



Being both the met man and a competitor called for a lot of early starts. As a newcomer to Competition Enterprise, winning was an added bonus for David Masson

Adrian Emck, in his K-6, kept David McCarthy and Sandy Hawkyard under pressure in the Duo ([www.sandyprints.co.uk](http://www.sandyprints.co.uk))

# FUN APPROACH TO COMPETING



Modern gliders are not nearly such good sunshades, or umbrellas, as a T-21 (Andrew Reid)

I WAS delighted when I heard that Competition Enterprise was coming to Lasham in 2010 (3-10 July). Although the weather had not been kind for the last couple of years, the Enterprise regulars always seem to come back happy, having made the most of the available conditions. And, when they do have a good year, boy do they do a lot of flying and some big tasks!

Enterprise does **not** claim to be better than modern gliding competitions, just different. But I have to say I have been a bit frustrated by, and disillusioned with, them.

So I've just been flying the BGA Ladder for the last few years, setting myself meaningful (declared) tasks, usually trying to use most of the day and sometimes risking pushing the limits of what is the soarable area. When it does go wrong and it seems stupid to continue, I try to do something meaningful – carry on with

the remainder of the task, go somewhere interesting, or try to put some undeclared distance on to OLC (Online Contest).

The Enterprise website [www.competition-enterprise.co.uk](http://www.competition-enterprise.co.uk) has had a makeover and nicely collects together the history of the competition, write-ups of previous years and venues, the rules (minimal) and, most importantly, the philosophy. The promise is there – I translated it into “we will do lots of fun, interesting flying and make the best use of the day”.

I was asked to be the met man and was happy to do that “so long as it didn't get in the way of flying”, though I knew it would mean some long hours on the PC, as well as flying.

Enterprise regular Paul Kite was to be task setter and Mick Wells director, so I had a few conversations where I tried to learn what these funny-named tasks (The Curate's Egg,

The String of Beads, etc) were all about and when to use them.

The scoring system is simple – a point per kilometre plus bonus points for visiting named turning points, all adjusted by glider handicap. I approve of that. I liked the idea of building a bit of flexibility into the tasks to allow for the vagaries of the weather, pilot ability and glider performance, but was worried that too much flexibility and it could turn into a meaningless wander.

As the week approached, the weather outlook was quite good with possibilities for some big days. How well could we use them? This would be interesting...

The way we set the tasks most days was for me to say what I thought the weather would do where and when. I would suggest what tasks I would have set myself, or what the options were. Then Paul used his experience to pick one of the Enterprise task types and we adapted/tuned it from there.

**Day 1: "East is east and west is west..."**

A big day (a possible 750km), with the best weather in the middle and east of the country later in the day, but probably having to go west or northwest first to make best use of the day. We had a line of turning points between Chilbolton and North Hill (the west) and another line of turning points between Calvert and Tibenham (the east). The task was to fly to one TP in the west and then to one in the east via Didcot (for a bonus), with the option of covering a big area or yo-yoing between east and west collecting turning points and bonus points. The results were interesting with a joint first between Justin Wills, who did 651km, and Andrew Reid, who did not go as far, but did more yo-yoing and collected more bonus points. I would have made better use of the day if I had turned at Crewkerne instead of carrying on to prove North Hill was possible. Thinking I had to go to Didcot before returning to Lasham made me land. Now I appreciate the rules better, I know I could have missed it out, carried on soaring, returned home and collected more points. A good rule.

**Day 2: Curate's Egg.** A 20-25kt WSW wind, 2,500-3,000ft cloudbase with a soaring window before increasing cloud cover killed it. A line of TPs running N from Lasham and another line of TPs running N from Andover, with more bonus points for visiting the upwind TPs, time limited to three hours with bonus points to encourage getting back to Lasham. Not an easy day to fly, with mostly

broken rough thermals. Justin managed 178km and five TPs, several managed more than 100km and most managed at least two TPs. It was pleasing to get a meaningful, though not too high-scoring, day on a day that would have been very hard to get a normal task out of.

