

BRITISH GLIDING ASSOCIATION

TECHNICAL COMMITTEE

TNS 9/10/80

1. AIRWORTHINESS "AGGRO"

- 1.1. Please add to 1980 Green Pages.
Blanik - ailerons jammed. Incorrectly routed bonding leads at the ailerons, (after dismantling for overhaul) caused jamming of the aileron shroud on to the aileron (Reported by RAFGSA, Bicester).
- 1.2. PIK.20 - Rudder Cables. Worn on bolt adjacent to u/c operating handle - sketch from Gliding Federation of Australia attached herewith.
- 1.3. KA7 (also KA13). Wing root control system bracket fractured. Repeat failure first reported TNS 9/78. Reported by West Wales Gliding Club, (sketch attached).
- 1.4. Slingsby T.65C. "Vega". Seat-pan fouls elevator control rod assembly - cutaway required to give clearance. (Sketch attached from Surrey & Hants G.C.).
- 1.5. Weak-Links. Failure to incorporate correct strength weak-links in winch-cable, nearly caused serious glider accident. Astir cable release systems may have a tendency to operate nose-hook first, followed by belly-hook with increased pilot effort. The use of cheap but "heavy" winch cable cannot be off-set by increasing the strength of weak-links!
Aero-tow Weak-Links. Confusion as to the requirements is amplified in latest issue of 'Sailplane and Gliding'.
- 1.6. KA6 - KA8. Delamination/Cracks on spar between RIBS 1 and 2. Small cracks on both mainplanes at the root end of the main spar extended 1" along the rear of the spar. May be due to overstressing. (Reported by D. Almey, Cranwell G.C.).
- 1.7. Personal Parachutes. Manufactured by STRONG ENTERPRISES (U.S.A.) FAA A/D herewith, requires modification to plastic ripcord handle.

2. GENERAL MATTERS

- 2.1. G.R.P. Gliders - possible fatigue-life limitations
German paper "ABTEILUNG TECHNIK 30" proposed a safe-life of 3000 hrs., which has been made "mandatory" in Australia! B.G.A. Technical Committee are investigating the validity of this limitation. The potential "safe-life" of carbon fibre wings is outlined in attached paper from Schempp-Hirth titled "18,000 Hours Flight Time Simulated with Nimbus 2".

3. TUGS & MOTOR GLIDERS

- 3.1. P.A. - 18 Super Cub fatigue failure of undercarriage support frame bolt. Wherever bolts are used as pivot points for undercarriages which are subject to repeated cycles if operation as in glider-towing, repeated inspection (by withdrawal) is required to detect wear/cracks. (Reported by Lakes G.C who narrowly avoided extensive damage when failure occurred on landing).
- 3.2. Maintenance of Aircraft NOT Exceeding 2730 kg. M.T.W.A. including STAR Inspection. C.A.I.P. leaflet BL1-15 has been issued by C.A.A. and is available from B.G.A. price 25p. This leaflet is essential for A8-15 tug maintenance approval.
- 3.3. Extracts from AIB Bulletins. 10/80/CASI 8/80 The attached extracts from the above documents are self explanatory.
- 3.4. Tow Release Controls. Floor mounted, or otherwise inaccessible release handles have been seen on tugs at recent competitions. Letters have been written to clubs pointing out their indefensible position, should accidents arise. Likewise, upper-body restraint systems should be reviewed, whether or not legal dispensation has been issued in a specific case.
- 3.5. Engine Overhauls. Silverstone Aero Engineering Ltd., Silverstone, Towcester, Northants. NN12 8TZ (0527 857361) offer overhauls and some second-hand engines. Contact Mike Tate.
- 3.6. Trials with B.S.4040 Gasoline in Aircraft. Progress with these trials is reported herein.

R.B. STRATTON
CHIEF TECHNICAL OFFICER

STRONG ENTERPRISES

Airworthiness Directive

Volume I & II

PERSONAL PARACHUTES.

80-13-01 STRONG ENTERPRISES: Amendment 39-3793. Applies to all angled plastic parachute ripcord handles (P/N 1034) to which the ripcord cables are attached through only one leg of the handle and not attached through the drilled reinforcing crossbar in a lengthwise direction (see Figure 1). These handles were manufactured by Strong Enterprises in accordance with FAA Technical Standard Order (TSO) C-23b, Parachutes, for use on Strong Enterprises "Pop-Top" Chest-Mounted Reserve Parachutes (P/N 1023), but may be found on parachutes of other makes, models or types.

Compliance required as indicated unless already accomplished.

