



# 10...9...8...

*the voice of UKRA*

Summer 2003

volume 7 issue 2

## **Team America Rocket Challenge**

by Mario Perdue

## **F100 Super Sabre PMC**

by Steven Rogers

## **TRAXA Transmitter**

by Roy Trzeciak-Hicks

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# Editorial

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## Council Election

Hopefully all of you who renewed in time will have recently received your ballot papers for the forthcoming UKRA Council election. I would encourage you to vote, but it'd really irrelevant given that there are fewer candidates than places on the council.

Personally speaking, I was disappointed at the number of people who put themselves forward as candidates. Yes, it is time consuming being a council member, but it can also be very rewarding. Remember that the running of UKRA depends upon volunteers, and please consider what you can do to help.

## Club News

This issue sees the start of a new, hopefully regular, feature - Club News. If you have any club announcements or news, please submit it and we will run it both on the web site and here in 10...9...8...

## Apologies...

...for the thinness of this issue. Events have conspired to make this the thinnest issue since volume 5 issue 1. There are two main reasons for this, in the first instance there was very few articles submitted until quite recently. Secondly, I'm leaving my current job and looking for new employment, and have found myself with very little free time to produce this issue. The current plan is for the next issue to be a bumper edition to make up for it.

The Editor

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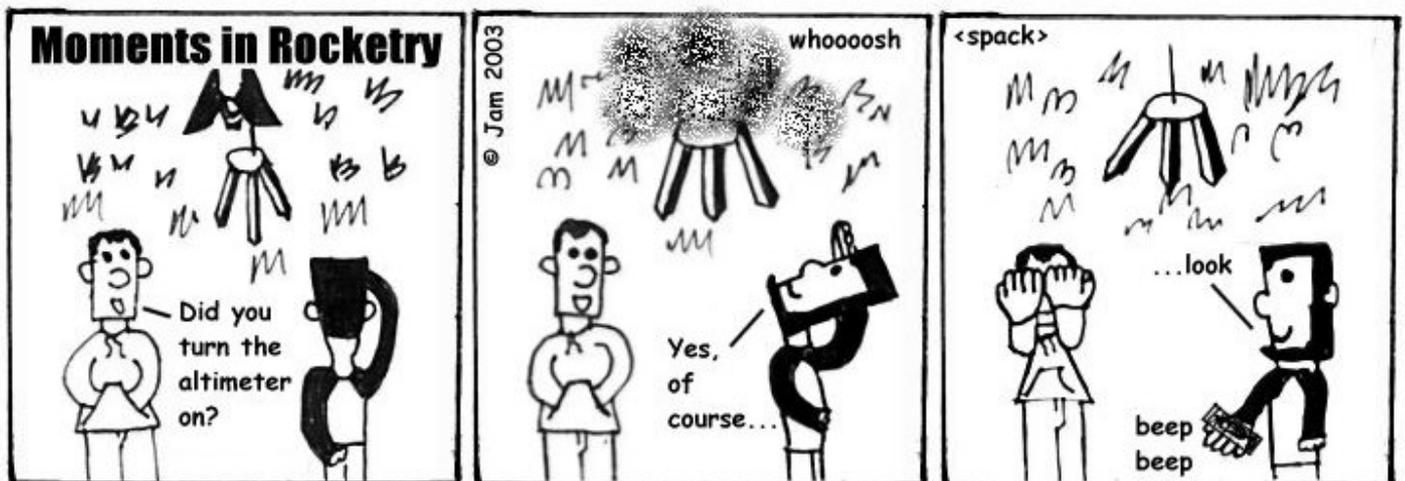
**Cover Photo:** Big EARS' Red Noses (*Photo courtesy of Bob Arnott*)

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# Mayflower Project

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**by Jim Lennie,  
SWARM, (UKRA L2 RSO)**

As a rocketry club, SWARM has progressed a long way since Felix founded it in January 2002. A lot of people already know that the club was formed to stage a charity rocketry event here in Devon last September and we had plenty of help from individuals already experienced in amateur rocketry.

Steve Gibbings from EARS showed us the ropes on building our first mid-power rocket, an Aerotech 'ARCAS' which we successfully launched from our Folly Gate site. That rocket has made 28 flights since then and is still going strong! Pete Davy from 'Pete's Rockets' has also been a great help attending launches on two occasions last year. The first was to examine Jim, Roy and Adrian to gain their UKRA Level 1 certification which went really well as all 3 passed first time.

The rocket kits were donated by Starchaser who were our sponsors at the time. They wanted us to build a high-power rocket safely and properly so that we would have some experience before the charity event. As we needed a large rocket for the display Starchaser again obliged and financed our purchase of a PML Giant Pteradactyl which



**Jim at Starchaser**

Jim built last year as our club project. Pete Davy came down for the launch in front of Carlton Television who were filming the event. This launch was also to cert Jim at Level 2 but the big rocket was damaged during deployment as the eject piston had jammed on its way out. The rocket recovered safely as it seemed to be okay during its descent. As a level 2 cert flight it was a failure and is well documented at SWARM's website. The damage and its repair (despite a number of people saying that it would be impossible to fix) and subsequent perfect flight can be also be seen at the website. Jim passed the L2 cert flight the next day using his PML Intruder with a PRO38 J300 motor.

This year it was decided to challenge the UK Altitude record set by Hugh Gemmill. We would use this as a club project and once again Starchaser offered to sponsor us after we met them at their factory last month (26/27th March 2003). Steve Bennett and his wife Adrienne made us all very welcome and their enthusiasm for amateur rocketry in the UK is undiminished. They were eager for us to proceed with this challenging project. Steve and his team were really busy with their own endeavours but made time to go through our rocket designs and run various simulations and I'm pleased to say they were very happy with the 'Speedwell' design. (as it was mine!)

## **A message of encouragement...**

...from Jimmie O' Dell Carroll to the Club:

*' I am IMPRESSED !!!!! I know you will "raise the sails" and go far with the Mayflower launch. I like the launch vehicle too. The first one I built for our rockets was made out of wood ! The four guides worked well, but the bottom holding the whole thing together was wood as well, AND it burnt up after a few launch attempts.....back to the drawing boards. That is when we decided on a steel rod and rings on the side of the rockets for a guide. You know I am hoping and praying for your success with the Mayflower. Godspeed and keep me up to speed and "in the loop". Cheers, Jimmie O"DELL Carroll (ancient rocket launcher)*

# The Mayflower Project

Felix came up with this project name as it links us here in the West Country nicely with our club patrons, 2 of the original 'Rocket Boys', Homer Hickam and Jimmie O'Dell Carroll in the United States. They are both really excited about this project and are in regular communication with Felix. Jimmie has had it in his diary since last year when Felix was just dreaming about it. The date of the launch has been set for the 6th September as this is the day on which the original Mayflower left Plymouth for her journey across the Atlantic to the Americas. This date is a target but is not cast in stone as the rocket build and weather will play its part on when the rocket is actually launched but Felix is very optimistic !!

## The Rockets

### Speedwell

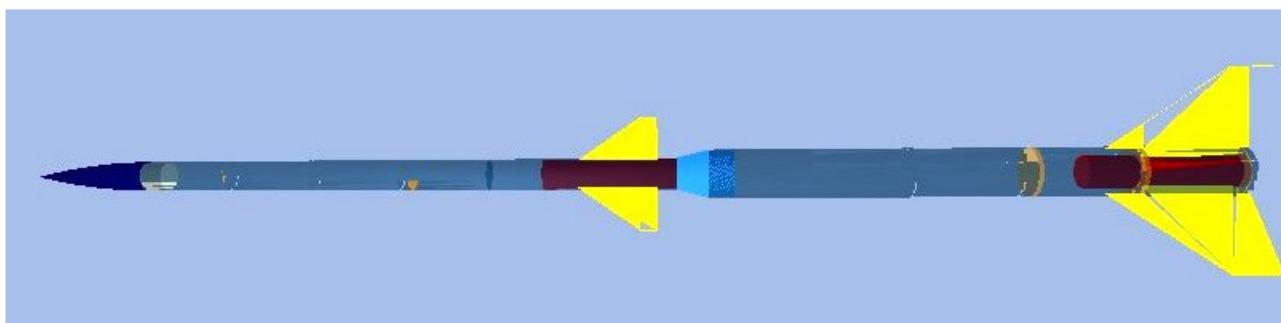
The team consists of Jim Lennie, Roy Cook & Steve Turner.

