B.G.A. TECHNICAL COMMITTEE
Technical Newsheet: TNS 4.5.82

PART 1 Airworthiness "Aggro". (Please add to 1982 Blue Pages).

1.1 STD. Cirrus. Spherical plain bearings in fuselage wing stub - disintergrated. Improved type bearings should be fitted when replacement is required by Inspection. (Reported by I. Corkell Manchester.)

1.2 Falke series motor-gliders overstressing and distortion of wing root fittings. Buckling of the top spar plates, and failure of the weld between the lower spar plates and the spacer, together with splaying of the female fittings, has been attributed to massive in-flight overload. Inspect for signs of such overload at periodic intervals, not only on this type, but also on similar type fittings.

PART 2 General.

2.1 400 x 4 Tyres. Two reports have been received of the application of "VREDESTEIN" 6 ply industrial tyres to gliders. Either ribbed or deep-tread types are available the latter described as "90 Cart Type". One supplier is: Tyre Sales, Francis Street, Scunthorpe, Lincs. (Report by R.J. Lines and Eric Rolph.)

2.2 Ask 21. Tech. Note 6 (Schleicher) authorises an increase in weak-link for winch-launching to 800daN. (Weak-link for aero-towing remains at 750 daN.) (1 Newton = 4.448 lbs therefore 800 daN = $\frac{8000}{4.448}$ = 1798.561 lbs !!!!!!)

PART 3 Tugs, etc.

3.1 Mogas. A CAA notice authorising the use of Mogas in certain applications, will be published this month. Users should study this document carefully before making any applications required therein.

More testing of Mogas has been undertaken than was ever applied to the introduction of 100L and 100LL. Five types have been bench-tested (Continental 0-200, Lycoming 0-320, 0-235, 0-540 and Continental TS10-360). The B.G.A. "Airedale" has flown 220 hours and the E.A.A. (USA) Cessna 150 - 500 hours. Liaison between B.G.A. and the Gliding Federation of Australia, and with AOPA (Australia) uncovered 27,000 hours of Mogas operation, in ambients up to 46°C.

Guidelines on the handling of fuel for club managers/operators/owners are enclosed herewith, and should be actioned and displayed.

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3.2 General Aviation Safety Information (GASIL). Extracts herewith include:-

a) Paint fumes in cockpit - RF4D.
b) Decorative paint stripes destroy laminer flow.
c) Cross wind/strong wind. Accidents.
d) Incorrect fuel.
e) Engine failure (VW Variant) - Fuel system failure.
f) Take-off accident (Rallye 110). Misjudged performance.
g) Fuel system drain malfunction - modification.
h) Turn barrel wire locking.

3.3 SLMG - CAA Remewals (3 years). Negotiations with the C.A.A. have achieved a good measure of success in very little time, and the B.G.A./C.A.A. approval ref. DAI/8378/73 has been ammended to give B.G.A. inspectors (with ordinary and 'E' ratings), at bases nominated by B.G.A. to C.A.A., and of listed motor-gliders the authority to certify "The Annual Check Associated with the C.A.A. renewal" (Ref. LAMS page 6/4).

When the necessary negotiations are complete you will be advised to apply for 3 year renewals in the "Private" category.

In the meanwhile one year applications should be submitted.

3.4 Petroleum Storage Act 1929. Clubs are reminded that a licence may be required to store fuel.

3.5 Change of Address, the undersigned now resides at:-
"Brashfield Bungalow",
Buckingham Road,
Bicester,
Oxon.
OX6 7EP. Tel: (08692 - 46020)

R.B. Stratton
Chief Technical Officer

May 1982

3. Fumes From Fresh Paint

Aircraft : Fournier RF4D Motor Glider
Date : September 1981

The aircraft was reported to have force landed due to noxious fumes in the cockpit. It later took-off again and when airborne the pilot advised that he was again suffering from noxious fumes. The destination aerodrome arranged for a fire vehicle and a police vehicle with a nurse to meet the aircraft.

CAA Comment:
Fumes entered the cockpit because the owner/pilot painted the glass fibre engine cowling, and he left it to dry for only ½ hour before flying. Sufficient time should always be allowed for paint to fully dry, glassfibre to completely cure, etc.