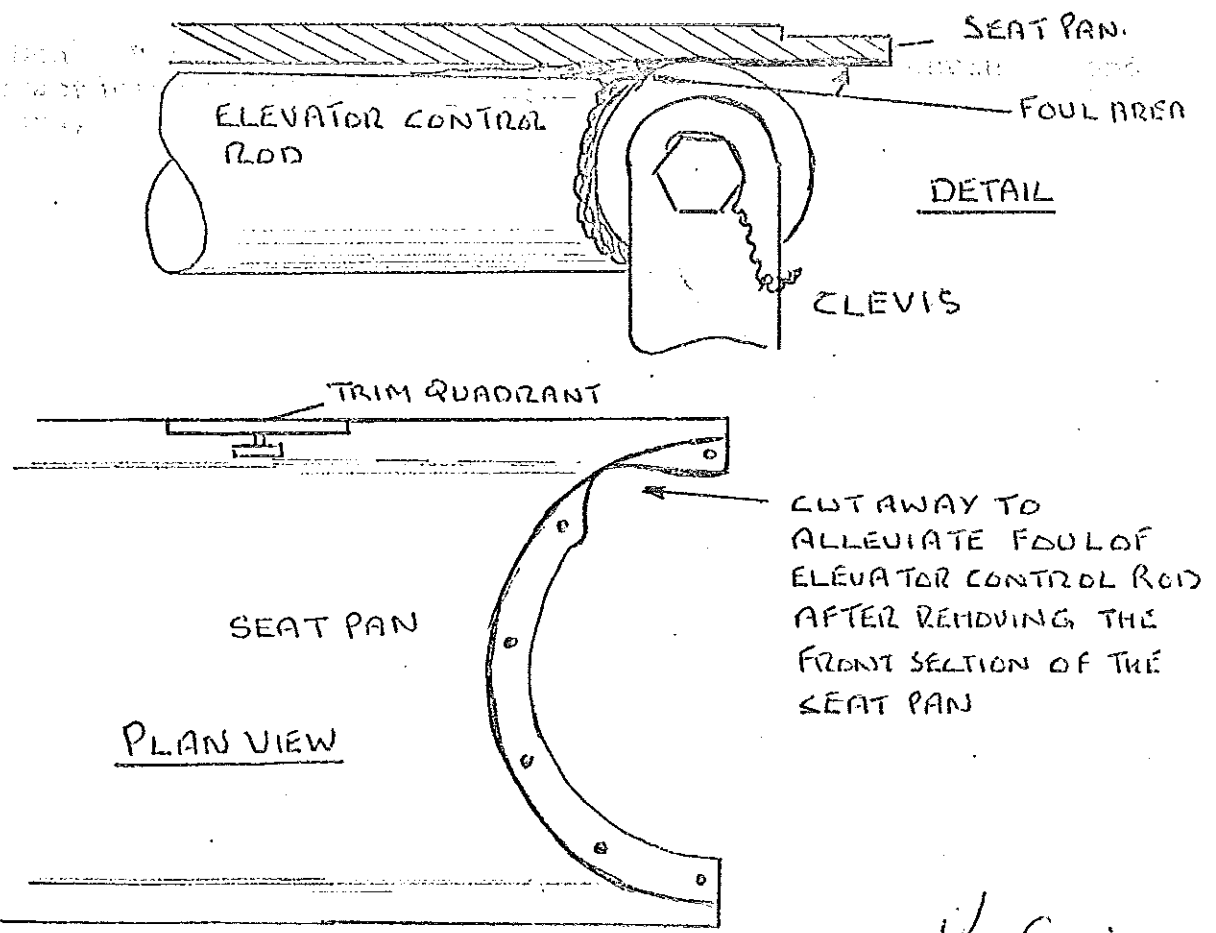
To prevent the possible nondeployment of a parachute canopy due to separation of the plastic handle from the ripcord cable when subjected to the deployment pull force, accomplish the following: replace the plastic handle shown in Figure 1 with a metal handle (P/N 1025) supplied by Strong Enterprises prior to the parachute being made available for any parachute jump.

Compliance with the provisions of this AD may be accomplished in an equivalent manner approved by the Chief, Engineering and Manufacturing Branch, FAA, Southern Region.

108

P.70

T. 65C. VEGA. SEAT PAN FOUL.



T. 65C. VEGA. SEAT PAN FOUL.

KAE Lewis
TECH OFFICER
S&HGC.

STRONG ENTERPRISES.

