

# Vintage theme for annual Inspector's seminar

Over 90 Inspectors turned up for the day to hear speakers from LAA's ranks



PHOTO Malcolm McBride

Dave Bonsall of Dukeries Aviation gave a brilliant and very informative talk at this year's Inspector Seminar. The theme for 2010 was 'Vintage Aircraft'.

**>** IT seems almost impossible to believe that we're halfway through the year already but, as I write this, May will soon be a memory. As is usual here at HQ, things generally are a bit fraught, the 'too much to do, not enough time in the day to do it' syndrome we're all familiar with. My pressure was increased because I effectively lost last Friday as I changed roles (slightly) into a 'Gaffer' during the Inspector's seminar held here.

This year's Inspector Seminar's theme was 'Vintage Aircraft' and I thoroughly enjoyed the day. One of the best things about this sort of event is that it's great to get a whole load of like-minded folks in one place. The weather was fantastic, which meant that the number of aircraft arrivals here beat all records; well, who would want to drive if you could go by air? I've just checked with

*'Proceedings were opened with a song about aircraft inspecting'*

Chris Brown, the Airfield Manager and he tells me that over 35 LAA aircraft turned up – it was certainly an impressive line-up. I asked Chris why he wasn't specific with regard to aircraft numbers, 'over 35' being a bit vague.

He explained, "There were a few that came in under the radar." I will, with your permission, leave you to ponder on that one!

All the speakers this year came from the

LAA ranks, so to speak, and all of them have a particular interest in the Vintage scene. Proceedings were opened with a song about aircraft inspecting (original in all sorts of ways) sung by long-term Inspector, Andy McCluskie who, much to everybody's amusement, accompanied himself on the ukulele (and yes, I had to check the spelling!)

Andy writes the regular 'Nuts and Bolts' feature in *Pilot* and is an expert on the Stampe aircraft which, although a CAA type at the moment, is very much in the LAA camp technically. The rest of the morning was taken over with housekeeping where both Ken Craigie, the LAA's Chief Inspector and Peter Harvey, our Chief Executive, did, among other things, their very best to 'put the wind up' us all by laying out individual liability issues.

The morning was brought to a close with Nigel



# Who's in charge?

**>** RIGHT, now we've got all that out of the way, let's get back to the business of aircraft safety. In the May edition of Safety Spot I featured, among other things, an accident that occurred to a Nord NC854S aircraft where carbon monoxide poisoning was implicated as a potential cause of the crash that took the lives of two LAA members.

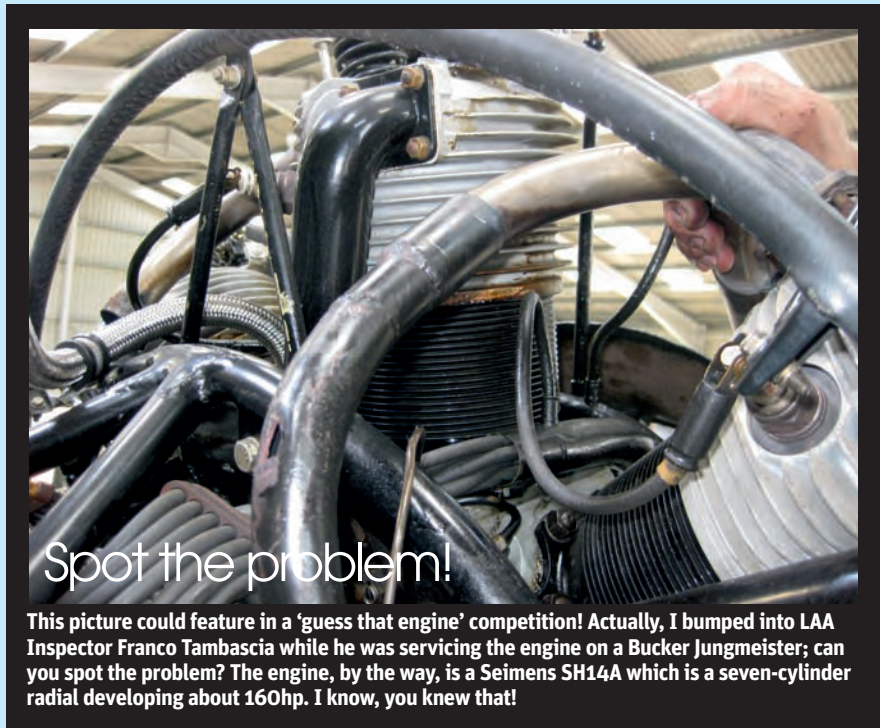
In the same feature I discussed problems that have been reported to us with cracking SportCruiser exhausts. These two items certainly generated a lot of correspondence and thank you to all of you who sent in your experiences and stories. Certainly it's clear that the problem of cracking exhausts is not confined to SportCruiser aircraft.