4. Decorative Paint Stripes On Wings P/E

Aircraft : Mainly homebuilt, particularly canards + Gliders

In America the owner/builder of a composite canard winged aircraft made two satisfactory flights with his new aircraft before finishing off the paint scheme. The scheme included the addition of stripes to the leading edges of the canard and rear wing. On take-off on the third flight the rate of climb was virtually nil and elevator and aileron controls were dangerously degraded. Level flight was only possible with full nose-up trim and some back pressure on the stick. After flying to use up all the fuel, the landing was made only with difficulty because of lack of elevator authority. It was concluded that the leading edge paint stripes (the only change since flight two) were the cause, so they were sanded off. The next flight was normal again. The ridge that had been left when pulling the masking tape off the stripes was only about .005", which was enough to destroy the laminar flow over the wings.

Other sources have stated that the performance of another type of canard homebuilt aircraft was very susceptible to leading edge roughness due to squashed insects. It has also been stated that certain high performance gliders must not take off with raindrops on the wings as these destroy the laminar flow.

CTO's Notes. TWO CHIPMUNK TURS HAVE BEEN DAMAGED CAAI/4/82
STRONG WINDS. SO FAR THIS YEAR, OPERATING IN WINDS
7. CROSSWINDS BEYOND THEIR FLIGHT MANUAL LIMITATIONS

A small tail wheel aircraft ground looped during landing, causing bent landing gear legs and a broken propeller. The wind was 24 knots at 80° across the runway. The pilot commented afterwards that either the controller was not familiar with tail wheel aircraft or forgot that tailwheel aircraft cannot land in such wind conditions.

The pilot's comments make it necessary to point out that the aircraft's commander is responsible for deciding if the crosswind is within the aircraft's and pilot's capability. The controller (or Aerodrome Flight Information Service Officer) cannot be expected to know the crosswind capability for each aircraft type. It is always up to the pilot to make the decision, based on the wind speed and direction.

The Air Navigation Order Article 31 states "The commander of an aircraft registered in the United Kingdom shall satisfy himself before the aircraft takes off -

a) that the flight can safely be made, taking into account the latest information as to the route and aerodrome to be used, the weather reports and forecast available and any alternative course of action which can be adopted in case the flight cannot be completed as planned".

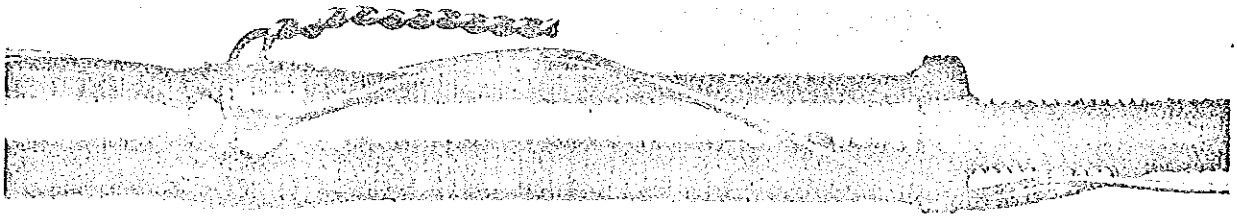
At the PFA Rally at Leicester in July 1981 clearly several pilots made the wrong decision as a number of ground loops and accidents occurred in the strong crosswind. Indeed, this author was faced on arrival there with a crosswind which was well within the maximum demonstrated crosswind declared in the aircraft Flight Manual, but was in excess of anything the pilot had flown in for many years. The pilot's limits are as important as the aircraft's and for this reason Flight Manuals do not specify a maximum crosswind as an operating limitation, but normally do state the maximum within which the aircraft's control has been demonstrated as satisfactory by the manufacturer.

8. TURNBARREL WIRE LOCKING [E]

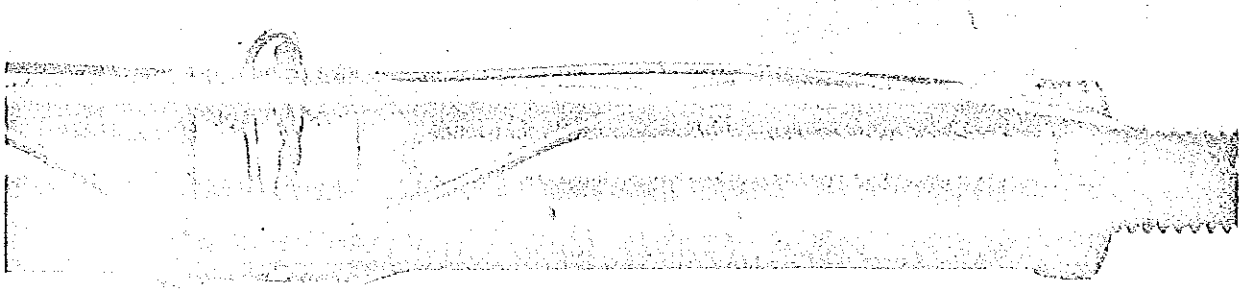
Recent investigation into a case of short term control jamming on a transport aircraft led to an investigation of the control system installation during which it was found that incorrect wire locking of a cable turnbarrel could lead to the end of the locking wire fouling the wire locking of an adjacent turnbarrel. This illustrated two features to be avoided in the installation of control systems.