PLASTIC RIPCORD HANDLE

PERSONAL PARACHUTES

REPLACE THIS HANDLE IF
RIPCORD CABLE ATTACHES HERE

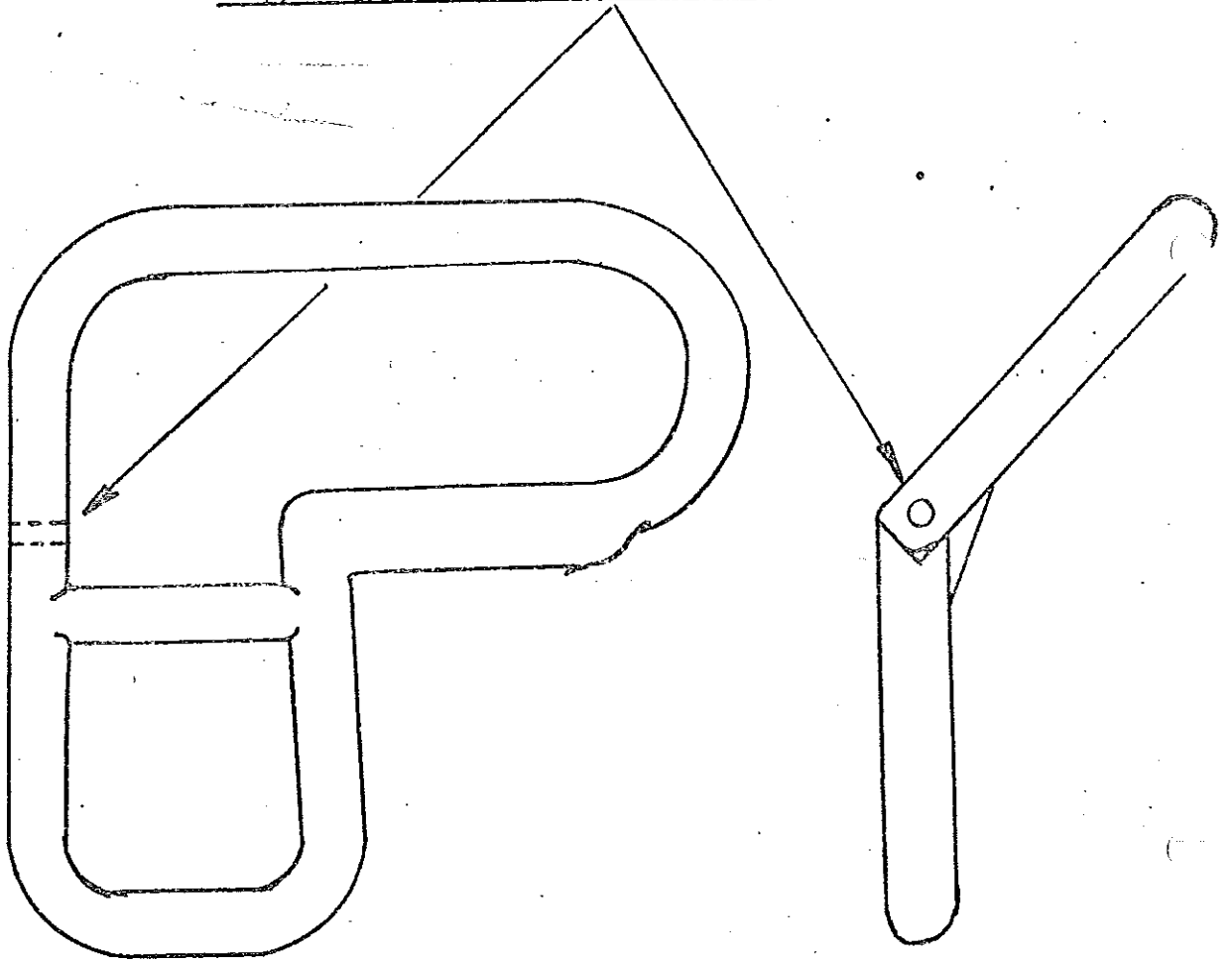
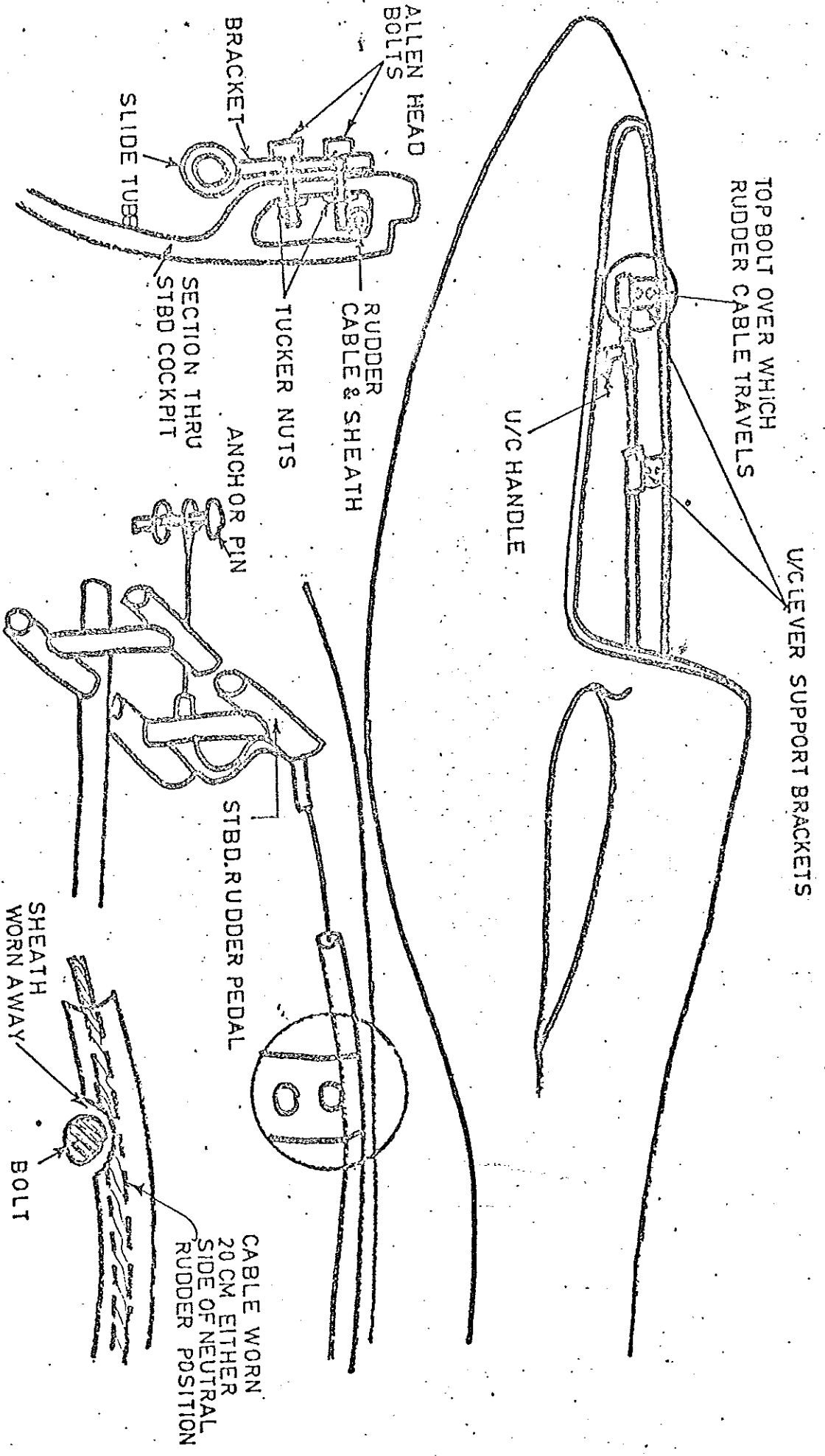