As it turns out, we are very close to compiling the data collected with the SportCruiser exhaust survey and the results are a bit worrying. First off, about 50% of owners have suffered cracks in their exhaust of one sort or another. Most owners, in concert with their Inspectors, have repaired their exhaust systems by welding. Some have replaced the systems completely.

I thought initially that the survey would show a distinct trend in one direction, for example differences between two and three blade propellers. So far, if there is a trend in any direction, I cannot see it. One thing that I haven't checked out, but will be doing so over the next couple of days, is whether the affected engines have been fitted with a 'Soft Start' module. It is a fairly well-known feature of the Rotax ULS engines that they are prone to, let's say, fairly 'energetic' behaviour during start up. The Soft Start system smoothes out the starting on this engine by taking control of the ignition advance timing.

If nothing else, the problems associated with cracking exhausts have focused our collective consciences a little and the wisdom of checking inside the engine cowl during the daily inspection is becoming clear, even to those who have no real love of 'those smelly, noisy things' under the bonnet.

Talking about not loving engines much, I was chatting to an old sailing mate earlier today and he's just had a rotten time of things because



Spot the problem!

This picture could feature in a 'guess that engine' competition! Actually, I bumped into LAA Inspector Franco Tambascia while he was servicing the engine on a Bucker Jungmeister; can you spot the problem? The engine, by the way, is a Seimens SH14A which is a seven-cylinder radial developing about 160hp. I know, you knew that!

of a maintenance issue that caught him out. I will relate the story because it resonates with aircraft maintenance, and issues relating to the management of the maintenance process, well. I've spoken before of the problems of operating a group aircraft where, for all sorts of quite normal reasons, nobody wants to take charge. Well, my mate is in a syndicate sailing boat and, like most sailing types, he's not a lover of engines in sailboats; they (the engine) are described in various unmentionable ways, but the term 'auxiliary' is often used. Reality is, though, that a serviceable engine, even on quite small sailing boats, is essential for safe operation in the fickle waters around our southern shore.

The boat is moored mid-river near the south coast and my mate and his wife, after a long

drive, duly got out to the boat on the dingy, took the covers off and loaded her up (the boat, not the wife). Anyway, to cut a long yarn short, he got the auxiliary diesel engine fired up and off they went. The weather was, as we have already commented, great, and they were planning to sail to the Island for a spot of lunch. Then the engine stopped.

Fortunately, there was no tide running and only a light breeze, and a passing yacht towed them back to their mooring. After a few hours messing about, the problem was found to be that the 'screw-on' fuel filter had vibrated loose and had fallen into the bilge along with most of the diesel fuel.

I asked my mate who was responsible for the maintenance on the boat and he confessed that he didn't think anybody was... Ring any bells?

Beale, the UK Eurostar agent, explaining how they are getting on at Cosmik with the 'wing checking' required by the CAA Mandatory Permit Directive that we've spoken about in previous Safety Spots.

During the lunch, Inspectors were able to visit various displays put on by some of the businesses here at Turweston. Quite a few Inspectors brought examples for our 'Black Museum' of dodgy aircraft bits. Thanks, in particular, to Mark Miller of de Havilland Support, Mike Vaisey of Vintech, Pete Smoothy of Airworld, Matt Pettit of Bygone Aviation and John Pothecar, for bringing along some fascinating examples of aircraft parts and materials that had definitely seen better days.

The afternoon was started with a fascinating talk by Dave Bonsall, the boss of Dukeries Aviation from Netherthorpe airfield, who gave us an insight into the deeper problems



I am not sure that the guy who wirelocked this turnbuckle had quite got the idea.

associated with various 'weird' instrument readings sometimes encountered. Dave handed out an engine run results sheet based upon the ubiquitous Continental O-200 and had an interactive question/answer session, which determined the individual mechanical problems.

It's amazing what a few simple checks can expose. Matt Pettit, a BA pilot who, in his spare time, runs his own aircraft repair and restoration business (Bygone Aviation), then described the pitfalls that can be encountered when buying an import. He brought along some exhibits that were enough to turn a young man's hair grey!

The seminar was topped off with a great talk by Martin Slater who carries much of the engineering responsibility for Air Atlantique's Classic Flight. Martin took us all through a brief history of this company through his eyes; he brought along a fantastic slide show and I, for one, loved it.