This will be a 2 stage rocket. The booster airframe will be 6" in diameter and will be fitted with an Aerotech M1939 motor. Starchaser have already supplied us with the casing for the build. The booster will be dual recovery; the transition section will be ejected at apogee and this will pull out the drogue chute. A RDAS backed-up with a timer and another altimeter (as yet to be decided ) will then release the ARRD device which will allow the drogue to pull out the main chute at 800 feet. There will also be a home-made device built into the transition bay where the timer for the sustainer is situated. This device will abort sustainer launch if the rocket is tilted over in any direction by more than 10 degrees. The device

is about to be tested in my converted Intruder and will be used to pop-out a drogue chute at apogee. If this is successful, it will, along with a timer, be used to bring the Intruder down with dual deployment without an altimeter. Special attention will be made to the motor thrust block and we're considering a perforated inch thick aluminium plate bonded into the airframe with epoxy and fibreglass. A 6" coupler will then anchor this plate further as we'll be bonding it for 8" inside the booster airframe. This is to cope with the M1939's initial 430 pounds of thrust which rises to 480 pounds and doesn't start to drop off for approximately 4 seconds. As the rocket's weight will be around 60 pounds at launch, significant thrust from this motor ends after 5 seconds.

Coast time before sustainer ignition will be critical for the potential maximum altitude for this rocket configuration. We have run many simulations and it seems at this stage that the timer for the sustainer should be set at 9 seconds after its G-switch is activated. If the rocket has started to angle over by more than 10 degrees then the timers output will be inhibited by our device and the rocket will be parted, allowing both stages to recover normally using their onboard flight computers. We don't want to send the sustainer into an angled trajectory as this will waste power and altitude, not to mention a distant recovery.

The sustainer will have a L952 motor fitted and we also have the hardware for that thanks to Starchaser. This part of the rocket is 'minimum diameter' and will be using a 4" airframe using phenolic tube which will be glassed as this rocket will be travelling at supersonic speeds. The same engine block materials will be used here as in the booster, perforated to allow for motor ejection in other launch configurations, as we will be making 75, 54, 38 adaptors for it



*Speedwell*

to allow for test launches on its own with smaller motors. The booster will also have 75, 54 motor mounts for this purpose. Electronics will be dual altimeters, probably a RDAS and G-Wizz for backup. I'm still considering piston ejection for both drogue and main but am looking into cooling meshes and all Nomex recovery materials instead as this will allow for a shorter and lighter sustainer. The nose will be conical and will be made by us as haven't found any for sale yet that will fit a 4" airframe. ( any offers ?) The booster / sustainer transition will also be made by us probably in aluminium and welded. We are lucky in that all 3 of the rocket- build team are engineers and have access to many types of materials and machining equipment. Starchaser have some great stuff as well which will help us enormously. Both rockets will be fitted with tracking devices and we were thinking about fitting the GPS module to the sustainer's RDAS unit but there are legal issues around that may prohibit this option. The rocket will be decorated by Yvonne Packham.

## The Pilgrim

The team consists of Jon Hopper, Ellie Moss & Sam Moss.

This will be a 'half-scale' version of the 'Speedwell' and will be built by the 'Beehive' (junior under 18 members of SWARM). This project is also being financed by Starchaser who think it's great that young people get a chance of modifying and building a complex 2 stage rocket. This will be done with strict supervision of course and all stages of the build will be checked before the next stage is allowed to commence. The booster for the 'Pilgrim' will have a 54, 38, 29mm motor mounts and the sustainer will have 29 and 38mm motor mount options. The booster section will have a timed recovery option that will utilise a main chute only. The sustainer will have full dual recovery and it's up to the team on how they achieve this. There are 3 Juniors on this project and one of them will be building the sustainer on his own so he can have a Level 2 attempt with it. The decoration will be done by Matthew Packham of the Beehive.

# YellowJacket MPR Pad

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*by Paul Lavin*

There comes a time when a man just needs his own launch pad. I got tired of queuing up to borrow somebody else's, scrounging around to find a loan rod to fit my rocket or needing features and functions that weren't already set up in the field. On the other hand, by borrowing pad facilities I got to meet some interesting and often friendly rocket folk. In the process I also got hands-on experience with a variety of other pads. But it was time to invest – an Estes pad will only take you so far!

When I went shopping, I found that there were few choices for MPR and HPR. I rejected the DIY path as I wanted something tried and true and I wanted it NOW. I scratch build most of my rockets and frankly I'd rather spend the time on vehicle construction than relearning what little I used to know about welding. Importing a pad directly from the US was costly and time consuming but the variety was intriguing.

I stumbled on YellowJacket Systems pads thanks to a recommendation from Andy Little of Deep Sky Rocketry ([www.modelrockets.co.uk](http://www.modelrockets.co.uk)). He was out of stock but he referred me to Olivier Timper, who runs T- Rocketry ([www.t-rocketry.de](http://www.t-rocketry.de)). Olivier is an amiable German chap who speaks/writes great English and had a few YellowJacket MPR pads on hand.

In common with most rocket product vendors, rocket bits are not Olivier's full time business. Nonetheless he gave me excellent service with fast and informative email replies and prompt shipping. Olivier takes Paypal which I found speedy and convenient, too.

The US maker of YellowJacket pads, James Ball, was taken ill last year and has to lay off manufacturing and developing new products. He is reportedly on the mend and will be

offering new, upgraded Hornet HPR pads this summer. For the latest info check [www.yellowjacketsystems.com](http://www.yellowjacketsystems.com) . For European stock levels, have a word with Olivier (djoli4@web.de).

## Love yellow

For price and an early delivery date I settled on a YellowJacket Systems Wasp MPR pad. It arrived by courier just three days after ordering. It was extremely well packed and once out of the foam and shrink-wrap, it was love at first sight.

The only problem with the colour is that it is likely to get lost in a flowering oil seed rape field! Otherwise, it is beautiful. The paint is thick and applied well, yellow on the folding legs and black for the pad head. The Wasp is made of steel but weighs just less than six kilos. The welding was of fantastically good quality. It is heavier than an aluminium pad but not backbreakingly so. Having a bit of weight low down can't hurt the stability.

The 750mm x 800 mm stance connects to the turf with half inch steel 'ground grabber' adjustable pegs. There's about an inch of levelling adjustment before you have to pound the high ones farther into the ground or look around for a handy stone to prop up a low one. Actually, pounding the pegs in is a good idea if you are setting up on soft ground. No adjusting tool needed aside from a calibrated rubber mallet ;-)



**YellowJacket MPR Pad**



**Foot Detail**

The much higher priced YellowJacket HPR pad (currently unavailable in Europe) has crank handle levelling adjustment while the Wasp needs a spanner. An upgrade kit may be in the offing. You could certainly make longer pegs out of threaded dowel and really nail the sucker deep down if you need to.

The apparent meagre adjustment at the feet is not a problem. The pad head swivels around a round peg so you can easily orientate it so that any remaining out-of-plumb condition can be adjusted out with the elevation adjustment. This rotation feature is also used as a azimuth/windage adjustment to align your bird with the prevailing breezes. It locks securely in place with a thumbscrew.

## What goes up

The elevation adjustment is via a heavy-duty connecting rod with self-lubricating steel bearing rod end attachments. You can tip the pad about 30 degrees to allow for wind or slope, nervous neighbours or other environmental complications

The pad head is a thing of beauty. Two exquisite aluminium star knobs clamp your choice of rod in the 14 mm square rod orifice. They have locking jam nuts. This is VERY secure. If that rod limit seems a bit small it may be because this is YellowJacket's so-called MPR pad.

The docs say that you should limit the rods to 3/8ths but a 1/2 inch will fit. The pad is supposedly good up to mid-H power level but Olivier has lofted Ks from his with no difficulty. You do need to suss out the weight and balance of any thing you launch and YMMV.