FIGURE 1

PK. 20. Rudder cables,

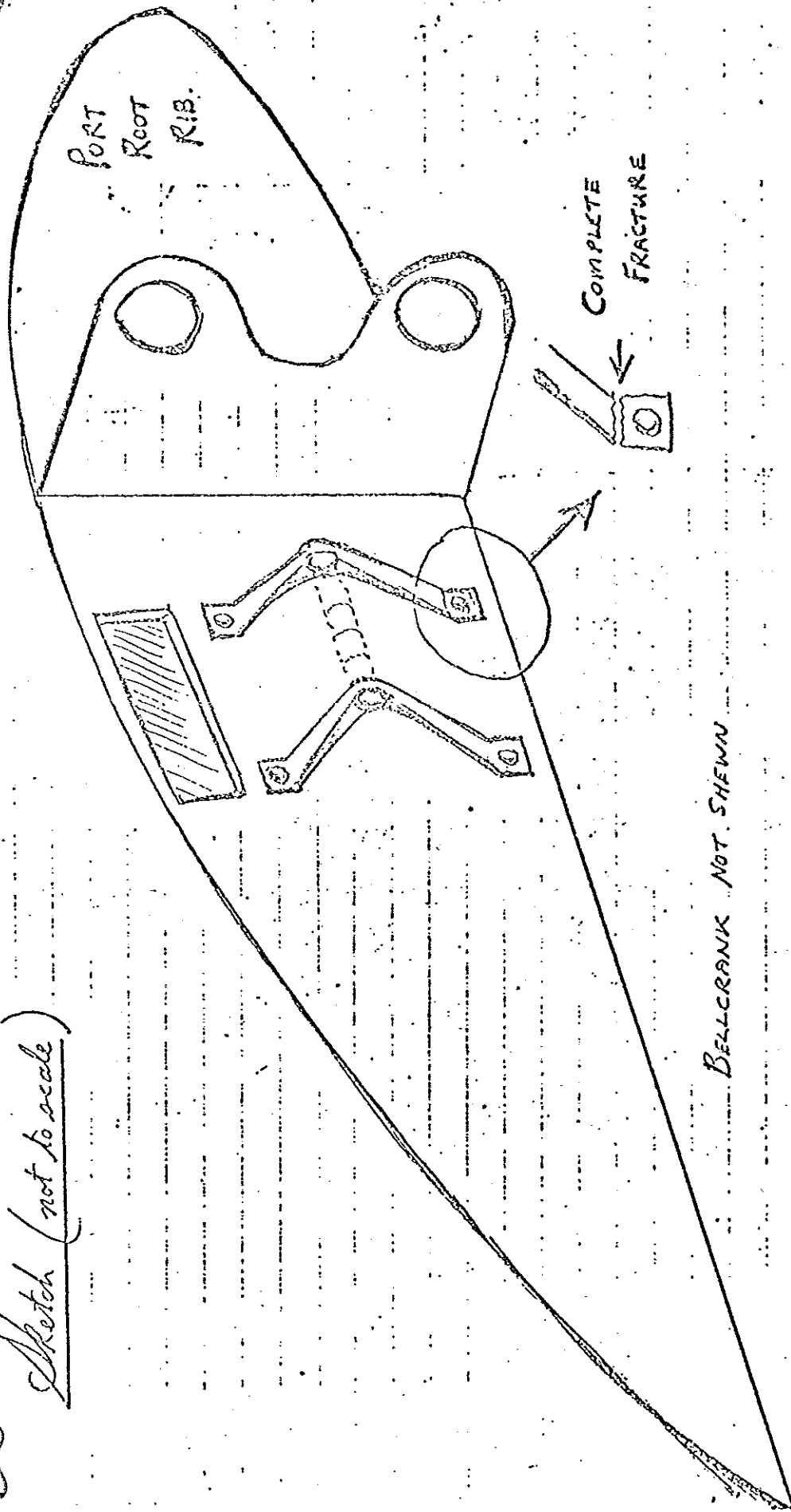


PK 20 - Rudder cables

GFA AUSTRALIA

13/6/80

Sketch (not to scale)

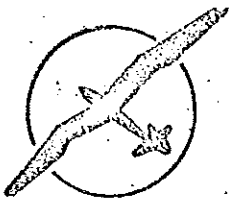


BELLCRANK NOT SHOWN

KAT. AILERON CONTROL BRACKET FRACTURED

West Wales G.C. July 1980.

TNS/9/80



TNS 9/80
SCHEMPP-HIRTH GmbH & Co KG KIRCHHEIM-TECK

SEGELFLUGZEUGBAU

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PRESS RELEASE
=====

7312 KIRCHHEIM-TECK, den
Krebenstraße 25

August 1980

SCHEMPP-HIRTH reports:

18.000 HOURS' FLIGHT TIME SIMULATED WITH NIMBUS-2

No lesser agency than the German Ministry of Transport took an interest in the life expectancy of carbon fibre wings for sailplanes. Therefore the DFVLR (German Research and Testing Institute for Air and Space Travel) in Stuttgart tested the inner wing section of a carbon fibre NIMBUS-2 from SCHEMPP-HIRTH (the NIMBUS has a 4-section wing).

18.000 hours flight time were simulated in a special program, by stressing the wing through a specially designed computer-guided stressing rig. At the end of the flight simulation program, the wing was heated to 540C (1290F) and a failure test was made.

At a load of approximately 68 % over the calculated maximum stress-point - which already yields hefty safety margin over the loads incurred at red line - the load transfer assembly failed. The inner wing panel itself survived the test without damage.

With the completion of this testing program, one can be certain, that the German National Aviation Board will allow a lifetime of 6.000 flight hours for sailplanes with carbon fibre wings. That would give, with 250 soaring hours per year, a lifetime of 24 years - with a safety factor of three!

SCHEMPP-HIRTH, the builder of the NIMBUS-2, and the supplier of the test wing, pioneered in the full utilisation of carbon fibre in sailplane construction. As a result, now more than 80 % of the sailplanes produced by SCHEMPP-HIRTH are delivered with carbon wings.



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British Gliding Association

10th June 1980.

TO: Executive Committee
Technical Committee

BEAGLE A.109 "AIREDALE" - G-AVKP

AVGAS - MOGAS TRIALS

1. Introduction.

In simple terms, the object of the trial is to demonstrate that B.S.4040 "4 Star" motor spirit (octane rating 89 MON/97 RON) has no significant effect upon the airworthiness of a typical 8.5:1 compression ratio aero engine of 180 h.p. (Lycoming O-360-A1A, for which 91/98 Aviation Fuel is specified). It may transpire that a more safe operation results therefrom, since 100LL AVGAS (D.ENG.R.D.2485), has, in the past, caused valve failures, lead-fouling of spark plugs and damage to fuel system seals, by virtue of high aromatic content.

2. Ground Tests will be conducted using installed instrumentation, together with a Crypton Exhaust Analyser, in an attempt to detect differences between AVGAS/MOGAS, in terms of combustion system behaviour.

3. Flight Testing will be pursued in an attempt to detect physical changes to combustion components, (cylinders/valves/plugs) and to fuel system accessories.

R.B. STRATTON
CHIEF TECHNICAL OFFICER.

Patron HRH The Duke of Edinburgh KG
Vice Presidents Basil Meads MBE
Air Chief Marshal Sir Theodore McEvoy
Sir Peter Scott CBE DSC LLD
Dr A E Slater MA FRMetS
K G Wilkinson CBE HonDSc CEng

25th July 1980.

FROM: THE BRITISH GLIDING ASSOCIATION'S CHIEF TECHNICAL OFFICER

Progress with Motor-Spirit Trials in Lycoming
O-360 engine, in Beagle "Airedale" G-AVKP.

"MOGAS FLYS OK - AT 14,000 FEET"

On 24th July 1980 from the R.A.F.G.S.A. Centre at Bicester, the B.G.A. MOGAS Test Aircraft was climbed to 14,000 feet, on B.S. 4040 "4 Star". At 14,000 feet the AVGAS supply was selected, and no detectable difference in engine operating performance was noticeable.

This altitude test will be repeated from time-to-time in order to determine whether the difference in vapour pressure between AVGAS (7.0 psig) and the more variable MOGAS (7.5-14 psig) induces vapour locking in a typical fuel system.

Airedale G-AVKP has been fitted with Cylinder Head Temp Gauges on each cylinder, Induction and Exhaust Gas Temp Gauges, as well as large scale Manifold Pressure and R.P.M. Instruments.

The B.G.A. trial has been kindly funded by the Light Aviation and Gliding Foundation.

R.B. STRATTON. C.ENG.; F.R.Ae.S., F.S.L.A.E.T.

CHIEF TECHNICAL OFFICER, B.G.A.



Accident Investigation Branch
Department of Transport

Ringside House, 100 Victoria Street, London SW1E 5AJ
Telephone: 01 212 6662 (Direct dialing)

AIB Bulletin

No: 10/80

Ref: EW/C696

20 August 1980

CABLE TENSION DAMAGE.