**Day 3: Visit your friends.** GFS could not make its mind up between this being a very good day or a good day spoiled by too much cloud. On the morning itself, it decided "too cloudy". I didn't have time to re-forecast and couldn't be sure enough which way to set tasks. So we opted for "visit your friends", which allows pilots to fly where they want and use any gliding clubs as TPs, with extra bonus points for visiting previous Enterprise venues. With only a bit of spreadout, the weather ended much better than the best I could offer in the morning and every bit as good as it had been promising before that. We were in the air early and, when it turned good, we had the flexibility to use it. I declared a 600km triangle, LAS-HUS-TAL-RIN-LAS (just in case), with more after (just in case), and ended up claiming 786km. What a fantastic day with good visibility, great views of Talgarth and some memorable streeting down to the south coast. It would have been iffy setting a 500km task on the morning forecast. I don't see any other competition setting or allowing us to do a task that big. In retrospect, this is the one day that may have offered the opportunity of a cross-Channel task, but we didn't think of that with the rush in the morning.

**Day 4: String of Pearls – Coast to Coast**

This had been looking like our best day, but, as it got closer, there was a bigger risk of top cover spoiling it and the return to Lasham might be tricky later on with the risk of it blueing out from the SW with the wind picking up. Still it was pretty clear that the best line for big flights would be from the SW into East Anglia. The task was basically to fly between a set of TPs spread on a line between Somerset, through the Devizes gap to Norfolk, with extra bonus points for flying over the sea on either coast. No one managed either coast as it was already windy and blueing out in the SW. Some brilliant

**I LIKED THE IDEA OF BUILDING A BIT OF FLEXIBILITY INTO THE TASKS TO ALLOW FOR THE VAGARIES OF THE WEATHER, PILOT ABILITY AND GLIDER PERFORMANCE**



Competition Enterprise, 5 July – an excellent day with 6,000ft cloudbases and strong climbs. Ed Smallbone and his 14-year-old son, Daniel, were following a street out over the Channel, south of Shoreham. It appeared to run for quite a distance out to sea with good climbs although dropping in height. On that day they flew for just over eight hours, covering about 550km, including two 70km glides in streets (Ed Smallbone)

The competition always attracts a wide variety of pilots!  
([www.sandyprints.co.uk](http://www.sandyprints.co.uk))



## **ENTERPRISE TASKS BUILD IN AN ELEMENT OF FLEXIBILITY THAT ALLOWS YOU TO CARRY ON DOING SOMETHING MEANINGFUL, EVEN WHEN THE WEATHER DOES NOT GO AS EXPECTED**



Enterprise regulars always seem to come back happy, having made the most of the available conditions ([www.sandyprints.co.uk](http://www.sandyprints.co.uk))



David Masson flies an LS6 from Lasham, where he also does the weather forecasts. A past 18m champion, David holds the UK 15m distance record. He has twice won the BGA weekend ladder (plus other BGA trophies) and has been the winner of the OLC-FAI (UK) in two of the past three years. David has flown 250 hours and over 16,000km so far this year

✈ air across the middle of the country with strong climbs and good lines of energy, but then significant amounts of top/medium cover formed over a big area and slowed us down. Two of us managed over 600km, but most were put off by the top cover and 300-400km was more typical. Those that came back late did struggle or fail to make the last few miles back to Lasham. It would have been possible to turn back east from somewhere like Calvert and go downwind into the better weather (the sun had come out) and do another 150km+, but land away.

**Day 5: How Big Can You Go?** After rain cleared, we thought the weather was going to be good enough for a 300-500km task, but in a confined area to our north and north-west with risk of top cover. So we set a triangular route around Brize. To cope with the lesser performance gliders and allow them to do a smaller triangle, we had a string of TPs along that route and allowed people to choose their own triangle or to reverse the direction of their task once. It is just as well, because there was thick top cover cutting off the north and north-west task area. Graham MacAndrew and Simon Marriot made the most of the rules and flew twice round a small triangle for 300km. This kind of task has potential, but I don't think we debugged it properly on the day. Still, we would have all landed out after 100km or so if we had had to carry on all the way round our original 300km triangle, so it still gets my thumbs up.