Over 90 LAA Inspectors turned up and there were representatives from the CAA (Civil Aviation Authority), the AAIB (Air Accidents Investigation Branch) and the BMAA (British Microlight Aircraft Association) in attendance. ➔



## Dyn Aero MCR-01: Corrosion update

**V**REGULAR readers of Safety Spot will know the story concerning a flapbracket failure. If you missed it then it's worth checking it out; this is easily done as all previous Safety Spots are available online from the LAA website. As with the issue about cracking exhaust pipes, I received a big mailbag about this. Most people agreed with me that this issue was less about corrosion and more about maintenance, or probably more

accurately, sensible maintenance schedules. We issued an Airworthiness Information Leaflet requiring the removal of the flying control surfaces from the wings to check the brackets, and the results of these inspections are gradually filtering back.

I am happy to report that we haven't had any further examples of failed brackets among the LAA fleet but, as you can see from the accompanying pictures, it's uncovered one or

two examples of corrosion that should have never been allowed to get to this stage... where the bracket is essentially written off.

The featured pictures tell their own story and I will not labour the points made previously about the absolute need to completely inspect your aircraft frequently – get to know every corner of your machine and deal with any problems found immediately before they compromise structural integrity.



PHOTO Richard Hunt

Notice the distinct line between corroded and non-corroded metal, due to weather exposure.



PHOTO Richard Hunt

An example of exfoliation, which, when started, is very difficult to stop.



PHOTO Steve Gill

Water played a primary role in this corroded trailing edge, as the joint was covered by tape.

## Ikarus C42: Throttle jamming

**V**YOU probably already know that the Ikarus C42, since the demise of Aerosport, has a new agent: Pioneer Aviation UK. On the technical side, Pioneer has retained the services of Malcolm Stewart which ensures technical continuity for the machine, always a good thing. I had a call from him the other day where he described a problem that had occurred to a BMAA machine during a training exercise. His story rang a bell with me and I checked back through the records here. The issue concerns a throttle jamming during a training sortie, not at first sight very important, but we'd had a few reports of this happening in the past and, as we have over 40 of these aircraft on our fleet, I was naturally interested.

Malcolm explained that during a training flight in an Ikarus C42, the student noticed that he was finding it difficult to close the throttle during an approach. The Instructor took over and, in an Instructor sort of way, gave the throttle lever a little more pressure. The throttle then jammed in the open position. Now, here's a situation that, with an Instructor on board, is almost a non-event. The Instructor did all the right things and climbed the aircraft to a sensible height above the airfield, gave a PAN call to let everybody know that there was a problem, switched off the engine and completed a dead stick onto the airfield; bread and butter Instructor stuff!

When they were safely back on the ground they had a look at the throttle mechanism to find out what might have gone wrong. It turned out that the head of a clevis pin had got stuck in a hole in the side panel which completely jammed the system. It's a straightforward oversight in design terms, easy to forgive as

the problem only occurs if the right-hand seat is occupied and the occupier inadvertently presses the panel in the wrong way.

Pioneer Aviation is about to issue a small modification which incorporates a spacer that prevents the side panel from impinging on the throttle mechanism. The throttle is a primary aircraft control and a failure here could have disastrous consequences; I certainly wouldn't have wanted this to happen to me with a 'fresh out of the packet' PPL and a nervous 'first timer' sat in the right-hand seat. For this reason, the LAA will be mandating this Service Bulletin by issuing an Airworthiness Information Leaflet.



PHOTO Malcolm Stewart

Tell-tale scratch (and dent) left by the throttle cable attachment on an Ikarus C42 aircraft. The throttle is a primary aircraft control and a throttle jam could cause a serious accident.



PHOTO Malcolm Stewart

A simple mod devised to keep the side panel away from the throttle mechanism.



## Europa EFATO

**>** AS you all know, I like to write about real incidents in Safety Spot. Sometimes the lessons learnt are specific ones and only apply to a particular type; mostly incidents 'flag up' potential for failure across the board. I call this 'bang for buck', certainly the issue about a cracked exhaust on a SportCruiser has got people checking their exhausts.

Am I mixing metaphors when I say that this is an example of a high bang factor? In any event, this next incident is an interesting one in that it is definitely not type specific. I will discuss the primary factor that lead to this rather unsatisfactory air test later. For now, have a read of the report (slightly edited) submitted to your Airworthiness Department explaining what happened. By the way, for those new to our ranks, EFATO means Engine Failure After Take Off – a most interesting experience, designed to take cardiac function to Vne! The pilot, an experienced test pilot and LAA Inspector, explains:

The aircraft has been flying under PFRC (Permit Flight Release Certificate – for testing – Ed) since 2006 and has flown approximately 16 hours, all with another LAA Inspector as pilot, except for the EFATO event flight where I was pilot. Various issues have caused the flight testing phase to be extended, some to do with engine cooling and latterly with propeller matching.