(a) the location of two turnbarrels on adjacent cables such that they pass each other in normal operation and therefore present the potential for fouling

(b) incorrect location of the twisted ends of the wire such as to form a hook which can pick up in the turnbarrel wire locking (see photo below) of an adjacent turnbarrel or in some other part of the aircraft.



This hook was re-created, and whilst it could not be proved to have been the cause of the reported in-flight problem it did nevertheless reproduce all the symptoms reported by the crew. Wire locking ends must always be made-off in such a fashion that they will not present a potential foul either to adjacent controls or other equipment/structure (see bottom photo). Note: The Civil Aircraft Inspection Procedures on this subject are being reviewed.



9. SPECIAL VFR FLIGHTS AND GENERAL AVIATION AERODROMES IN LONDON CONTROL ZONE [P]

GASIL 2/80, item 2 drew attention to the misunderstanding that some general aviation pilots have concerning their responsibilities when communicating with ATZ's within the London Control Zone.

Complaints received recently by Air Traffic Control Heathrow show that ATZ infringements by SVR flights transitting through the London Control Zone are still occurring.

Some general aviation aircraft are equipped with two VHF sets and can readily contact and obtain clearance through or into an ATZ and at the same time monitor the SVFR frequency. Other general aviation aircraft do not have this facility and since many aircraft have quite high cruising speeds, it is often the case that by the time a SVFR controller is able to release the aircraft to a general aviation aerodrome, an infringement has taken place.

The primary responsibiltiy for transit through or obtaining clearance to land in an ATZ rests solely with the pilot. In particular when operating aircraft equipped with a single VHF set, sufficient time must be allowed to obtain release from the controlling ATSU to effect ATC clearance with the ATZ. This should be at least 5-10 minutes prior to reaching the ATZ boundary.

TNS 5/82.

No: 3/82 Ref: EW/G82/02/04

Aircraft:	Rallye 110 ST G-BGKC
Date and time (GMT)	18 February 1982 at 1505 hrs
Location:	Mursley Hall Farm, Nr. Winslow, Bucks
Type of flight:	Business
Persons on board:	Crew - 1 Passengers - 2
Injuries:	Crew - Nil Passengers - Nil
Nature of damage:	Propeller and engine bearer damaged. Nose undercarriage leg collapsed and right leg penetrated wing, bending main spar. Right tailplane and elevator badly damaged.
Commander's Licence:	Private Pilot's Licence
Commander's total flying experience:	420 hours (of which 300 hours were on type)

The aircraft was taking off in calm conditions from a farm field with a soft surface covered with long wet grass. Just after becoming airborne the nose and main wheels brushed the top of a 4 feet high hedge and the tail struck it firmly. The aircraft then struck the ground beyond the hedge in a nose down attitude. The pilot has since assessed the take-off distance available as having been inadequate in the conditions pertaining.

13. FUEL DRAIN LEFT OPEN (ALL TYPES OF FUEL SYSTEM.) P/E

Aircraft : Piper PA28-161 Cherokee Warrior (applicable to other Piper aircraft) CURTIS Valves
Date : February 1982

After carrying out the pre-flight inspection, including water drains checks, followed by an engine run-up, the aircraft took off. At about 100 ft the engine suddenly cut. The pilot got the nose down, exercised the throttle and checked the mixture and shortly afterwards the engine re-started. He was able to climb straight ahead to 300ft, where the engine again cut, so he turned downwind. A Mayday call was made and after the engine briefly came to life again a downwind (15 to 20 kts) landing was made on the reciprocal runway. The aircraft stopped just before the far end of the runway. The flying club CFI met the aircraft and noticed that fuel was flowing freely from the engine drain valve. He turned the valve off and instructed the pilot to return to dispersal.