**Day 6: Blue or Cu?** My forecast was for cumulus to our north and north-west and blue to the SE of a line roughly Oxford-Graffam and the best weather was likely to be roughly along that line. We set an assigned area task, 30km radius of Membury, then 50km radius of Graffam Water, back to the first sector and home. The task was not time limited, but there are enough bonus points to make it worth trying not to overdo it and to get home. It was low and blue at Lasham for ages and I ended up limping off and dumping water when it was going only to 2,000ft. After a struggle, I got to the cumulus, but half an hour before most of the others. I flew in the mainly blue bit, always with better cumulus to my NW and mainly blue to my SE. I turned Upwood Hangar

and had a nice run for a bit in a nearly blue convergence marked by a few wisps. I had a right old struggle back into wind, but managed to connect with cumulus again near the M4, which turned into another convergence zone with good cumulus that took to me Andover and back to Lasham for 400km.

**Day 7: Blue or Cu 2 (time limited)?** A similar task today for similar reasons. The best weather was going to be on a line roughly to the Wash, with increasing amounts of cumulus and top cover to the NW and blue to the SE of that. So the task was assigned area again with a 30km radius of Membury, a 50km radius of Eyebrook, back to the first sector and home. Today (the last day) it was time limited with no scoring after 4pm except for a generous bonus for getting back to Lasham by 5pm. This is to encourage people to get home in time to do the scoring and sums before the presentation and party – what a good idea. Justin flew furthest for 453km. I was a bad boy and just declared Newbury-Newark-Newbury, did it, but came back too late for bonus points.

### **Conclusions**

I really enjoyed my first Competition Enterprise. I did end up winning, but I would have enjoyed it anyway as we were blessed with good and interesting weather and it was a great excuse to do lots of flying. It probably is an advantage being the met man, but I think it would be a greater advantage if I wasn't!

I still prefer to declare something and attempt it, but I really appreciate how the Enterprise tasks build in an element of flexibility that allows you to carry on doing something meaningful even when the weather does not go as expected (which is to be expected). And it does allow a group of people who all want to fly and have fun to do so together and to fly to their own abilities and the performance of their aircraft. It is not geared to the best pilots or aircraft. And it's not limited by the worst pilots or aircraft. It caters for all pretty well.

I did a 500km the next day, so my totals were 51 hours and 3,700km for the week, which you can't say very often. I don't think Enterprise held me back!

I will say "thank you" once more to my crew, Nigel Pocock, without whom I would not have been able to spend so much time on the met. And thank you to all the organisers and other competitors. What a good crowd and what fun!

# COMFORT ZONE

Adrian Emck evaluates fatigue during Competition Enterprise

**A** MAZING! The first day gave us eight hours of flying 10,855 task kilometres. Lots of wonderful flying all week, where a total of 45,569km were flown by 26 pilots. On one day, Enterprise tasked us further than both the Regional and Nationals tasks put together! This created its own problem: fatigue. Having just recently battled a 15kt headwind, rain, and land-out followed by a (long) tiring, late night road retrieve, this aspect was reinforced with a vengeance.

George Moffat, winner of the World Soaring Championships in 1974, describes "The last day...the enormous strain on Ax, Grosse and Zegles, fighting it out for second place, was clearly apparent. Grosse looked exhausted and even the usually imperturbable Ax showed the strain, a fact that may have contributed to his landing-out at the first turn...Since ship choice and skills are less of a factor, what then prevents a contest from being won by luck? My feeling is basic competitiveness and ability to treat personal energy as an apportionable and expendable resource, rather like altitude, largely supplants ship choice..." George Moffat *Winning on the Wind*, pp221/222, 1974 *The Soaring press*, CA USA.

## Managing your "expendable resource"

My last BGA competition was eight years ago, in 2002, when I flew four competitions. I stopped competing due to ever worsening cockpit discomfort, when "personal energy" was largely expended even before a competition had started, but since then comfort has been dramatically improved. This year, Mick Wells persuaded me to reconsider Enterprise at our home club, Lasham, reassuring me it would involve no departure from my normal flying, using the whole day to best advantage.