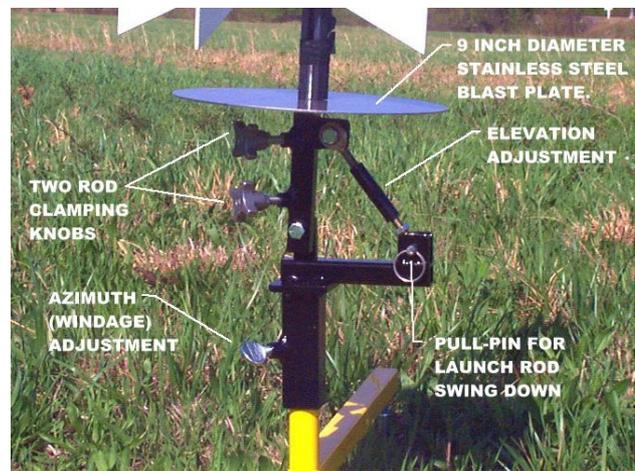
One YellowJacket feature I shall really enjoy is the quick disconnect pull pin that allows the pad head to recline so that you can easily fit a rocket on a long rod or rail without straining on tippy toes or risking a fall from a toolbox or steps. That'd be a hell of a thing to confess: while braving the dangers of amateur rocketry you break your arm falling off a chair in the middle of a field. The cotter-less clevis pull pin that secures the reclining pivot is well retained. It won't come loose under fire.

All in, the pad sits 400mm high so it has a very low centre of gravity. Included is 200mm diameter stainless steel blast shield and adapter/retainers for three rod sizes: 3/16, 1/4 and 3/8ths. You can also use the pad with 1/8 inch model rocket rods with the 3/16 collar with some precision duct tape application.

I found a stainless steel stockist that sold me 3m of 6mm rod for a tenner. That was quickly hacked in two to suit (1200mm and 1800mm). Mounting the 30mm 'quadrail' extrusion sourced from an aluminium foundry in the bowels of 'old Europe' was EZPZ. I got a 300mm length of 5/16th inch stainless, clamped 100mm of that short bit of rod on the pad head and slipped one of the slots in the rail over the rest of it. A bit of drilling and some 6mm fasteners had the pad ready for action in an hour. YellowJacket says they will sell you an adapter but why bother?

I bought a few extra fittings and now have moveable stops for rail launched rockets and a way to secure spare rods in the unused quadrail tracks. Max size 9mm. 6mm rods and under need a bit of retention – some gardening wire sorted it.

I'm delighted at the quality of YellowJacket construction and the solidity of the design. The price could be better, though. Even shipping the pads over to Euroland by slow boat from the States, by the time you add German VAT and onward shipping to England, the price tag crept over euro 200. You pay your money and take your choice ;-). I think the Wasp is worth it being a big believer in only buying something once that you hope to use for a long time. However, I was not completely content with an off-the-peg pad. I immediately accessorised the Wasp to work with my launcher and rocket fleet. I attached Velcro strips to hold my pad end



**Adjustment Mechanism**

launcher box so that the ignition wires are as short as possible. I also used some cable tidy hardware to provide strain relief for the cables.

On another leg I mounted my fire extinguisher bottle in case of too warm a send off. I made a bit of lanyard for the spare rod adapters, spanner and the recliner pull pin so that they don't come astray in some muddy farmer's field. There was even room for a St Christopher's figurine to complement the rabbit's foot on the control box ignition key. If I could source some rocket bullshit repellent, I'd be all set!

My quadra rail is two meters tall and right on the comfortable limit for stability so I plan to add extensions to the legs before I give any weighty birds a send-off. My friendly local stainless steel stockist quoted me £27 for 6m of 30mm square with 1.5mm walls. I plan to slip 1m lengths of it inside the yellow legs and give the pad a very sturdy two meter footprint. RSN. Rebel Rocketry in the Netherlands has my 30mm quadrail as well as lighter duty 25mm rails (as sold by Giant Leap in the US as Extreme Rail). Rebel also have another matching rail with no slots at all – VERY stiff. I plan to use my upgraded pad to launch my Level 3 Mother Of All Tetrahedrons using the quadrail and slotless extension as a four meter rod with an effective diameter of 40mm. Sand bags on the legs, longer pegs and guy wires will be added, too.

I would recommend the YellowJacket Wasp to anyone looking for a MPR/HPR pad on its quality of construction and thoughtful design. There is plenty of scope for DIY embellishment. A nicer price would increase the appeal for a wider audience but it is worth it as is.

# UKRA 2003

## 6th / 7th / 8th June



### Southview Farm, Heckington, Lincolnshire

	<b>Weekend Pass</b>	<b>Day Pass</b>
<b>Adult Flyer</b>	<b>£15.00</b>	<b>£10.00</b>
<b>Junior Flyer</b>	<b>£10.00</b>	<b>£7.00</b>
<b>Non-Flyer</b>	<b>£5.00/£3.00</b>	<b>£2.50/£1.50</b>
<b>Temporary Membership</b>		<b>£9.00</b>
<b>Prep Benches (Subject to availability)</b>		<b>£5.00</b>
<b>Card Wallet</b>		<b>£0.50</b>
<b>Raffle Tickets</b>		<b>£1.00</b>
<b>Vendors fee</b>		<b>£35.00</b>

#### More information:

<http://www.ukra.org.uk/events/ukra.shtml>

**MicroMax to M  
Ceiling 10000ft\***  
**Sheltered prep area**  
**Vendors welcome**  
\*by prior arrangement

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**Preregistration**

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# **Review:**

## **Canadian Sprint**

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**by Richard Parkin,  
UKRA 1268 L1**

After scratch building my L1 certification rocket I had sort of promised myself I wasn't going to buy any more HPR rocket kits, but then I was struck with that curse of the modern age – a credit card, boredom & internet access! I had seen the quality of BSD kits in Damian Hall's Thor rocket at one of the WRS's regular meetings, and was quite taken by the elliptical fins of the Sprint and Apache designs on the BSD website. In the end I decided to just buy one and put myself out of my misery.

The rocket of choice was the Canadian Sprint as I considered the 38mm motor mount and 29mm converter to be the most flexible choice in this day and age. Another point to consider was the fact that I didn't know of anyone else in the UK who had one, and having new things allows them to be written up in 10...9...8... which keeps the editor from hassling you for other long overdue articles... [Only a temporary respite - Ed]

### **It arrives!**

A really big box from RocketSilo that has been overlooked by HM Customs and Excise must surely be a cause for celebration!

After scrabbling around for a while and checking that I had all requisite bits (lots of nice little extras are included) I noticed that the vinyl cut graphic sheet was missing the SPRINT portion of the decoration. This was mildly annoying, but as I hadn't really planned on finishing it stock I didn't really worry about it. Everything else was there and well wrapped or sealed to protect it from the gorillas that work in my local ParcelForce depot. The male workers are worse...

I started to consider the construction and concluded someone new to M/HPR but with a

few smaller kits behind them could easily build it using the well laid out and illustrated instruction book. Having decided this I put the book back in the box and more or less ignored it.

### **Construction**

The rocket goes together very easily with only the one (almost) gotcha which I will talk about later.

There were only 2 minor problems, the first being the coupler tube which was marginally smaller than the ID of the 3" body tube. After building the payload bay I noticed that the fit wasn't wonderful and that a small portion of the BT was not in contact with the coupler, but this was easily fixed with the application of some thin CA into the gap. Armed with this knowledge I was able to avoid the same thing happening when joining the 2 body tubes together.

The other problem was so minor that I have since forgotten what it was! I meant to write it down, but I must of thrown the bit of paper away...

I deviated from the instructions at several points, but not because I was in any doubt that the stock build was lacking in any real way. To start with I used a longer piece of 38mm motor mount tubing than supplied because I wanted the centring rings further apart to allow me to mount the rail buttons directly into them. I also decided to build the motor mount and fin assembly as one piece and slide the lot into the rocket rather than slotting the body tube and trying to marry it all together; I am not the worlds best at that sort of thing!

Anyway, the gotcha that isn't (or shouldn't be) - I looked at the fins and suffered from a momentary lack of confidence; which around should they go? The fins illustrated in the book are not clear enough to determine this (I think it shows generic fins, but I can't tell now as I have misplaced it), but a visit to the BSD website cleared that up. Then a highly persistent voice in my head (shouting to make itself heard over the others) pointed out that putting the fins on the other way around might be quite a good idea anyway!

The voice's reasoning was sound on this; putting the fins on this way around would allow the portion of what should be the leading edge to sit squarely against the motor tube and rear centring ring, whereas the stock configuration has a clipped aspect to final portion of the trailing edge that would leave a gap; presumably to allow the fins to clear any epoxy on the rear centring ring when pushed in through the slots in the body tube. As I was building the whole assembly in one piece and the forward centring ring was now too far forward to engage the fins' leading edge regardless of the orientation, that is what I did.

The profile of the fins is such that there is a slight curve to the trailing edge, which I think looks better as the leading edge. I was fairly confident that no one would notice my modification anyway as the fins are fairly symmetrical about their mid line, but Mark at BSD did notice when he saw the photos! I suppose this was to be expected as they did design the thing...