The pilot had carried out a fuel drains check with the fuel cock OFF and had therefore not noticed that the spring-loaded bayonet type drain valve was still open. As soon as the fuel cock was turned ON fuel flowed out causing fuel starvation at sustained high engine power.

The CFI has commented that the pilot was on his third flight in the aircraft and his first with a full passenger complement and displayed commendable airmanship and steadiness in a very difficult situation.

The operator has amended the aircraft check list to include "After checking for contamination, ensure all drain valves are fully closed".

CAA Comment:
Drains check should be done with the fuel ON. As a result of a notifiable accident some years ago, CSE issued Service Bulletin 6/75 shown below:

C.S.E. SERVICE BULLETIN 6/75 OCTOBER, 1975

SUBJECT: Fuel Filter Water Drain Valves.

MODELS AFFECTED: All Piper Single and Twin Engined Aircraft.

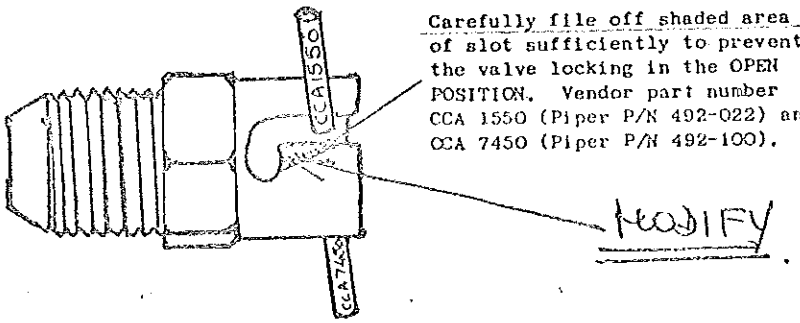
RECOMMENDED COMPLIANCE TIME: Within the next 50 hours of operation or at the next inspection whichever occurs first.

There have been a number of reports from the field of engine failure and loss of power shortly after take-off on the Cherokee range of aircraft. In addition, there have been cases of high fuel consumption reported on one engine of the twin engine range.

Investigations have proved that, in some cases, the problems have been due to the Curtis drain valve, on the bowl of the fuel filter, located between the fuel cock and the engine driven fuel pump, being inadvertantly locked in the open position after carrying out a water check during a pre-flight inspection.

In order to prevent a re-occurrence of the above problem, modify all Curtis drain valves, part number CCA 1550 (Piper P/N 492-022) and CCA 7450 (Piper P/N 492-100), located between the fuel cock and the engine, as indicated in the sketch below, taking care not to damage the spring in the process.

NOTE: It is not possible to dismantle the Curtis Valve in any way.



B.G.A. TECHNICAL COMMITTEE. (TNS/5/82)
"Potted Guide to Clean Fuel Procurement"

PART 1 MANAGEMENT.

1.1 Appoint a responsible person to manage your fuel supplies and equipment, including its maintenance.

1.2 Consult CAP 34 (Aviation Fuel at Aerodromes) from C.A.A. Publications, 37 Gratton Road, Cheltenham. £1.25.

1.3 Consider the implications of the Petroleum Act 1929, and the requirement for licencing a storeage facility.

1.4 Consider the implications of the Air Navigation Order (article 79), which defines the responsibility of a person who has "the management of an aviation fuel installation at an aerodrome".

1.5 Specify the grade of fuel you require, and check that the correct grade is delivered.

PART 2 TECHNICAL

2.1 Incoming bulk supplies should be "sampled" and delivered into tanks through 180 mesh filter.

2.2 Storeage tanks should be inspected every 3 years.

2.3 Take samples from the lowest point in the tank, and extract any water.

2.4 Label grade of fuel on the pump.

2.5 Hoses should be inspected for internal deterioration and external damage.

2.6 Nozzles should be fitted with 5 micron filters.

2.7 Barrelled fuel should be stored undercover, clear of the ground, on their side, with the bungs in 3 o'clock or 9 o'clock position. Barrelled fuel should be re-tested or replaced every 6 months (CAP 434).

2.8 Dispensing containers to be scrupulously clean, free from rust and disintegrating paint.

2.9 Funnels should contain fine gauze filters capable of removing water. (Chamois leather may contain chalk and shed fluff).

/2 ....(PTO).....

2.10 Fuel tank and system water drains should be sampled "daily", and sufficient fuel drained to ensure removal of water. Inspect each sample for contaminants.

Note: BGA/TNS/5/82 draws attention to the need to modify Curtis Drain Valves to prevent them locking "OPEN"