The 2010 Enterprise, with its reputation for attracting canny pilots, had outstanding pilot-organisers. Flying non-powered gliders were Director Mick Wells, David Masson providing weather and Paul Kite as task setter; I thought they would accurately gauge our best flying possibilities since they too would plan to get home. (My K-6 otherwise was expected to land out every day, so full marks to David Masson, who asked me whether a proposed

03/07/2010 - COMPETITION ENTERPRISE, LASHAM				
<b>GLIDER</b> Antares 18 K-6	<b>PILOT</b> Justin Wills Adrian Emck	<b>DISTANCE (KM)</b> *734 *572 <small>*total distance including task</small>		
<b>AVG CLIMB (KTS)</b> Antares: 3.1 K-6: 3.1	<b>TIME:</b> 7hrs 18 8hrs 31	<b>CIRCLING TIME</b> 2hrs 13 3hrs 8	<b>CIRCLING %</b> 31% 37%	
<b>THERMALS</b> Antares: 47 K-6: 69	<b>GAIN HEIGHT</b> 48,179ft 62,776ft	<b>NUMBER GLIDES</b> 48 69	<b>KILOMETRES GLIDE AVG</b> 15.3 8.3	<b>MEAN L/D</b> 57 32
K-6: 22 (46%) more thermals		K-6: 14,597ft (30%) more height gain		Antares: 7km (84%) further per glide

task he was setting was practical for this lowest performance glider entry.) These factors reduced the very considerable inequality from competing with those who simply fire up the engine to get home for tea when the powerless glider lands out day after day, the pilot suffering ever decreasing performance, while the well-rested power pilot enjoys an increasing competitive advantage, without penalty.

That aside, very careful stamina management flying a low-performance glider was needed. By rule of thumb, after an eight-hour K-6 flight compared to a fast, modern glider in six hours, you are not 25 per cent more tired, but twice as tired. Why? Surely the K-6 is so easy to fly? The figures above show that more time is spent in a K-6 circling a greater number of thermals: 69 climbing 63,000ft compared to the modern Antares' 47 thermals climbing 48,000ft.

G Dale pointed out, when taking part in the Lasham seating cushion tests, if you circle in a rate one turn, the pilot is significantly heavier than in straight flight. In a 45-degree turn you are 1.414 times heavier and, at 60 degrees, twice as heavy. The K-6 pilot may weigh 1.414G or more, whilst circling for 3 hours and 8 minutes, the pilot in the modern Antares circling 2hrs 13 minutes. Poor body support and posture is ruthlessly exposed, resulting

(Above) Figures show that more time is spent in a K-6 circling a greater number of thermals

(Below) Two days retrieving Gerry Lee by John White and Andrew Sandison (Mike Weston)



**ON ONE DAY, ENTERPRISE TASKED US FURTHER THAN BOTH THE REGIONAL AND NATIONALS TASKS PUT TOGETHER!**

### FINAL POSITIONS

1st: David Masson, with 3,585 points (and he got up very early to provide our weather!)

2nd: Justin Wills, 3,382 points

3rd: Bill Payton, 2,902 points

Let's hope some women enter next year at Sutton Bank 2-9 July, 2011 - there were eight in the Club Class Nationals this year.

Many, many thanks to Paul Kite, who sacrificed himself for others. To Sandy Harrup; Trish Williams; Tim Newport Peace for the logs for analysis. Thanks to Wally Kahn for his generous donation of champagne and prints of his late wife's painting as special prizes



Bill Paton, Andrew Clusky and wives discuss the size of thermals that day (Marc Corrence)



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■ If you would like to attend a presentation of comfort research findings at the Lasham Pilot performance and Cockpit Comfort 2003-2010 workshop by Adrian Emck and Colin Jackson, provisionally on 26 February, 2011, ring Lasham Office 01256 384900 or email [office@lasham.org.uk](mailto:office@lasham.org.uk)

in fatigue that inflicts a high depletion of "personal energy". This affects the pilot of the modern glider too. Ask Justin Wills.