## Finishing

Ah-ha, I now remember what the other minor problem was; the fin and rail button markings on the body tube were in coloured ink (permanent marker?) which refused to be painted over! I used about 8 coats of a good quality primer in alternating colours, but as each coat dried the lines began to show through. This was annoying as I had planned to paint the rocket fluorescent orange or yellow with metallic charcoal detailing, but ended up painting the whole thing in the charcoal. I have no idea why this happened as it never has before on similar materials with the same paints - suggestions are welcome!

In general though the tubing and fin materials took the paint very well and did not require much pre or post application sanding to get a good finish. There is a patch of dodgy colouring on one side of the body which corresponds to my application of alcohol to remove a few epoxy based fingerprints, but I think it should refresh quite well with another coat or two at the end of the season.

## Flying

A scout around EMRR indicated that the single grain Pro38 would be a good motor for a first flight, but I skipped ahead a little and flew it on the two-grain Smokey Sam reload. At the last minute I decided to put my AltAcc 2C in the rocket to control deployment as none of the delays on the motor felt or simmed quite right. I thought this was quite brave of me given that it was the rockets first flight!

I loosely packed / folded a big square of the Pratt Hobbies Kevlar material well down inside the body tube to protect the chute. The advantage, I find, to having an oversized bit is that it doesn't seem to impede the deployment at all while allowing a deployment charge to be placed in between the folds.

The flight itself was a bit of a neck-snapper on the H143 and I was very impressed; I hadn't really expected it to be such a performer. It was quite windy at the BigEARS launch but the flight was dead straight to apogee where the AltAcc kicked the chute out (after having a bit of a think about it).



**Launch**

The supplied 30" chute would be a good choice on still days, but the East Anglian wind over the Bank Holiday weekend was a little excessive; I recovered the rocket a few hours later several fields and 2 roads away! Although the Canadian Sprint is not a small rocket it is quite light for someone used to PML phenolic tubing. Must remember that in future...



*In Flight*

## Conclusions

I would happily recommend this kit to anyone, and I am sure it would make a good first M/HPR rocket; L1 certification would be a breeze on this thing. With a bit of a mod for dual deployment I suspect that L2 would be equally easy.

The styling is very good and the stock colour scheme is quite striking. My colour scheme (driven by necessity rather than any ideas of good taste) looks quite good, and after I have touched the paint up a bit I will probably add the rest of the decals.

10...9...8...

The final plus point to this and the other BSD rockets must be the support from the manufacturer. Many people I know speak highly of BSD's quick and helpful responses to their questions, and this was true for me when I wanted to apply my CP sticker before I had got around to building it in RockSim!

## Rocketry Cocktails

*by Sarah Packham*

I have a few idea for cocktails for you, I hope the readers of the UKRA newsletter enjoy them and if they don't, don't blame me! He He!

### Lawn Dart!

- 2oz Midori
- 1oz vodka
- Orange Juice

Pour the Midori & Vodka over some ice cubes in a glass and then fill the glass with orange juice, stir and add a cherry on a cocktail stick!

### Cato!

- 1oz Brandy
- 3oz Pineapple juice
- dash of grenadine

Pour the ingredients over ice cubes in a glass



*Sarah enjoying the fruits of her labours*

More cocktails recipes, next issue...

# F100 Super Sabre Limberg kit PMC

by *Steven Rogers*

I took this project on specifically to see how cheap and easy I could make a PMC project. You don't see many PMC projects outside contests. If that is due to a reputation as being expensive or difficult, it is undeserved. Of course, a PMC project can be complex and require a lot of tedious painting, but it can also be fast and easy.



*The Box Art*

The box markings indicate that this kit came out in 1993. I paid \$5 for it at a model show - there's the inexpensive part. Its a beginner's kit that has a bright silver coating so it wouldn't necessarily have to be painted. Overall, the kit is typically Lindberg. The body is covered with huge surface rivets that would probably turn-off a scale modeler. Cockpit detail is minimal. However, if you're looking for a quick PMC, none of these things should present a problem.



*The body halves*

## Weight

Weight is usually an issue with PMCs. Since this model has an 18mm motor tube, the limits are 113 grams for a C6-3 or 127 grams for a B6-2. With some care in internal assembly and by leaving off the vast array of munitions included with the kit, it was possible to just squeak by the 127 gram limit.

## Stability

Like any airplane PMC, the shape is to complex to find the centre of pressure using ordinary methods such as a rocket simulator or cardboard cutout. If you approach this with the right attitude, it can be the challenging and fun part of a PMC project. One approach to this problem is to use the real plane's CG as a clue to where your model's CG should be. You can make a very good guess at where the CG of the real plane is located by looking at where munitions or other extra weight on the plane is located. The CG of these extras will be a little ahead of the plane's empty CG to ensure that munitions don't ruin the plane's handling characteristics. If your model is a true scale model, that will be a good guide to where your model's CG should be.

## Construction

This is a fairly straightforward conversion, being one of the earlier 'stovepipe' jets with everything in a straight line. The exhaust fits an 18mm tube with a shaved down centring ring to take up a little extra space. I created the maximum possible chute space by putting a larger body tube in the centre of the plane with an aft bulkhead to receive the engine tube.



*Internals*

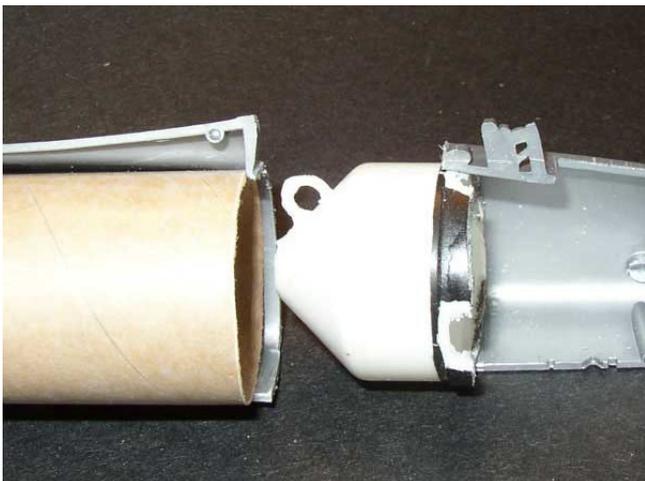
This body tube got some help in conforming to the shape of the airplane by using an aft

bulkhead cut to match the shape of the fuselage. The aft shock cord is retained in this bulkhead. The structural seams on the body and wings were glued with an epoxy called Ace Plastic Bonder formulated specifically for plastic. In addition, the internal areas were roughed up with 100 grit sandpaper to help ensure a strong bond.



**Conformal bulkhead**

The nose cone was made by cutting the tail from a nose cone and gluing it onto a balsa/plywood bulkhead cut to fit the inner contour of the airplane nose. The forward shock cord is retained in this bulkhead - the shock cord loop on the nose cone was cut off and the cord runs out through the hole in the centre.



**Nose cone attachment**

I put rail buttons on the bottom of the plane, primarily to provide a longer and stiffer launch guidance for the plane.

## Finishing

For finishing, I simply applied the decals from the kit and nailed them down with some Micro-sol decal setting solution. This is not a rocket that would be mistaken for a prize winner from a scale plastic model show, but it does look decent and it was easy, fun, and fast. So don't leave PMCs for just competition.



**The finished look**

### **Editor's note:**

Steven contacted us some time after allowing us to run the article with a warning that the first flight of his F100 wasn't stable! As he said in his email:

*"I flew it today, and it wasn't stable . . . DOH! That's the breaks in PMC".*

So some additional nose weight and a swing test are probably in order before trying this one out!