NO UPPER BODY RESTRAINT.

Aircraft:

Jodel DR1051 G-AVTH

Date and time (GMT): 12 April 1980 at 1448 hrs

Location: Woodplumpton, nr Preston, Lancs

Type of flight: Private

Persons on board: Crew - 1 Passengers - 2

Injuries: Crew - 1 (fatal) Passengers - 2 (fatal)

Nature of damage: Aircraft destroyed

Commander's Licence: Private Pilot's Licence

Commander's total flying experience: 93 hours (of which 30 hours were on type)

The pilot took off from Blackpool Airport at 1431 hours for a local flight, whose intended route included areas of at least moderate turbulence. At 1444 hours the pilot made a short distress call on Blackpool Approach frequency, using the words "Structural damage, forced landing imminent", after which nothing further was heard. Eye witness reports then describe the aircraft in a glide, with the engine silent; after a wing-rocking manoeuvre at low altitude it pitched nose down into some trees from a height of about thirty feet. Although there was no fire, the pilot and the passenger beside him

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This Bulletin contains facts relating to the accidents which have been determined up to the time of issue. This information is published to inform the public and the aviation industry of the general circumstances of the accidents at the preliminary stage and must necessarily be regarded as tentative and subject to alteration or correction if additional evidence becomes available.

Short extracts can be published without specific permission providing that the source is duly acknowledged.

were both killed in the impact; the second passenger died of his injuries some days later. There was no upper torso restraint fitted to the front seats, as required by the regulations, but pathological evidence suggests that this had no bearing on survival.

During the winter before the accident, the aircraft, which was of wooden construction, had been parked out of doors, and at times snow had been allowed to lie on it; in recent weeks there had been a spell of warm weather. In order to compensate for changes in the airframe caused by wing warping, the maintenance schedule for the aircraft required a check of tension in the aileron controls every 50 flying hours, or every 3 months, and after large variations in temperature or humidity, but this check had not been performed for 10 months. Examination of the wreckage showed that the starboard aileron pulley had been pulled out of its mounting on the rear of the main spar before the impact, causing at least a partial loss of aileron control, although the exact amount of control loss could not be determined.

No: 10/80

Ref: EW/G80/04/23

Aircraft:	<u>Pik 20E Motor Glider G-SOAR</u>	
Date and time (GMT):	27 April 1980 at 1400 hrs	
Location:	RAF Cosford, nr Wellington, Shropshire	
Type of flight:	Private	
Persons on board:	Crew - 1	Passengers - nil
Injuries:	Crew - nil	Passengers - n/a
Nature of damage:	Damage to landing gear and forward fuselage	
Commander's Licence:	Private Pilot's Licence	
Commander's total flying experience:	700 hours (of which 9 hours were on type)	

The aircraft was landing following a thermalling flight of 1 hour 20 minutes. The normal landing area was obstructed by three gliders which had just landed so the pilot made his approach to one side of the area where there happened to be longer grass. After a normal landing the aircraft rolled and dropped into a hollow concealed by the grass.

No: 10/80

Ref: EW/G80/06/06

Aircraft: Piper PA18 (Super Cub) G-BBYB

Date and time (GMT): 22 June 1980 at 0940 hrs

Location: Sunderland Airport, Sunderland,
Tyne and Wear

Type of flight: Private

Persons on board: Crew - 2 Passengers - 0

Injuries: Crew - nil Passengers - n/a

Nature of damage: Damage to landing gear, both wings, engine
crankcase, propeller and lower fuselage

Commander's Licence: Private Pilot's Licence

Commander's total flying experience: 450 hours (of which 40 hours were
on type)

The purpose of the flight was to check out the co-pilot, holder of a PPL with 200 hours experience, prior to him flying the aircraft solo. During the take-off roll the aircraft started to swing to the left, the co-pilot over-corrected and the aircraft swung violently to the right. The commander attempted to take over control but found that the co-pilot resisted all his efforts to move the controls. The aircraft became airborne in a semi-stalled condition still turning to the right. The co-pilot released the controls when the aircraft had turned through 90° and was heading towards a house on the aerodrome perimeter.

The commander attempted a climbing turn to the right away from the house but the airspeed was too low. The right wing struck the ground, the aircraft then skidded along the ground and came to rest when the left wing struck a wire fence.

The runway in use was 23 with a wind of six knots from a southerly direction.

No: 10/80

Ref: EW/C704

Aircraft: PZL-104 'Wilga 35' G-BC1C
NO FUEL NO UPPER-BODY RESTRAINT!

Date and time (GMT): 29 June 1980 at 1528 hrs

Location: $\frac{1}{2}$ mile north of Wycombe Air Park (Booker)

Type of flight: Glider towing

Persons on board: Crew - 1 Passengers - 1

Injuries: Crew - 1 (serious) Passengers - 1 (fatal)

Nature of damage: Aircraft destroyed

Commander's Licence: Private Pilot's Licence

Commander's total flying experience: 773 hours (of which 2 hours 30 minutes were on type)

The aircraft had just taken off from Wycombe Air Park on a glider aero-tow. On reaching a height between two and three hundred feet its engine stopped and the tug started to descend. The glider pilot cast off and completed a successful landing on the aerodrome but the 'Wilga' tug struck the tops of high trees during an attempted forced landing in a field and fell inverted onto a public highway. There was no fire but both occupants sustained serious injuries from which one of them died.

The occupants were secured with lap seat belts without upper torso restraint which were fastened on impact. However the central securing ring retaining both belts failed in the crash.

Inspection of the wreckage revealed no pre-crash defect; however, it was ascertained that the aircraft had full tanks when aero-towing commenced and a total of 27 tows were completed without refuelling prior to the last flight. During the previous six weeks it was calculated that the 'Wilga's' average fuel consumption during towing activities varied between 1.2 and 1.8 imperial gallons per tow. On the basis of these figures, the 27 air tows on the day of the accident would have used between $32\frac{1}{2}$ to $48\frac{1}{2}$ imperial gallons. The total fuel quantity in the aircraft was 41 imperial gallons.

The high wing aircraft had projecting underwing fuel gauges visible from the cockpit and were calibrated in litres for two readings; one calibration to be read from the cockpit in flight, and the other from outside when tail-down. According to the pilot's handbook the gauge error is plus or minus eight litres per tank.

