

Comments Invited

Interested persons are invited to participate in the making of the proposed rule by submitting such written data, views, or arguments as they may desire. Communications shall identify the Rules Docket number and be submitted in triplicate to the address specified above. All communications received on or before the closing date for comments, specified above, will be considered before taking action on the proposed rule. The proposals contained in this action may be changed in light of the comments received.

Submit comments using the following format:

- Organize comments issue-by-issue. For example, discuss a request to change the compliance time and a request to change the service bulletin reference as two separate issues.
- For each issue, state what specific change to the proposed AD is being requested.
- Include justification (e.g., reasons or data) for each request.

Comments are specifically invited on the overall regulatory, economic, environmental, and energy aspects of the proposed rule. All comments submitted will be available, both before and after the closing date for comments, in the Rules Docket for examination by interested persons. A report summarizing each FAA-public contact concerned with the substance of this proposal will be filed in the Rules Docket.

Commenters wishing the FAA to acknowledge receipt of their comments submitted in response to this action must submit a self-addressed, stamped postcard on which the following statement is made: "Comments to Docket Number 2001-NM-366-AD." The postcard will be date stamped and returned to the commenter.

Availability of NPRMs

Any person may obtain a copy of this NPRM by submitting a request to the FAA, Transport Airplane Directorate, ANM-114, Attention: Rules Docket No. 2001-NM-366-AD, 1601 Lind Avenue, SW., Renton, Washington 98055-4056.

Discussion

The FAA has received reports that cracks in the shear webs of the forward engine beams were discovered on certain Learjet Model 31, 31A, 35, 35A (C-21A), 36, and 36A airplanes, which experienced damage while landing. Further investigation revealed that the cracks were caused by repetitive loading of the engine beams during airplane operation (*i.e.*, flight, maneuver, taxi,

and landing). The engine beams are the primary structural elements of the pylon support for each engine. Such cracking, if not corrected, could result in significant structural damage to the engine pylons, possible separation of the engines from the fuselage, and consequent reduced controllability of the airplane.

Explanation of Relevant Service Information

We have reviewed and approved Bombardier Service Bulletin 31-51-2 (for Model 31 airplanes) and Bombardier Service Bulletin 35/36-51-3 (for Model 35 and 36 airplanes); both dated February 1, 2001. These service bulletins include procedures for modifying the drag angles of the fuselage and engine pylons to gain access to the shear webs of the forward engine beams. The modification includes including removing the upper forward drag angles, trimming the slots in the fuselage and pylon skins, creating slots in the drag angles to match slots in the fuselage and pylon skins, grit blasting the radius of the engine shear webs, re-identifying the drag angles, installing new nutplates on the pylon skins, re-installing the upper forward drag angles, fillet sealing the drag angles to the fuselage and engine pylon skins, installing covers on the drag angles, fay surfacing the covers to the drag angles, and fillet sealing the cover edges.

The service bulletins also include procedures for repetitive detailed inspections (using a probe) and general visual inspections of the shear webs of the forward engine beams for cracking. The probe inspection includes grit blasting areas of the shear webs of the forward engine beams, calibrating a micro-ohmmeter, attaching a test probe to the micro-ohmmeter, applying the test probe to the base of the forward and aft shear webs, applying the test probe to the radius of the forward and aft shear webs, inspecting the forward and aft shear webs for visible cracks, applying primer to the grit blasted areas of the shear webs of the forward engine beam, and determining if the resistance values of the probe inspection are within the acceptable limits specified in the service bulletins.

We have also reviewed and approved Bombardier Service Bulletin 31-51-3, Revision 1 (for Model 31 airplanes) and Bombardier Service Bulletin 35/36-51-4, Revision 1 (for Model 35 and 36 airplanes), both dated August 2, 2001. These service bulletins describe procedures for modifying/repairing the shear webs of the forward engine beams. The modification/repair procedures include trimming the upper and lower

flanges of frame 24, measuring the lengths and dimensions of existing cracks in the shear webs of the forward engine beams and reporting the results to the manufacturer, installing the appropriate parts kits, fabricating certain parts, and installing new hardware and a jumper on the conduit located between stringers 6 and 7 on the left side of the airplane. Modification/repair of the shear webs eliminates the need for the repetitive detailed inspections (using a probe) and general visual inspections of the shear webs of the forward engine beams for cracking.

Accomplishment of the actions specified in these service bulletins is intended to adequately address the identified unsafe condition.

Explanation of Requirements of Proposed Rule

Since an unsafe condition has been identified that is likely to exist or develop on other products of this same type design, the proposed AD would require accomplishment of the actions specified in the service bulletins described previously, except as discussed under "Differences Between the Proposed Rule and the Service Bulletins."

Flight With Cracks

Operators should note that, while it is not the FAA's normal policy to allow flight with known cracks, this proposed AD does permit further flight with cracking within certain limits. If the crack size limits are strictly observed and if repetitive inspections are performed at the required intervals, cracks that grow beyond the limits will be detected, and corrective action taken, before they can grow to a size that would create an unacceptable risk of structural failure.

This proposed AD allows flight with crack openings less than 0.03 inch, provided that (1) the crack is not part of multi-site damage, (2) the crack growth is easily detectable, and (3) the established inspection procedures would detect cracked structure at intervals that would permit repairs to be accomplished before the structure's strength falls below ultimate load carrying capability.

Differences Between the Proposed Rule and the Service Bulletins

Although the service bulletins either do not reference repair instructions or specify that operators may contact the manufacturer for disposition of certain repair conditions, this proposed AD would require operators to repair those conditions per a method approved by the FAA.