Safety Regulation Group
Safety Investigation and Data Department

Follow-up Action on Occurrence Report

ACCIDENT TO YAK 50, G-YAKK, AT NORTH WEALD AIRFIELD ON 22 AUGUST 2003
(PNEUMATIC SYSTEM RESERVOIR BURST AS AIRCRAFT WAS STARTING TO TAXI)

CAA FACTOR NUMBER	:	F14/2004
FACTOR PUBLICATION DATE	:	16 March 2004
OPERATOR	:	Private
CAA OCCURRENCE NUMBER	:	2003/05757
AAIB REPORT	:	Bulletin 2/2004

SYNOPSIS

(From AAIB Report)

A pneumatic system reservoir, pressurised to a nominal 50 kg/sq cm (711 psi), mounted behind the engine bay firewall burst in two as the aircraft was starting to taxi. As well as causing substantial structural and systems damage, parts from the disrupted bottle increased the throttle setting causing the aircraft to accelerate and pitch nose down bringing the propeller into contact with the ground.

The bottle had fractured, at normal pressure, because of severe internal corrosion resulting from the presence of water and the absence of effective surface protection. Water draining procedures appeared inadequate, there appeared to be no published or generally accepted standards for bottle inspection or corrosion protection for aircraft on the UK register and the required five yearly interval for internal inspection and proof pressure checking appeared inappropriate. Similar bottles are used on a number of Eastern Bloc manufactured aircraft operated in the UK and previous cases of failure, due to internal corrosion, have reportedly been caused by 'pinholing' of the reservoir walls, brought about by pitting, and not fracturing. It appears that this relatively benign failure mode may have led to an inappropriate attitude towards the prevention, detection and rejection of corroded bottles. Significant levels of bottle internal corrosion may therefore be widespread on UK registered aircraft. Three safety recommendations addressing this subject were made to the CAA on 2 September 2003.

FOLLOW UP ACTION

The three Safety Recommendations, made by the AAIB following their investigation, are reproduced below, together with the CAA's responses.

Recommendation 2003-101

The CAA, as a matter of urgency, inform all UK operators of aircraft fitted with pneumatic system reservoirs similar to those on the Yak 50 of the possibility of advanced, undetected internal corrosion of the reservoirs and of the potentially catastrophic consequences of a reservoir failure.

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CAA Response

The CAA accepts this Recommendation.

This Recommendation was received on 03 September 2003 and was acted on immediately. Letter to Operators 2464 was issued on 9 September 2003 to all A8-20 organisations and to all owners of Yak, Sukhoi, L29/L39 and Nanchang aircraft owners, alerting them to the possibility of advanced, undetected internal corrosion of such reservoirs and reminding them of the relevant CAA Airworthiness Approval Notes. In addition, details of this incident were publicised in GASIL 4 (General Aviation Safety Information Leaflet) in December 2003.

CAA Status - Closed

Recommendation 2003-102

The CAA, as a matter of urgency, specify a maintenance schedule and procedures for the Yak-50 pneumatic system reservoirs, and similar reservoirs fitted to other aircraft types, aimed at preventing serious internal corrosion and reservoir failure. This should include reservoir draining, inspection, rejection criteria and corrosion protection aspects. It is recommended that the required repeat interval for inspection and proof-pressure testing should be no more than one year.

CAA Response

The CAA partially accepts this Recommendation.

The maintenance schedule for aircraft such as the Yak 50 issued with a Permit to Fly is specified in the individual aircraft's Airworthiness Approval Note (AAN). As regards procedures for the pneumatic system reservoir, the CAA will publish a leaflet in Civil Aircraft Airworthiness Inspections & Procedures (CAP 562) in the first quarter of 2004 giving generic guidance on the operation and maintenance of high-pressure pneumatic systems in aircraft.

To supplement existing material regarding the content of scheduled maintenance tasks and acceptance / rejection criteria for pneumatic reservoirs, the CAA has issued Mandatory Permit Directive (MPD) 2004-004 on 30 January 2004 which clarifies the requirements.

In the absence of specific recommendations by the manufacturer relating to the use of particular corrosion-inhibiting compounds in pneumatic system reservoirs the CAA consider that the clarification in the MPD provides sufficient inspection and test requirements without the need to specify corrosion protection. The CAA has contacted Yakovlev for further advice on this matter. As stated in the MPD, the CAA also considers that the proof-pressure testing of pneumatic system reservoirs should be carried out at periods specifically recommended by the manufacturer or in the absence of such advice at periods not exceeding five years.

CAA Status - Closed

Recommendation 2003-103

The CAA require all UK operators of aircraft fitted with pneumatic system reservoirs similar to those on the Yak-50 to thoroughly inspect, proof-pressure test and effectively corrosion protect the reservoirs as a matter of urgency.

CAA Response

The CAA partially accepts this Recommendation.

To supplement existing material regarding the content of scheduled maintenance tasks and acceptance / rejection criteria for pneumatic reservoirs, the CAA has issued Mandatory Permit Directive (MPD) 2004-004 on 30 January 2004 which clarifies the requirements.

In the absence of specific recommendations by the manufacturer relating to the use of particular corrosion-inhibiting compounds in pneumatic system reservoirs the CAA consider that the clarification in the MPD provides sufficient inspection and test requirements without the need to specify corrosion protection. As stated in the MPD, the CAA also considers that the proof-pressure testing of pneumatic system reservoirs should be carried out at periods specifically recommended by the manufacturer or in the absence of such advice at periods not exceeding five years.

CAA Status - Closed