2.4 GHz radio sets are allowed to be used at anyone time on the same site.
- All equipment used must comply with the requirements of the Australian Radio communications Act 1992, covering both Standards and Class Licence.
- Without a C-Tick compliance mark being applied to equipment, including those equipments accepted by the MAAA, the user is personally responsible for ensuring that they have the documentation to show that the specific equipment that they are operating complies with the Act, the Standards and the Class Licence.

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