### **Steven Rogers' Home Page:**

<http://homepage.mac.com/srogers4/rockets/>

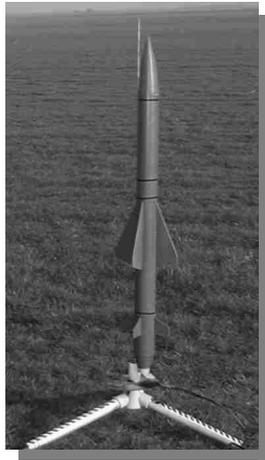
### **Steven Rogers' F100 Photo gallery:**

[http://users.tinyworld.co.uk/rogersm/f100\\_gallery.htm](http://users.tinyworld.co.uk/rogersm/f100_gallery.htm)

### **History of the F100:**

<http://www.neam.co.uk/ssaber.html>

# PHYSICS OF FLIGHT



**ALARM** (UK)  
(Air-Launched Anti-Radar Missile)  
Length: 658mm (27.5")  
Engine: D



**NOMEX**

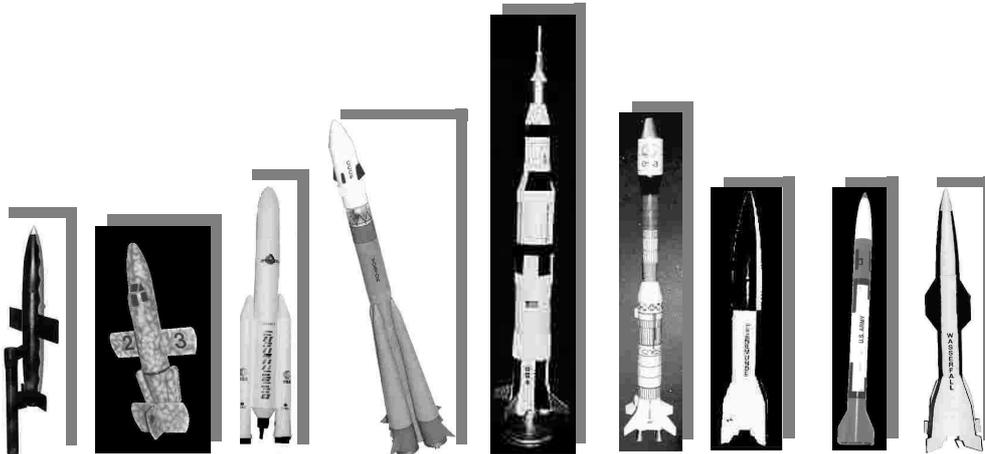
No more recovery wadding needed! Hobby pack contains:  
Three 3"x 3"  
Two 9"x 9"  
One 12"x 12"



**ADDER**

The UK Viper  
Length: 610mm (24.5")  
Engine: 3xB or 3xC cluster

## DAS MODELL



**ROCKET KITS AVAILABLE FROM:**

**ROCKETS & THINGS**

01293 517857  
[www.rockets-things.co.uk](http://www.rockets-things.co.uk)

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[www.modelrockets.co.uk](http://www.modelrockets.co.uk)

For trade enquiries, please contact 01233 811873  
**[www.physicsofflight.com](http://www.physicsofflight.com)**

# Level Two Logic

by *Felix Lennie*

Six UKRA members went to six different events to do their Level 2 Certification, using six different rockets. Using the statements given opposite, can you deduce who used which rocket at which event and what the result was? A grid is provided to help you. For those not familiar with logic problems, try using ' 0' for positive and ' X' for negative.

- There was disappointment at the SWARM Open Day when the L2 attempt was aborted because Pete had left his documents at home.
- A horizontal flight had the Big EARS crowd ducking but Helen missed the meeting because she was on holiday in Spain.
- There was plenty of daylight at the Summer Solstice to look for the Intruder but it was never found.
- Roy will have a lot to do on his Patriot after its mishap at the L-Lob meeting but at least he didn't suffer the CATO which happened at the last meeting of the year.
- Darren's AMRAAM performed beautifully so he passed his L2 in style but James had a depressing Yuletide trying to repair his badly damaged Tomahawk.
- The builder of the Endeavour had to travel to East Anglia for his Level 2 attempt.

We're offering a prize of a UKRA T-Shirt for the first correct answer received at [newsletter@ukra.org.uk](mailto:newsletter@ukra.org.uk)

		rockets						events						results					
		AMRAAM	Endeavour	Intruder	Tomahawk	Patriot	Pteradactyl	Big EARS	K-Lob	Largs	SWARM Midsummer	SWARM 'open'	SWARM XMAS	Land shark	No docs	CATO	Passed	Lawn dart	Lost
fliers	Pete																		
	Jim																		
	Helen																		
	Darren																		
	Roy																		
	Jon																		
results	Land shark																		
	No docs																		
	CATO																		
	Passed																		
	Lawn dart																		
	Lost																		
events	Big EARS																		
	K-Lob																		
	Largs																		
	SWARM Midsummer																		
	SWARM 'open'																		
	SWARM XMAS																		

# Central Indiana TARC Finalists

*by Mario Perdue*

Even though ROCI did not have any launch dates scheduled for March, some of our members were involved with a lot of rocketry activities. The events were part of the Team America Rocketry Challenge (TARC) that invited high school teams from across the USA to design and build a two stage rocket capable of carrying two raw eggs to exactly 1500 feet and returning them undamaged.

The TARC competition has attracted a total of 873 team comprised of more than 9,000 high school students in high schools from all 50 states. There's more than personal and school pride at stake here, the top 100 teams are invited to a national fly-off to be held on May 10th where they will compete for a share of almost \$60,000 in prizes. The list of finalists was announced on March 21st; included on it were two local Teams, Covenant Christian High School in Indianapolis and Carmel High School in Carmel. It was my great pleasure to be involved with the certification of both of these team's flights.

The competition was organized by the Aerospace Industries Association (AIA) and the National Association of Rocketry (NAR). "The idea is to get kids interested in the world of aerospace," says Trip Barber, vice-president of the NAR and director of the TARC competition. "They will learn some important lessons about the power of math and science—and cooperation and teamwork—along the way."

NASA has also joined in and "added value." NASA Administrator Sean O'Keefe will attend the finals in Virginia and invite the teachers from the top 25 teams to an advanced rocketry workshop to be held this summer at the Marshall Space Flight Center (MSFC) in Huntsville, Alabama. In addition, students from the top 10 teams can apply to participate in the Student Launch Initiative at MSFC.

If accepted, they will work side-by-side with NASA engineers to design and build a rocket that can fly more than 5,000 feet into the air.

## ***Covenant Christian High School TARC Team***



*Front row:*  
Darbi Truax  
Reid Lane  
Stephen Zumbrun

*Middle row:*  
Michael Sutton  
Jonathan Maci  
John Pichon

*Back row:*  
Jason Athialy  
Sean Bird (teacher)

Qualified with a total score of 10 points  
Altitude 1510  
Both eggs intact

***Photo by Joe Vitti***

The first team I qualified was Covenant Christian High School; the day was Tuesday, March 11th. I had been on hand to observe a few of their test flights and their previous qualification attempt. Most of the previous flights had ended badly when some part of the rocket failed. With only one qualification attempt remaining the group set about preparing their rocket for flight.

## ***Carmel High School TARC Team***



*From Left:*  
Andrew Feigenbaum  
Eric Lee  
Ryabn Widmer  
Orestis Herodotou

*Not Present:*  
Lucian Provine  
Emily Michael

Qualified with a total score of 160 points  
Altitude 1340  
Both eggs intact

***Photo by Rick Weber***

As they were getting things together, the weather continued to deteriorate. By the time they were ready, the wind was blowing about 18 mph. Not exactly ideal conditions, but within the safety code. Since they were flying at the Academy of Model Aeronautics' Aeromodeling Center, we figured there was plenty of space for recovery so they made the decision to "go for it."

As Rick Weber (their mentor), Steve Kaluf (AMA Contest Director) and I watched, the team took their positions and counted down to launch. Everything about this flight was perfect. Despite the high wind, the rocket left the pad straight up. The upper stage ignited on cue as the booster fell away and deployed its parachute. The sustainer continued to climb while cocking a bit into the wind. The parachute deployed at apogee and brought the eggs down to a safe landing.

The recovery crew was ecstatic when I caught up with them. It was easy to understand why; the altimeter was beeping out an altitude of 1510 feet. I examined their eggs and found no damage to either of them. They had just qualified with a score of 10 points.

On Saturday, March 15th, Rick Weber and I headed to the Aeromodeling Center once again. The task for this day was to observe the practice and/or qualification flights of several teams. One of these teams was from Carmel High School. Four of the six members of this team were able to make it for the day. The rocket was a fairly simple design so it didn't take them too long to get it ready for flight. Their first attempt didn't do too well as the rocket was damaged. Worse, the EconoJet motor seemed to have glued itself into their booster. No amount of force was able to dislodge it so they got out the X-acto knives to perform on-site surgery.