No: 10/80

Ref: EW/C699

Aircraft:

Beagle Auster A61 G-ASKJ

PROPELLER BOLTS - LOOSE.

Date and time (GMT): 29 May 1980 at 1730 hrs

Location: Two miles west of Wrotham, Kent

Type of flight: Private

Persons on board: Crew - 1 Passengers - 2

Injuries: Crew - nil Passengers - nil

Nature of damage: Damage to starboard landing gear and propeller

Commander's Licence: Private Pilot's Licence

Commander's total flying experience: 1,020 hours (of which 6 hours were on type)

The aircraft took off from Biggin Hill at 1640 hrs for a local flight towards Headcorn and then back to Biggin Hill via West Malling. Shortly after passing West Malling at 2,000 feet the pilot noticed an engine vibration; he checked the gauges, all were normal, so he reduced RPM from 2100 to 1900. The vibration continued and was bad enough for the pilot to decide it would be wise to make an emergency landing. He had just passed a stretch of motorway under construction and as he considered there were no suitable fields, he turned back towards the motorway. Just prior to the turn he heard a slight bang and felt a thud on the aircraft; he considered that obviously something had become detached. The vibration increased and the pilot positioned the aircraft for a right-hand circuit to land on the motorway in a westerly direction. The approach and landing onto the left-hand lane were made successfully and the aircraft touched down on three points in the centre of the lane. Although during the first part of the ground run the aircraft was under control, at about 25 knots the northerly wind weathercocked it to the right. The aircraft collided with the motorway centre barrier and came to a stop. The pilot and front seat passenger were wearing full upper torso restraint harnesses and no one was injured. On examining the aircraft the pilot noticed that the propeller spinner was missing. He also found that two of the propeller clamping bolts were missing and two others were loose.

Subsequent examination of the propeller hub showed that five of the eight clamping bolts had failed, and all had suffered considerable fatigue damage. This feature is consistent with the clamp bolt nuts being insufficiently torque loaded, permitting the propeller to become loose between the hub and the clamping plate. Unfortunately the propeller was stolen before the aircraft was recovered, so no assessment could be made of the fretting suffered.

No: 10/80

Ref: EW/G80/05/18

Aircraft: Jodel DR1050 G-BGBE
poor Brakes - worn Tailwheel Assy.

Date and time (GMT): 29 May 1980 at 1430 hrs
Location: Great Eversden private airstrip,
Cambridge
Type of flight: Private
Persons on board: Crew - 2 Passengers - nil
Injuries: Crew - nil Passengers - n/a
Nature of damage: Damage to landing gear, propeller and
wing ribs
Commander's Licence: Private Pilot's Licence
Commander's total flying experience: 3,756 hours (of which 87 hours were
on type)

After a normal circuit the aircraft touched down close to the runway threshold. The pilot corrected a slight deviation to the left using the starboard brake and hand brake. As the aircraft regained the runway centre line he applied port brake to straighten out, but the aircraft continued turning to the right, ground looped and ran into a ditch.

Examination revealed the starboard brake to be operating satisfactorily throughout the range of pedal deflection, but the port brake was sufficiently weak in operation that it allowed the wheel to turn when fully applied.

Additionally it was found that the tail wheel assembly was loose and the springs connecting the rudder to the assembly steering arms were slack. As a result the tail wheel was free to swing through an angle of some 45° to 60° either side of the aircraft centreline without any equivalent movement of the rudder.

No: 10/80

Ref: EW/G80/07/04

Aircraft: Piper PA28-140 (Cherokee) G-BCGJ
CARB - IC/NR ??

Date and time (GMT): 10 July 1980 at 1004 hrs

Location: Field, 1 mile north of Marsh Gibbon,
nr Oxford

Type of flight: Training

Persons on board: Crew - 1 Passengers - nil

Injuries: Crew - nil Passengers - nil

Nature of damage: Damage to port and nose landing gear, port
wing and engine cowling

Commander's Licence: Student Pilot

Commander's total flying experience: 43 hours 25 minutes (of which 42 hours
45 minutes were on type, with 10 hours
15 minutes P1 time)

The student was practising steep turns, stalls and forced landings in the Oxford Airport local flying area. After completing one practice forced landing he commenced a second one into a different field from a downwind position at 2,600 feet QNH. He completed the practice checks and at 1500 feet QNH cleared the engine. At 950 feet QNH he commenced overshoot action, selected carburettor heat to cold and applied full power. The engine coughed and the propeller began to slow down and subsequently the engine stopped.

The student prepared to make a forced landing and after completing the forced landing checks made a 'Mayday' call. He then found that he was overshooting his selected field and managed to ease the aircraft over the boundary hedge with the stall warning light on, and touched down in the corn field beyond.

CASI.8/80/.

5. FUEL LEAK FROM DETERIORATED RUBBER PIPE

Aircraft : Rallye MS 880B
Date : June 1980

Fuel starvation caused a forced landing without damage. When the aircraft was next topped up with fuel it was discovered that there was a fuel leak at the rubber joint where the fuel contents sight gauge is connected to the fuel system. This is beneath the trim on the left-hand side of the cockpit. The rubber joint was split and in poor condition. The aircraft was built in 1967; the gauging system was changed on later production aircraft.

CAA Comment:

The pipe should be inspected as required by the maintenance schedule but it is necessary to remove cabin trim to gain access.

No: 10/80

Ref: EW/G80/07/06

Aircraft: Piper PA28-140 (Cherokee) G-AXTB
CARB-ICING PRIOR TO TAKE-OFF??

Date and time (GMT): 13 July 1980 at 1423 hrs

Location: Gallens End Farm, Lambourne End, Essex

Type of flight: Private

Persons on board: Crew - 1 Passengers - 2

Injuries: Crew - nil Passengers - 1 (minor)

Nature of damage: Aircraft destroyed

Commander's Licence: Private Pilot's Licence

Commander's total flying experience: 2,000 hours (of which 200 hours were on type)

The aircraft was climbing after take-off from Stapleford Tawney Aerodrome when at a height of 100 feet and speed of 60 mph the engine lost power and stopped. The pilot maintained his heading and crash landed straight ahead amongst trees and bushes.

When the engine was checked no defects came to light to indicate why it had stopped.

13. NOSEWHEEL STEERING LINK FITTED BACK-TO-FRONT

USE MAINTENANCE
MANUALS !!