Of the 34 hours I spent in the K-6 cockpit during Enterprise, 10 hours 25 minutes (31 per cent) were circling at x 1.414 body weight or worse. At 1.414G, a poorly supported 23lb leg now weighs 32lb - that may increase static muscle strain considerably. Pilots who are often criticised for not circling sufficiently steeply for efficient climbing may find it too exhausting and are distracted from flying accurately, since, one of the reasons being according to Liu et al\*, our brain employs increasingly more cells to compensate for fatiguing muscles. (\**Neurophysiol* 90:300-312,2003)

In addition to the very high workload from turning in a tight narrow thermal near the ground (in your low performance glider at 60 degree bank), your leg now weighs 46lb and your torso, at 2G, weighing twice as much as normal, is pressed hard into the seat, interrupting capillary blood flow. If not properly supported, the torso muscles strain to hold you in a position where you do not damage your spine. In S&G in Jan 2003, I quoted that "fatigued muscles are less able

to compensate any perturbation in the load or position of the trunk...loss of the ability to protect these weakened passive elements makes the spine susceptible to industrial and recreational injuries". (*Parnianpour et al, Volvo Award, Spine*,13(9)982-92 1988).

These factors are the reason why I wear a spine-shell to spread load below the critical 1.6psi and to maintain perfect posture when circling up to twice my normal weight. I fully reported the spine-shell in S&G Jan 2003. Martin Baker suggested the glider cockpit comfort-safety team test Confor energy-absorbing foam and the samples they sent me after testing were duly installed in this spine shell in 2007, which improved my comfort even further. Tony Firmin is currently using finite element analysis (FEA) to determine if the shell is impact crash impact neutral, so in future it may be recommended as a comfort aid. Comfort of the pilot emerges as a dominant factor enabling the learning and the sustaining of flying skill.

### Workload, discomfort and land-out-fatigue

Workload-fatigue may accumulate over one flight and over the strenuous competition week. As Pete Masson, says: "If you are not working very hard on a cross-country then you

are doing it wrong." But also discomfort-fatigue accumulates as the body increasingly protests against a less than perfect posture, to widen the performance between those who are relatively comfortable and those who are not.

In our research, we found pilots become more uncomfortable with the passage of time. Flight-discomfort-fatigue (particularly important at the end of the flight when so much can go so wrong so quickly), is inextricably coupled to the dreaded land out-fatigue that destroys enjoyment and flying competence: Catch 22. The less competently you fly, the more you land-out, accumulating the very special fatigue all on its own. Combined with flight-fatigue, this is far worse than the sum of the two separate parts, causing decline in performance from which there is no recovery until after the competition. In recognition of this, there could be no flying my K-6 on the competition day following a road retrieve, so landing out is not an option.

### Final notes

That powered gliders compete without penalty against gliders very nearly put me off flying Enterprise. This was partially off-set by pilot choice turn points and setting their own task length, which considerably reduces land-out risk for those who wish to fly as I do.

The Lasham pilot survey showed seven out of 10 pilots had suffered cockpit discomfort. I try to avoid gaggle flying since the chance of circling with another flying unsafely due to muscle fatigue is high. Fortunately, Enterprise was gaggle free.

Present handicap rules ignore the considerable extra wear-and-tear the lower performance glider inflicts on the pilot. The Enterprise rule that pilots calculate their own completed task distances proved unworkable. I underestimated one flight by 100km, because after consecutive flights in a K-6, the only thing I could do was to go into a dark room and lie down. Fatigue accumulates alarmingly during a competition and low performance gliders require more physical stamina to sustain competition flying. What is certain is I would not have been able to fly the long hours in Enterprise without being comfortable.

Lack of consistent windcapping while suffering longer at x1.414G remains a large issue. Hopefully Enterprise organisers are aware of these dangers and perhaps matters will be resolved for next year.

I landed out once - on the last comp day - and did not have stamina to fly the day after that retrieve, whereas winner David Masson had energy to do his usual 500km+...