It took them quite some time to extract the motor mount and cut the expended motor out. Then they began the task of reassembly using liberal quantities of 5 minute epoxy. Our FAA notification only covered activity up to 5:00pm and that time was rapidly approaching. The entire team got involved in a frantic effort to get their rocket ready to fly before the deadline. To everyone's surprise, they did it. The repair job wasn't very pretty, but it looked

to be flight worthy so I gave the OK to launch, and they were able to get it into the air with about two minutes to spare.

This flight went very well. The rocket boosted straight, staged properly and deployed the recovery system at the desired time. This time, there was no damage to either the booster or the sustainer. The onboard altimeter beeped out an altitude of 1340 feet. When I checked the eggs, I found no damage so they had qualified with 160 points.

Several other teams flew that day. DeKalb High School was able to qualify with a total score of 700 points. Their rocket had a booster that used three D12-3 motors. I was impressed with their ability to reliably ignite all three booster motors.

Lawrence Central High School had one of the nicest rockets I'd seen in the competition. It was well designed, beautifully built and finished, and sported a unique egg capsule that cushioned the eggs with Jello. Unfortunately, the upper stage did not ignite and the rocket lawn-darted into the AMA field spraying egg yolk and jello over about half an acre.

Attempts were also made by teams from Hamilton Heights High School, Arcadia; Pendleton Heights High School, Pendleton; and Western High School, Russiaville. All of these rockets failed to ignite their upper stages.

***Editor' s note:***

Mario Perdue is the Editor of ROCINews the newsletter of the Rocketeers of Central Indiana, NAR Section #625.

After a recent discussion about newsletters on [rec.models.rockets](http://rec.models.rockets), Mario and I decided to try trading articles. Mario ran an article about the UK Aerospace Challenge (recently featured on the UKRA web site and) in the April issue of ROCINews, and was kind enough to provide this article in exchange.

For more information about ROCI, see their web site: <http://www.indyroockets.org/>

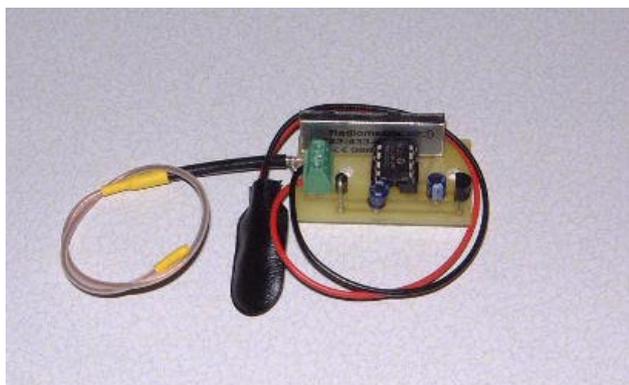
# Review: TRAXA Transmitter

by Roy Trzeciak-Hicks

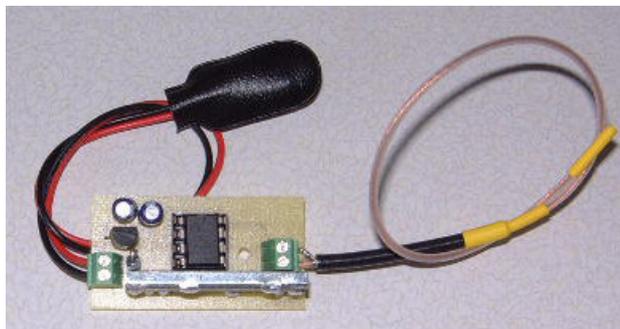
The new RG transmitters from TRAXA are reasonably priced, but how well do they work in practice? I was so amazed at the range of these tiny tracking transmitters that I have ordered three! Here's how we tested the units.

I offered to help Paul after his attempt at a range check the other day when he ran out of space! So off we went towards Cranfield, Paul set himself up near the end of Cranfield runway and off I drove with the transmitter jammed in my open sunroof, and I got to Woburn with no problems for those who don't know the MK area that is nearly 6 miles with a hill, trees and buildings in between! But still I kept on going...

And how do I know Paul still had a track on me? Well to start he told me the direction I was in compared to the position I left him, he did not know what route I was going to take (well neither did I when I left) plus, I zigged left and right and Paul kept me informed as to where I was (to start by PRM radio but when those went out of range by mobile phone) and the best part of it was I could hear the signal from the scanner beeping out over the phone at 6 miles (as the crow flies, measured on a map after returning home from the route I took, this was the furthest I got and Paul still had a track on me). Even on my return Journey I did not tell Paul where I was, at one



**TRAXA RLB**



**TRAXA RLBx**

point, Paul informed me I was in the direction of Amazon.co.uk's distribution building when in fact I was stopped at the level crossing next to it how is that for direction at approx 3 to 4 miles.

On my return I stopped about 1.5 miles from where Paul was and placed his transmitter in the middle of a field along with my umbrella (passers by must have thought me nuts leaving an umbrella in a field especially on a sunny day) I returned to Paul. Paul got into my car and with the Yagi held out of the sun roof he directed me as to where to drive, up till the point that he realised we had passed the transmitter and got me to stop, he walked back and entered a field tracking started to get difficult now so he switched on an attenuator to kill some signal strength and with that walked up to my umbrella and his transmitter.

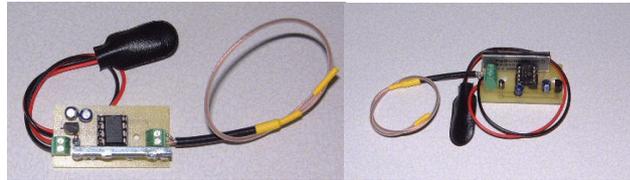
Now if that is not the proof of the pudding is I don't know what is, so I placed an order for three of his TRAXA units and am also looking out for a Yaesu VR-500 as it teamed up well with the TRAXA especially as it has the built in attenuator!

The cost of the TRAXA RLB transmitter is £29.95 (including free postage & packing). The unit transmits a morse identifier at a frequency of 433.92MHz. For a small extra charge TRAXA will program a custom 50 character morse message into the unit. TRAXA also sell YAGI antennae kits to be used in conjunction with their transmitter and a suitable receiver such as a scanner.

**Editor's note:** Got a favourite product that you want to tell the UK rocketry community about? Why not write a review of it for 10...9...8... ?

# I'M OVER HERE....

Reduce the fear of losing your prized rocket.  
TRAXA Rocket Locator Beacons are licence exempt,  
affordable and easy to use.



RLBx

RLB

### **Technical specification:**

TX frequency : 433.92Mhz @ 10mw

Antenna : flexible ¼ wave copper plated steel

Ground track range : > 2 miles\*

(\*subject to receiver, antenna and atmospheric conditions)

Physical dimensions : RLB 22.5mm x 38mm x 15mm

RLBx 20.5mm x 38mm x 15mm

Board weight : approx 9 grams

Power requirements : 13ma @ 7v to 16v

Only £29.95 (*inc. fast recorded delivery.*)

6 element 11db Yagi-Uda antenna element kit  
and construction details £10.95 (inc.)

Audible “in the crops” pull-pin beepers  
£4.45 (+70p p+p)

See website for secure online ordering.

Email or call 07977 283992

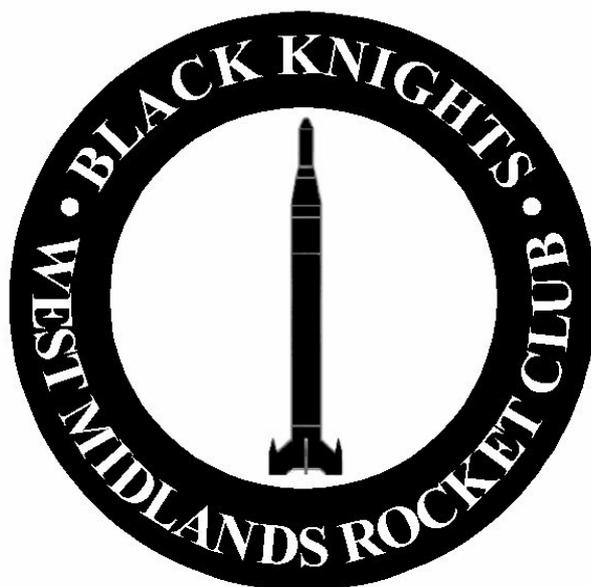
for further information.

