

Widespread Fatigue Damage: Notice of proposed rulemaking Docket # FAA-2006-24281

Overview

Safair is a Part 121 Operator, operating Boeing, B727/B737, MD80 and Lockheed L382 aircraft, as well as maintaining these models up to D-Level maintenance. The Company is based in Johannesburg, South Africa and has route stations for Operations as well as Maintenance in other parts of the world.

We have a history of operating and maintaining various models of aircraft dating back to 1968. The company currently owns a fleet of 68 aircraft, of which most are on lease agreements, but we operate, control and maintain a mix of 38 aircraft out of Johannesburg.

Some of these aircraft date back to the 1960's, but on average the calendar life of these are closer to 15 years. This also means that some aircraft have, particularly high hours and cycles, and that is where our interest in the WFD NPRM comes in.

The South African CAA also requires us to comply with the Airworthiness requirements of the Air Authority of the origin of the particular aircraft we operate. In this case it is the FAA as we only operate and maintain US manufactured aircraft, Boeing and Lockheed.

Fleet status

The Safair fleet, as stated comprises a number of aircraft that have high cycles when related to the "Service Goal" as proposed in the NPRM. This is of particular concern to us as we have some aircraft that, by model have twice the number of cycles that is proposed as a service life limit. We also own, as a Leasing Company, mostly "older" aircraft and this NPRM, if turned into a Rule, has the potential to seriously affect the future of the company.

Below are some issues on two of the types where we have high Cycles, or are close to the proposed life limit. This is not the case with all our aircraft but our recommendation regarding the life limit, is one that we would like to see applied to all aircraft.

Lockheed L382: Proposal for 20,000 Cycles "Life"

In particular, the Lockheed L382 fleet consists of ten aircraft, and the fleet cycles will, at the proposed compliance date of June 2008, range from plus 5,500 to minus 22,000 Cycles, with only three aircraft below the limit and those three will be at 5,500 Cycles, 946 Cycles and 574 Cycles. As can be seen, this leaves a few months of operation for two more aircraft, and the whole fleet bar for one will have to be grounded. It is easy to see why this is a major concern to Safair. The Lockheed L382 is a major factor in our business as far as income generation is concerned. This type and model generates at least sixty percent of our revenue, and if that fleet is to be grounded, it will have a significant impact on the existence of the company. The model is also, unfortunately a unique one in that there is no replacement aircraft available for that particular market niche that is even remotely comparable in terms of acquisition costs, payload or operating role. What is significant is that we have two aircraft that have almost twice the proposed number of Cycles. One of them has some signs of Multiple Site

Damage, and the other has absolutely none. (Based on the OEM recommended Service Bulletin, specifically targeting WFD in critical structural areas) This supports the understanding that Fatigue is very difficult to predict, but it also underlines the fact that Fatigue is mostly a function of specific operational effort. One airframe can have high cycles associated with high load factors/stresses and show Fatigue Damage, whereas another airframe with the same cycle life and a very low load factor/stressed life can show very little or no signs of Fatigue Damage. The OEM has a programme in place where a severity loading is applied to the Type, and based on the severity loading for a specific operator, the maintenance and inspection programme is modified to compensate for the higher stress levels. This we feel is an adequate and safe approach to take for this aircraft type, based on modern maintenance and NDT techniques.

Boeing MD 80: Proposal for 50,000 Cycles “Life”

Safair has a fleet of 8 MD80 aircraft and the fleet Cycles will be in the range of plus 3,700 to plus 27,600 Cycles. The majority of them will be below 10,000 Cycles and the expected life thereafter is not high considering an annual utilization of around 1,200 Cycles per annum.

What is not clear in this case is the differentiation between the DC9 at 100,000 Cycles and the MD 80 at 50,000 Cycles. The two models share the same Type Certificate and the MD 80 is in essence a DC9 in terms of the structure. We can therefore not really understand the huge difference in the allocation of the two “lives”.

Considerations

Safair fully understand the concern about WFD and the effect it has on aircraft structures. We also fully agree that some additional maintenance is required to establish a baseline status on specific airframes, and ensuing tasks to identify particular fatigue prone areas and follow on development of preventative structural interventions.

We are part of the Lockheed initiative as detailed in Lockheed SB 387-57-84 and 85. These two SB’s have a specific focus on WFD in the area of the center wing. We feel this was excellent work done by Lockheed to evaluate and monitor the impact of WFD. The only limitation to this is maybe that it focuses on the center wing and the rest of the airframe is not subjected to the same level of inspections, however, we feel confident that the OEM has identified the critical area/areas and support their severity factor and maintenance schedule adjustment philosophy.

There are similar and more elaborate SB’s from Boeing as well, and although the SSID and CPCP Programs do not specifically address WFD they do place emphasis on the wider areas of the airframe that will be prone to WFD. These are supplemented by the requirements of the aging fleet program tasks that are already worked into the Boeing maintenance schedules.

In our opinion, the need for more detail and emphasis on WFD is correct. Where we differ from the proposed approach taken by the FAA is that we do not believe that airframes should be “life limited” as groups based on the Type Certificate.

In our experience, the difference in structural integrity of aging airframes lies in their use and abuse during their lives and is largely dependant on the specific load factors that the actual airframe was subjected to.

Conclusion

Safair wish to propose that the Manufacturers, TC and STC Holders look at developing detailed inspections that can be included in the Maintenance Schedules that will identify the onset of WFD in a particular airframe.

These tasks must specify a feedback mechanism to the Manufacturers, TC and STC holders, and that such repair to the damage can be developed up to a point where the airframe is still safe to operate, or it becomes uneconomical to perform the ever increasing inspection requirements.

Safair also does not agree that there should be a "Cycle Life limit" as proposed by the NPRM, based on a global Model system. This we feel will have a major impact on specific fleets and the cost of operating an air carrier without adding to global air safety. While strongly supporting any safety programme in commercial aviation, we feel that the proposed plan may be based on inadequate technical evaluation of the actual operational experience, considering the huge number of older aircraft that have been safely operated well beyond the actual cycles listed in the NPRM.