Suites données aux recommandations de sécurité

Accident du Dyn'Aero MCR01-01 ULC, G-BZXG le 30 décembre 2007 à Burgham Park Golf Course

The pilot and his passenger, who each owned a half-share in the aircraft, were making a short flight between two airfields about 4 nm apart. As the aircraft joined the circuit to land, at a height of around 800 ft there was a "bang" as the tailplane separated and fell to the ground. The aircraft became uncontrollable and descended into trees. The occupants survived the impact but both received serious injuries. The tailphane attachment lugs had failed in upload and metallurgical evidence showed that a stress corrosion mechanism had been present. Two safety recommendations are made.
Rapport technique de l'AAIB
Réception par la DGAC : 12 Février 2009

Recommandation 01

AAIB (extrait)

The tailplane lugs had failed in upload. The mettallurgical evidence showed that stress corrosion had been present, weakening the left lug. The most likely failure mechanism would be for the stress corrosion to develop and caus on side of the left lug to initially fail. A key Factor was that the applied loads were perpendicular to the orientation of the material grain in the failed lug. Other possible contributory factors may have been the deep bearing staking marks, which could have caused increased stress concentration . It was also noted that the left bearing was rotationally tight and showed evidence of corrosion. The new design of Type 3 lugs, in stainless steel and whithout tre requirement for staking the bearing with the attendant stress concentration effect, are designed to eliminate the possibility of a similar failure mechanism. The type1 lug has been in use for up to 12 years, without any reported failures. This design, although having potentially similar issues regarding the staked bearing retention, does have a longitudinal grain direction and so may not be as susceptible to a similar stress corrosion mechanism. However, the type 2 lug is of similar design to the type 3 and, although thicker dimensionally, and therefore able to sustain higher loading, does still have similarities in the method of staking the bearing. As the material grain direction is not specified, its orientation could be unfavourable. The following Safety Recommendations are therefore made :
Safety recommendation 2008-45 It is recommended that the Direction Generale de l'Aviation Civile (DGAC) consider madating the replacement of Type 2 tailplane attachment lugs on all variants of MCR model with a stainless steel replacement as described IN dyn'Aero procedure MEH NO 01, dated 13 march 2008.

Réponse de la DGAC

Suite à l'accident du MCR ULC, le constructeur a publié le 13 février 2008 un premier bulletin service obligatoire (ref. BS 08 B 0034) qui a été repris, pour les avions, par la consigne de navigabilité 2008-002(A) du 27 février 2008 (première diffusion urgente le 14 février 2008) et pour les ULM par la consigne de navigabilité 2008-ULM 001 du 13 février 2008.
Lors d'une réunion de suivi de navigabilité le 5 novembre 2009, il a été décidé que le bulletin de service initial sur les ferrures des MCR serait revu pour permettre d'obtenir une version plus claire et qui répondrait aux recommandations de l'AAIB.
Le BS 08B0034 rev2 a été émis par Dyn Aviation et répond à cet objectif. La consigne de navigabilité F-2012-001r1 impose ce BS pour les avions sous le régime CNSK. La consigne de navigabilité CN 2012-ULM-01 impose ce BS pour les MCR ULM.

Le suivi de cette recommandation est clos.

Degré d'avancement (12 Décembre 2012)

100%

Recommandation 02

AAIB (extrait)

The tailplane lugs had failed in upload. The mettallurgical evidence showed that stress corrosion had been present, weakening the left lug. The most likely failure mechanism would be for the stress corrosion to develop and caus on side of the left lug to initially fail. A key Factor was that the applied loads were perpendicular to the orientation of the material grain in the failed lug. Other possible contributory factors may have been the deep bearing staking marks, which could have caused increased stress concentration . It was also noted that the left bearing was rotationally tight and showed evidence of corrosion. The new design of Type 3 lugs, in stainless steel and whithout tre requirement for staking the bearing with the attendant stress concentration effect, are designed to eliminate the possibility of a similar failure mechanism. The type1 lug has been in use for up to 12 years, without any reported failures. This design, although having potentially similar issues regarding the staked bearing retention, does have a longitudinal grain direction and so may not be as

susceptible to a similar stress corrosion mechanism. However, the type 2 lug is of similar design to the type 3 and, although thicker dimensionally, and therefore able to sustain higher loading, does still have similarities in the method of staking the bearing. As the material grain direction is not specified, its orientation could be unfavourable. The following Safety Recommendations are therefore made :
Safety Recommendation 2008-46 It is recommended that the aircraft manufacturer, Dyn'Aero, should consider informing owners of all variants of MCR models with the Type 2 tailplane attachment lug fitted, as identified from Dyn'Aero Service Bulletin (BS 08 B0034 ISSUED ON 13 February 2008), of the availability of a stainless steel replacement, as describeb in Dyn'Aero Procedure M EH NO 01, dated 13 march 2008

Réponse de la DGAC

Suite à l'accident du MCR ULC, le constructeur a publié le 13 février 2008 un premier bulletin service obligatoire (ref. BS 08 B 0034) qui a été repris, pour les avions, par la consigne de navigabilité 2008-002(A) du 27 février 2008 (première diffusion urgente le 14 février 2008) et pour les ULM par la consigne de navigabilité 2008-ULM 001 du 13 février 2008.
Lors d'une réunion de suivi de navigabilité le 5 novembre 2009, il a été décidé que le bulletin de service initial sur les ferrures des MCR serait revu pour permettre d'obtenir une version plus claire et qui répondrait aux recommandations de l'AAIB.
Le BS 08B0034 rev2 a été émis par Dyn Aviation et répond à cet objectif. La consigne de navigabilité F-2012-001r1 impose ce BS pour les avions sous le régime CNSK. La consigne de navigabilité CN 2012-ULM-01 impose ce BS pour les MCR ULM.

Le suivi de cette recommandation est clos.

Degré d'avancement (12 Décembre 2012)

100%