*International orders welcome.*

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[WWW.TRAXA.COM](http://WWW.TRAXA.COM)

email : [SALES@TRAXA.CO.UK](mailto:SALES@TRAXA.CO.UK)



## **ROCKET CHALLENGE**

Hosted by  
Black Knights – West Midlands Rocket Club

To be held at  
Brook Farm, Drayton Bassett Nr Tamworth  
On  
Sunday 13<sup>th</sup> July 2003 commencing at 14.00

The Competition

There are five classes:-

Schools/Youth Groups

Egg lofting for 11-14 year olds. Max motor size “D”, Single motor only.  
Egg lofting for 15-18 year olds. Max motor size “D”, Single motor only.

Individual UKRA/BMFA members

Egg lofting for 11-14 year olds. Max motor size “D”, Single motor only.  
Egg lofting for 15-18 year olds. Max engine size “D”, Single motor only.  
Egg lofting for adults(18+). Max engine size “D”, Single motor only.

Entrance Fee

Schools/Youth Groups £5.00/team.  
Individual UKRA/BMFA Members £5.00 each.

For additional details and to view a copy of the rules you can visit the Black Knights  
web site [www.blackknights.org.uk](http://www.blackknights.org.uk)

The venue for this event may change full details will be posted on the website.

# UKRA News

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- Certification recognition
- Promotional Information
- RSO identification
- UKRA Photo ID Cards
- Council meeting 22/03/03
- Calling all rocket altimeter flyers!

## Certification recognition

---

Members of other recognised Rocketry Organisations joining UKRA can do so at a certification level corresponding to their certification level within that organisation. This applies to both permanent and temporary UKRA membership. Proof of current membership and certification level of the recognised rocketry organisation will be required. UKRA currently recognises the HPR certifications awarded by the following organisations:

- Interessengemeinschaft Modellraketen e.V. (IMR)
- National Association of Rocketry (NAR)
- Tripoli Rocketry Association (TRA)

Whilst UKRA is actively pursuing cross-recognition, only IMR currently recognise UKRA certifications.

## Promotional Information

---

Recently UKRA have started to attend model engineering shows and the like in an attempt to promote rocketry in general and UKRA in particular. One of the things we lack at present is material for displays.

One of the best ways to promote the hobby is to show the active rocketry hobby around the country. It would seem that the best way to do that is to promote affiliated, associated and other groups. So, it would be very useful indeed if groups could provide us with some material from which we could create such a

display. A piece of text describing each group's activities with a few statistics, and some pictures (the higher resolution the better) would be most welcome. But, don't restrict yourself to that, if you have a better idea, please let us know!

For those that are interested in helping out at such events - watch the UKRA web site for potential events which we could attend. I know that some groups already attend such shows to promote their own groups. If you are doing so, please consider promoting UKRA at the same time. We have promotional leaflets which can be provided for this purpose.

## RSO identification

---

Recently there have been a number of queries regarding who is and isn't an RSO. Unfortunately due to the Data Protection Act we cannot give a list of UKRA RSOs, however we would remind members that all UKRA RSOs are issued with RSO cards. Anyone carrying out the duties of a UKRA RSO must show:

- Current UKRA membership card with photo
- Current year card
- Current RSO card

If you do not possess any one of these items you cannot act as a RSO at a UKRA event. Any RSOs who still have the old style membership card, without photo, should get a new card. New cards may be obtained by sending two passport sized photographs to the Membership Secretary at the usual P.O. box address.

## UKRA Photo ID Cards

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Some of you may still have the old style UKRA Photo ID Cards, which may be getting close to the expiry date. If this is case, please send a new photo to the UKRA PO Box (and a SAE would be helpful), and we will issue you with a new ID Card.

# Council Meeting 22/03/03

---

## Location

CB' s house, Battersea, London

## Attendance

Bob Arnott (BA), Cath Bashford (CB), Mike Crewe (MC - Chair), Darren J Longhorn (DL - Secretary), Richard Osborne (RO), Zigi Kklynoski.

## Agenda

- Apologies
- Minutes of previous meeting
- Level Cert/RSO badges
- Temporary Membership - impulse limits
- PA for UKRA hut/events
- Relationship with European groups
- BMFA correspondence
- Promotional materials
- AOB
- DVNM

## Apologies

Apologies were received from Pete Davy (PD) & Jim Macfarlane (JM).

## Minutes of previous meeting

The minutes of the previous meeting were read and approved. The list of outstanding actions was examined and updated.

## Level Cert/ RSO badges

Several council members doubted the value of this, but as members had expressed an interest it was decided to investigate further. It was agreed there should be badges for MAP L1/2/3, HPR L1/2/3 and RSO. Design would be approved and badges issued via UKRA. It was agreed that a competition would be run for design ideas.

10...9...8...

## Temporary Membership - Impulse limits

It was confirmed that fliers with temporary membership could take advantage of UKRA' s recognition of other organisation' s certification programmes. The flier must produce evidence of cert level and membership in other organisation. E.G. A flier who is TRA L2 can fly as though they had UKRA L2 at a UKRA event with temporary membership.

## PA for UKRA hut/events

Mike Roberts had contacted UKRA offering to build PA equipment at cost (see appendix i). It was agreed that we would ask Mike to produce three speaker/stand units and a receiver unit for the UKRA hut.

## Relationship with European groups

There have been several conflicting rumours circulating regarding the setting up of a European "association of associations" which may or may not be associated with the Tripoli Rocketry Association. It was confirmed that UKRA has received no official proposal from anyone. It was determined that we should attempt to find out more.

## BMFA correspondence

Recent correspondence received from the BMFA was reviewed. It was agreed that we should add reports from the Secretary, Treasurer and Membership Secretary to the agenda of each meeting. It was further agreed that financial information would not be reported in the newsletter outside of the annual accounts. It was reported that we currently had 137 members, 16 of whom were new, and £3578 in the bank.

## Promotional materials

DL suggested that we should get copies of the current leaflet asap. CB stated that the current paper banner was good but would not last long. It was agreed to investigate a vinyl banner. CB reported that UKRA could use the MARS display stand when not in use if we had our own panels, also that a MARS member had made a great portable display from MDF.

## AOB

DPA - as a result of points raised during the meeting it was agreed that this still needed further investigation.

Newsletter Costs - MC reported that due to increased paper weight the maximum page count ought to be 28 rather than 40. It was agreed that we did not wish to reduce the page count. Various options were discussed and it was agreed to revert to 2nd class, but up the weight to 100g. This would increase the maximum page count to 56 with a cost increase of 6p/issue.

RSO Identification - MC queried this point and it was agreed that to RSO at an event a member was required to display their membership card (with photo - some members need to get new cards), year card, and RSO card.

Certification level lapse & renewal - it was agreed that we would add this to the agenda of the next meeting.

UKAC certificates - CB reported that PD had asked if it would be possible to send participating schools a certificate of commendation. This was agreed.

### Date and Venue of next meeting

UKRA hut on Saturday 17th May was tentatively agreed. (N.B. Later moved to 24/05/03)

## Calling all rocket altimeter flyers!

---

After a few years of altitude data for records or general altimeter flight data arriving at UKRA, there have been surprisingly few rocketeers submitting data the past 6 months.

Given the ever increasing use of altimeters onboard HPR vehicles (and model rockets), where is everybody? Remember, you don't have to set an altitude record to get your data included on the UKRA motor class altitude tables, or on the UKRA open altitude table, just

a vaguely decent altitude. The more data on the altitude tables, the more other rocketeers can get a feel for how high their rockets will go.

Currently, the H-class, I-class, J-class and K-class altitudes have set some pretty high altitudes to beat, although there is room for improvement in all these motor classes. There is plenty of opportunity in the F-class and G-class altitude tables, where the altitudes recorded are still quite low, and as yet, nobody has claimed, altitude records for lower motor classes than F-class - leaving the field wide open to anyone who wants to blaze a trail in the altitude stakes.

With the blossoming use of altimeters such as the R-DAS, the ALTACC, the G-Wiz and the Perfectlite altimeters and the PicoAlt, now is your opportunity to get your rocket's name in lights! (or at least on the web), and with the summer's launch events upon us, why not get launching your rockets, logging your data, and submitting your data?

## IRW 2003

Kelburn Country Centre, Largs, Ayrshire, Scotland 18th - 25th August. HPR days will be 21st to 23rd with the 24th as backup.