Aircraft : Piper PA23 Aztec
Date : May 1980

While taxiing for take-off the pilot felt vibration and nose wheel shimmy through the rudder pedals. He requested inspection as the rudder pedals appeared to be disconnected. Ground staff confirmed that the nose steering link was disconnected. The aircraft was taxied back to the apron using brake and asymmetric power, where a new link was fitted. The link which failed had replaced a damaged link and had only done two flights. It had been fitted back-to-front.

CAA Comment:

The maintenance organisation concerned have accepted responsibility and reimbursed the operator. It is possible to fit the link four different ways, the correct way being shown in the Maintenance Manual.

WHEEL AND BRAKE PROBLEMS

14. Brake Back-Plate Failure

Aircraft : Auster 5D, Registration G-AGLK (applicable to other aircraft of the era)
Date : May 1980
Notifiable Accident at Shoreham

After landing, the right-hand brake locked causing the aircraft to pitch nose-down until the propeller struck the ground.

It was found that the right-hand back plate had fractured allowing the Bendix shoes to try to over-ride each other and thus lock the wheel in a forward direction. The back plates are of aluminium/magnesium alloy, and in view of the age of the aircraft (1944), the reporter suggests the back plates should be regularly tested for deterioration.

CAA Comment:

This is only the second case of back-plate failure which has been reported (see GASIL 9/77 p.6). It is believed that the same parts are used on a number of other aircraft of the same era, and on some home built aircraft. All owners/operators are advised to check for any signs of cracking or deterioration - it may prevent a damaging ground loop or turnover. The CAA is going to issue a Mandatory Inspection to Saywell Service Bulletin RFS/AUS/3 dated 1 July 1980.

15. Wheel Failure

Aircraft : Jodel D120A
Date : May 1980

FREQUENT INSPECTION REQUIRED.
ALL Wheel/BRAKE ASSYS.

While the aircraft was being pushed to the fuel bowser a crack was heard, and the aircraft sagged slightly. It was found that the two-piece main wheel had shed the rim/outer segment allowing the inner tube to force the tyre bead off the wheel.

The reason for this failure was that two of the studs had stripped the threads in the alloy wheel casting and the other three high tensile studs had sheared at about their mid-points. Some time previously two studs had sheared in the other wheel. The aircraft had flown 1732 hours.

In consultation with PFA Engineering the holes were drilled out to $\frac{1}{4}$ in dia, using the outer half as a jig and the wheels reassembled using high tensile bolts with washers and locknuts. The cause could be overtightening of the small diameter nuts onto the studs, since no torque values are available.

CAA Comment:

All owners/operators are advised to check for sheared bolts at regular maintenance intervals.

13. EMPTY FUEL TANK SELECTED

No FUEL !!

Aircraft : Robin HR100/210
Date : May 1980

The aircraft joined the circuit overhead the aerodrome when the pilot made a 'Mayday' call saying that he had an engine failure. The aircraft made a safe landing on the grass area. An inspection by the Duty Engineer found that the fuel cock was selected to an empty tank. The pilot however was under the impression that he had selected a full tank.

CAA Comment:

This incident could have had more serious consequences. Frequent checks on fuel contents and a positive check when making tank selections are essential.

14. THROTTLE CABLE BREAKAGE

Aircraft : Cessna F150J
Date : May 1980

During pre-flight cockpit checks which included exercising the throttle, the throttle actuating arm came free. Examination showed a breakage at the forward end of the lever where the wire enters the Bowden cable.

CAA Comment:

The Cessna Service Manual pertaining to engine controls on Cessna 150 aircraft contains the following inspection requirement:

"Inspect each 50 hrs for general condition and freedom of movement. These controls are not repairable. Replace as required at each engine overhaul."

There is no evidence that the throttle cable had ever been changed on this aircraft although it had flown approximately 6000 hrs. Operators are reminded of the need to add manufacturers' inspection items to their CAA Light Aircraft Maintenance Schedule.

15. TURBULENT TIMES - BEWARE OF BURNING STUBBLE

(TUG PILOTS!!)

Aircraft : DH82 Tiger Moth

The report on this incident arrived at the end of last year's stubble burning season. The aircraft was being flown on a late summer's afternoon, ground temperature 20°C, wind SW at 10 kts and half cover of fair weather cumulus cloud. Without warning the aircraft was thrown about quite violently. On looking round for the cause, the pilot noticed that he was about 2½ miles downwind of a large field of burning stubble. The smoke had dispersed in well under a mile from the heat source, so there was no obvious visible indication. The turbulence covered a considerable area in all directions and although uncomfortable it was not in any way dangerous.

On returning to the aerodrome further stubble burning was seen just over a mile upwind and the pilot thought little more about it until turning on the downwind leg at 800 feet, when severe turbulence was encountered. The feeling was of unusual horizontal air movement as well as the more usual vertical thermal activity. At one stage the ailerons had a brief reversal of control response as though the aircraft was not flying forward through the air. For several seconds the ASI, though fluctuating, indicated nearly 15 mph higher than normal for the power setting. The band of severe turbulence was fairly narrow. The pilot, who has been flying light aircraft for 32 years, noted that in the conditions prevailing at the time, the height of the main turbulence was roughly 700 feet for each mile downwind of the heat source. A heavily laden or low-powered aircraft just after take-off or an aircraft on a full flap overshoot could lose significant climb performance if stubble burning is encountered immediately upwind of the aerodrome.

8. WING PROFILE DISTORTED AFTER PRESSURE TEST

Fuel TANKS DAMAGED

By Pressure Test.!!