Following my carrying out an annual inspection and a check of the fit and function of a cockpit controllable radiator shutter (a recent mod) and the installation of the propeller whose blade pitch had been changed from 17° (tip) to 15°, I proceeded to carry out a flight (solo) with the purpose of verifying the new propeller setting and the function of the radiator shutter. The engine started with no hesitation and idled smoothly at 3000rpm for the warm up. Once the minimum coolant temperature of 50°C was reached, an engine run up and ignition check was carried out at 5000rpm. An rpm drop of approx 50rpm was noted, with the engine continuing to run smoothly on one ignition system, for both ignition systems. It was also noted that the idle speed was too slow at 1500rpm – the book figure being 2500rpm minimum.

During the take-off roll the engine ran smoothly at approximately 6500rpm (max is 7150rpm, max continuous is 6700). The rpm and

acceleration was judged to be satisfactory so the take off was continued. Flap/undercarriage retraction was carried out at 250ft agl (60kt) and was normal for the type. The aircraft was then accelerated to 75kt and at approximately 400ft agl the engine stopped developing power with no warning. An abbreviated Mayday call on the Radio frequency was sent expressing the intention to return to the airfield. A successful engine off landing was made on runway 09 where the aircraft coasted to a halt. All systems were then shut down.

After recovering the aircraft by hand back to the work area by the hangar, an investigation by the aircraft owner into the engine stoppage began. It was discovered that, although all the other electrical systems were operating normally (avionics, pitch trim, etc), neither electric fuel pump operated. The circuit breakers, one for each pump, had not tripped. Following removal of the radio and transponder it was possible to see the electrical connections for the pump switches, mounted in the lower part of the avionics section of the instrument panel. All were connected properly. The electrical connections to the two fuel pumps, mounted in the central tunnel, were found to be connected properly. It was not possible to examine the rest of the electrical connections without removal of the instrument module, which the aircraft owner has committed to do when the aircraft is back at his workshop. I await to hear of his findings.

Pertinent info: Since the previous flight to the EFATO, the owner reported to having replaced the radio and fitted a Mode S transponder. The instrument module had been removed from the aircraft for the installation work to be done, which may have involved disconnection of certain electrical connections including those between the fuel pump switches and the pumps.

As is completely normal when I receive a field report like this I opened an Occurrence Report. The owner came back to us with his findings and, as you have probably guessed, he had disconnected the fuel pump's electrical connection so that he could remove the instrument module to enable the fitment of the new radio gear.

The connector came apart as the test pilot was climbing away from the airfield. With this type



**Actual socket that came apart leaving LAA test pilot without an engine. We used to call this 'spaghetti' wiring when we were younger.**

of engine, as with so many others these days, no fuel pump, no run! I can almost hear your brain whirring, what about the other pump? Well, yes, you are absolutely right, because a positive fuel pressure is absolutely needed there must be two independent pumps producing it. For some reason the connector wasn't re-connected correctly when everything was re-assembled and this was missed during inspection; also missed, of course, was the fact that both fuel pump supplies went through the same connector block.

I can see how easy it would be to miss these two potential 'show stoppers' especially when one considers that the connector was supplied by the manufacturer with the engine.

In many aircraft systems one pump will be mechanically driven and an electrical back up pump fitted in case of mechanical failure. Some aircraft, because of differing architecture, will be able to operate by gravity feed alone and may only need one 'driven' pump. This meets the rule for 'independence'. Some systems have two electrical pumps.

What has gone wrong is that there are shared components between the two systems and that independence has been compromised. Specifically, a single bulkhead connector plug carried current to the pump switches from both pumps. Disconnection or failure here will mean the failure of both pumps.

Aircraft designers are always trying to find ways to decrease the weight of their machines. Structure engineers are always looking for ways to share load paths and will always have one eye on redundancy. In this case an aircraft was very nearly lost for the sake of an extra ten pence connector, not very good economics really.

As usual, Fair Winds.

## LAA ENGINEERING SCALE OF CHARGES

### LAA Project Registration

Kit Built Aircraft £300

Plans Built Aircraft £50

### Issue of a Permit to Test Fly

Non-LAA approved design only £40

### Initial Permit issue

Up to 390kg £320

391 - 499kg £425

500kg and above £565

Three seats and above £630

### Permit renewal

Up to 390kg £105

391 - 499kg £140

500kg and above £190

Three seats and above £210

### Modification application

Prototype modification £45

Repeat modification £22,50

### Transfer

(from CofA to Permit or CAA Permit to LAA Permit)

Up to 499kg £135

500 kg and above £250

Three seats and above £350

### Four-seat aircraft

Manufacturer's/agent's type acceptance fee £2,000

Project registration royalty £50

### Category change

Group A to microlight £135

Microlight to Group A £135

### Change of G-Registration fee

Issue of Permit Documents following G-Reg change £45

### Replacement Documents

Lost, stolen etc (fee is per document) £20

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