- 18th Annual Largs Event
- Open Experimental Flying MicroMax to K Class
- Competition Flying
- Aquajet Flying
- Camping On Site
- Food On Site
- Local Hotels & B/B

### For more details contact:

John Bonsor  
48 Longbar Avenue, Glengarnock, Beith,  
Ayrshire, KA14 3BW  
Tel: 07733 250135  
Email: c/o Bobby Wark  
bob@scotroc.force9.co.uk





# NPL Water Rocket Challenge

Wednesday 25 June 2003

Schools competition starts 1.30 pm

Open competition starts 6.00 pm

For more info visit our website or contact:

Simon Jullard

National Physical Laboratory

Queens Road

Teddington

Middlesex

TW11 0LW

Tel: 020 8943 6447

E-mail: [waterrockets@npl.co.uk](mailto:waterrockets@npl.co.uk)

Website: [www.npl.co.uk/waterrockets](http://www.npl.co.uk/waterrockets)

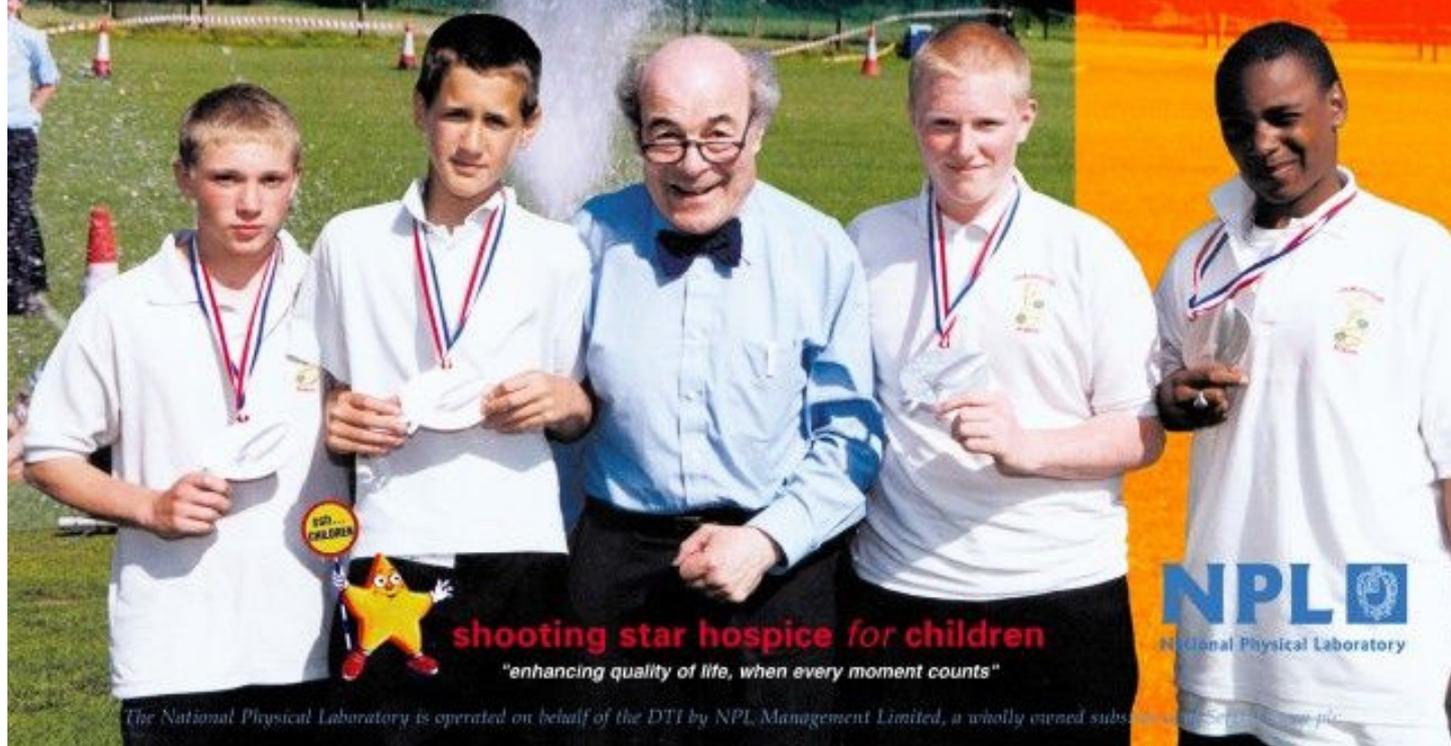
Join in  
or come  
and watch  
the fun

Get a team together to design and build a water and air powered rocket.

Prizes awarded to the rocket that remains airborne for the longest time in each category.

Prize for best rocket design.

Entry fees donated to: the Shooting Star Trust



shooting star hospice for children

"enhancing quality of life, when every moment counts"

**NPL**  
National Physical Laboratory

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# Club News

- Black Knights
- UK Junior FAI team
- SWARM

## Black Knights' Photo Contest

Black Knights' are holding a competition for the best photo of a rocket/space ship in the most unusual place such as in fairgrounds, bubble gum machines, sweet shops etc. The closing date is 1st December 2003. The rules and details of how to enter are on the Black Knights' web site [www.blackknights.org.uk/photocomp.htm](http://www.blackknights.org.uk/photocomp.htm)

## UK Junior FAI team

The first ever junior national rocketry team passed its initial hurdle on the way to the European Cup in Serbia. Flying in atrocious conditions, Genni Lavin, Gaby Lavin, Robin Seabrook and Trevor Seabrook qualified for the team after months of preparation.

"If the team can put up good rockets and turn in decent times on a day like this, they will have an excellent chance against the European competition come September," said Stuart Lodge, UK junior team manager, head of the British Space Modelling Alliance and eminence gris of UK sport rockets.

"We're looking ahead to a summer filled with building and testing these exotic high performance competition rockets that can go faster and get higher than most Level 1 HPR vehicles," explained Paul Lavin, chairman of Blast Off for Britain, the charity that supports the team and conducts a secondary education outreach and lobbying programmes.

More news about competition rocketry and the junior British team at [www.blastoff4britain.org.uk](http://www.blastoff4britain.org.uk)



## SWARM letter from Homer Hickam

SWARM recently received the following letter of encouragement from Rocket Boy Homer Hickam.



Dear junior members of the South-West Amateur Rocketry Membership,

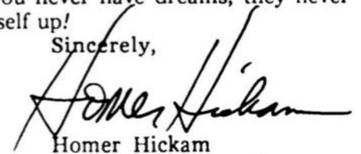
An author is always gratified when it's clear his work has touched so many people, especially young people. As you study this year, I hope you will take with you the true message of the *Rocket Boys* in the book and the movie which is this: it is important for everyone to find a passion in life, then work very hard to make it come true. To only dream of a better future is inconsequential. Each of us must take the next steps beyond and learn to map out what must be done to reach our goals. After that, it's easy. All that must be done is to persevere, persevere, persevere!

As O'Dell said in *Rocket Boys / October Sky*, "A rocket won't fly unless somebody lights the fuse." His was a literal meaning but he was also voicing an important idea. Nothing will happen unless someone takes the initiative to make it so. To be passive and wait for something good to happen in your life is to probably experience vast disappointment. You must learn to move, to exert yourselves, to let dreams translate into reality through hard work, study, and working with other people. It is my belief that, especially in this country, there are no boundaries to excellence and success except for those we place on ourselves. There are so many people - our teachers, our parents, our families, and our friends - who are willing and able to help us if only we let them know what it is we want to do.

In the end, we determine our own success through our own labor. As my dear teacher Miss Riley said to me once long ago, "All I've done is give you a book. You have to have the courage to learn what's inside it." She was referring to an advanced text on rocketry which required an understanding of higher mathematics quite beyond me at the time. She was confident, however, that her challenge to me would be enough to make me try to learn. She was right. I studied, I learned, I worked hard, and I succeeded. If a boy in a small, dying coal town in West Virginia can do those things, so can you.

Best wishes to you and remember, if you never have dreams, they never come true. - *Aim High!* And don't blow yourself up!

Sincerely,

  
Homer Hickam  
Author and Rocket Boy

# SWARM Beehive Newsletter Contest

SWARM recently invited their Junior members to write articles / draw pictures about rocketry for their web site. We decided to make a contest of it, with the winning article being printed in 10...9...8... Without further ado, the winner is Liz Hopper for her very colourful pictures of a recent SWARM launch. As a bonus prize there is also a rocket kit winging its way to Liz.

## Strange photo taken at recent SWARM launch

It's amazing what you see at some launches. This picture was taken at a recent SWARM launch, where Pete Davy was performing the RSO honours. Hmmmm, that's a very long burn motor...



*Pete Davy with prospective L2 candidate*