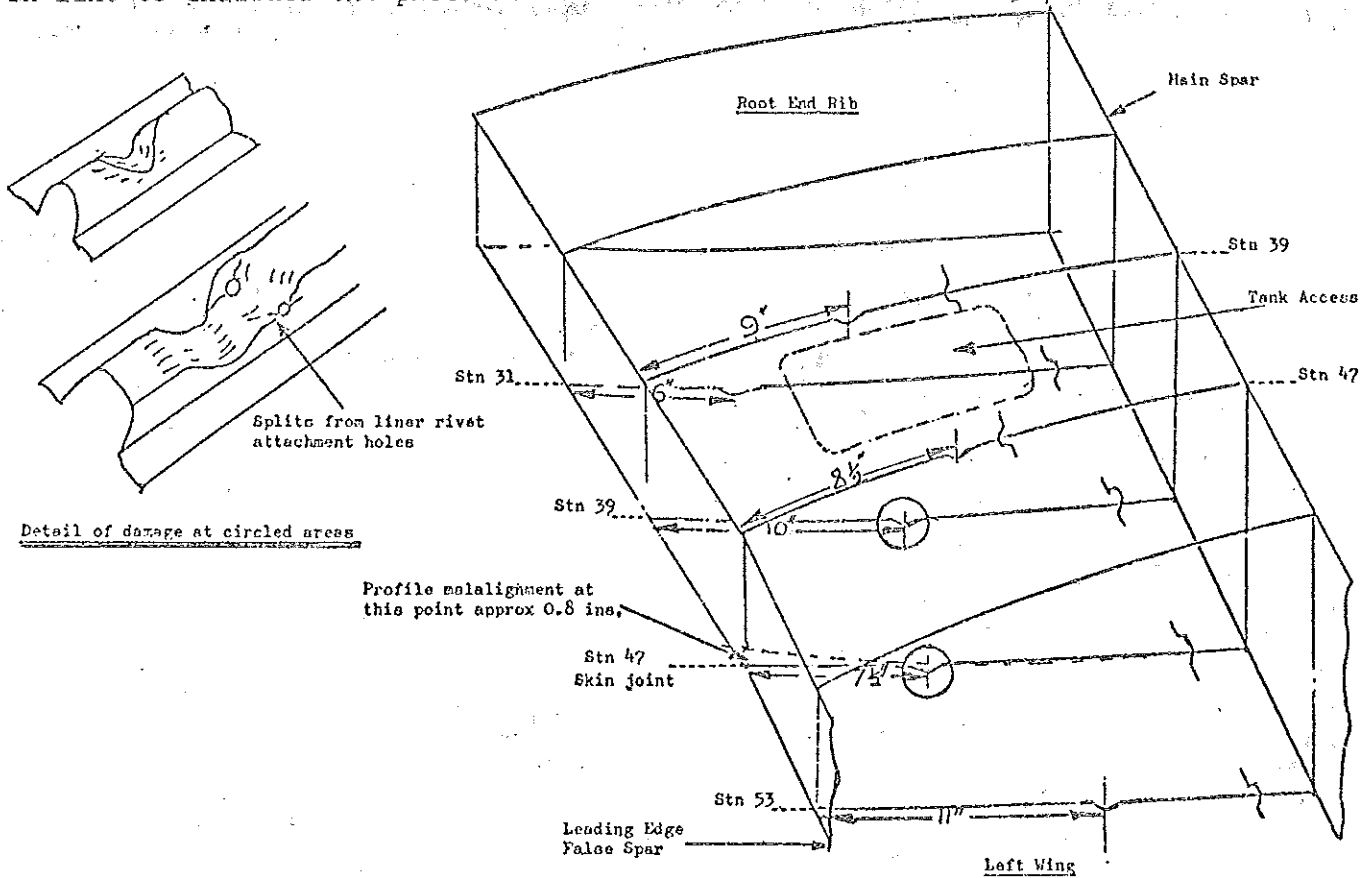
Aircraft : Beech D55 Baron
Date : April 1980

The operator, who has a fleet of Beech D55 Baron aircraft, carries out pressure checks on fuel tanks at 0.5 p.s.i. at 100 hour intervals, in order to test for leakage of fuel filler caps (leakage has in the past led to engine stoppage due to suction in the tank raising the floor of the tank and with it the float gauge arm giving a falsely high fuel contents indication - see GASILS 2/78 p.4 and 2/79 item 1).

After a Check 4 and test flights had been carried out on the subject aircraft, the profile of the underside leading edge skin of the left-hand wing was found to be visibly at variance with the right-hand wing. On checking against profile jigs there was a discrepancy of 0.8 inches at stn. 47 on the left-hand wing leading edge false spar.

The skin and rivetting in this area showed no signs of internal damage being transmitted, apart from out-of-profile stretching. Removal of the left-hand main fuel cell revealed considerable distortion of the bottom tank liner, and the two halves had split the tape at stn. 47. The bottom leading edge formers at stns. 31, 39, 47 and 53 were all deformed (see sketch), and on the top skin the formers at stns. 39 and 47 were also distorted.

An identical defect was found on one of the same operator's Barons in 1972. Beech were positive in that case that the cause was over-pressurisation of the tank bay. The operator, however, was unable to find a record of this having occurred. Both before the 1972 incident and every 100 hrs since, the operator has continued the low pressure checks referred to above, using a foot pump with an open water manometer in line to indicate the pressure so that it does not exceed 0.5 p.s.i.



CAA Comment:

The structural damage remains unexplained. The Safety Data Unit should be informed of any similar cases.

6. BATTERY VENTILATION SYSTEMS

EXTRACTS G.A.S.I.L 7/80

(From FAA General Aviation Alerts -- May 1980)

"The National Transportation Safety Board recently determined probable cause of a fatal accident to have been one or more explosions in the aircraft aft fuselage, resulting in fire and subsequent loss of control capability. The explosions were attributed to hydrogen gas in the tail cone igniting as it was drawn past operating electrical equipment.

During investigation, it was noted that vent hoses to one side of each battery case were not connected. Thus, it was possible for hydrogen gas to pass from the battery to the tail cone area.

In the battery charging process, the charging voltage, at constant current and normal charging rate, increases gradually to slightly above full charge voltage, then increases rapidly from this point unless controlled. This latter portion of the charging cycle is known as the gassing period and is characterized by, among other things, the rapid loss of electrolyte through evaporation and disassociation into free hydrogen and oxygen. Undesirable gassing is normally controlled by voltage regulating devices; however, if these devices malfunction, it is essential that ventilation systems function properly.

Maintenance and inspection personnel should be alert for signs of overcharging and give immediate attention to voltage regulator controls when overcharging is indicated. When batteries are installed or inspected, particular attention should be given to vent systems to be certain that they are in good condition, free of bends and kinks, and properly connected."

7. CONTROL COLUMN JAMMED

Aircraft : Gulfstream American AA-5A Cheetah
Date : May 1980

During a stalling exercise the right-hand control column was moved fully aft. On recovery it became jammed, and was released by the combined efforts of both pilots. It was found that the right-hand column retaining bolt was fouling the ammeter cable. All ammeter wiring and radio installation wiring was subsequently tie wrapped for further clearance, but with the column fully back the wiring is still close to it. A check was made on other aircraft in the school, which were found to be satisfactory.

CAA Comment:

This is a problem that has been highlighted in GASIL several times (eg 6/78 p.3). The control system should be checked for the possibility of fouling electrical wiring, etc, over the whole range of control movement.