

National Transportation Safety Board

Washington, D. C. 20594

Safety Recommendation

ADG 2046

Date: September 22, 1988

In reply refer to: A-88-109

Honorable T. Allan McArtor
Administrator
Federal Aviation Administration
Washington, D.C. 20591

On June 22, 1987, a Lockheed L-382-30, S/N 4561, operated by Southern Air Transport, experienced a complete separation of the nose landing gear during landing roll at Wright Patterson AFB in Dayton, Ohio.¹ The airplane was on lease from TransAmerica Airlines and the flight was a scheduled domestic, Part 121, air cargo flight.

Inspection of the nose landing gear assembly revealed a complete circumferential fracture through the steering collar area of the shock strut assembly, P/N 388071-3. Metallurgical examination established that the fracture was the result of progression of a preexisting crack emanating from small corrosion pits on the outer surface of the strut. The preexisting crack was the result of the sequential progression of small fatigue cracks and stress corrosion cracking.

Lockheed-Georgia Company had previously issued service bulletin (SB) 82-448 on September 5, 1979, calling for a one-time inspection for cracks and corrosion in the steering collar area of all P/N 388071-3 nose landing gear strut assemblies. P/N 388071-3 strut assemblies were initially installed on L-382 aircraft serial numbers (S/N) 3501 to 4637. Airplanes manufactured later were equipped with a redesigned strut assembly, P/N 3303591-1, on which cracking and corrosion have not been identified as a problem. The SB cites "about a dozen failures" related to stress corrosion cracking of P/N 388071-3 strut assemblies in commercial and military service. Lockheed SB 82-448 superseded SB 82-288, dated July 28, 1971, and revised the initially suggested compliance time and the inspection and repair techniques. Aircraft records indicate that SB 82-288 had been accomplished on the incident airplane but SB 82-448 had not.

Southern Air Transport owns and operates 17 L-382 airplanes and its maintenance program requires the SB inspection at every other "C" check. (Each "C" check occurs every 3,000 hours of service time.) However, the incident airplane was on lease from TransAmerica Airlines and was being maintained by Southern in accordance with the TransAmerica maintenance program, which did not require compliance with SB 82-448. Recently, Southern Air Transport further modified its

¹For more detailed information, read Field Accident Brief No. 1892 (attached).

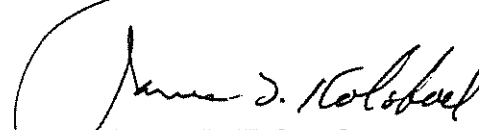
maintenance program to perform the inspections at every "C" check because of other strut assembly fractures, which had resulted in loss of nose wheel steering but not gear collapse.

This incident highlights the variance of in-house maintenance practices between operators in complying with SB recommendations. The incident also reveals a shortcoming in SB 82-448 in that it does not provide for recurrent inspections. The Safety Board is concerned that other L-382 airplanes with P/N 388071-3 strut assemblies could develop cracks that propagate to failure even though SB 82-448 has been accomplished.

Therefore, the National Transportation Safety Board recommends that the Federal Aviation Administration:

Issue an airworthiness directive for Lockheed L-382 airplanes with P/N 388071-3 nose landing gear strut assemblies requiring periodic inspections to detect cracking in the steering collar area at intervals that will preclude the cracking from reaching a critical size and causing failure of these struts. (Class II, Priority Action) (A-88-109)

KOLSTAD, Acting Chairman, and BURNETT, LAUBER, NALL, and DICKINSON, Members, concurred in this recommendation.


By: James L. Kolstad
Acting Chairman

Brief of Accident (Continued)

File No. - 1892 6/22/87 DAYTON, OH A/C REG. NO. N20ST Time (Lcl) - 1256 EDT

Occurrence #1 NOSE GEAR COLLAPSED
Phase of Operation LANDING - ROLL

Findings(s)

1. LANDING GEAR, NOSE GEAR - FAILURE, TOTAL
2. MAINTENANCE - INADEQUATE - COMPANY/OPEKATOR NGHT
3. LANDING GEAR, NOSE GEAR - SEPARATION
4. MAINTENANCE, SERVICE BULLETINS - DISREGARDED - COMPANY/OPEKATOR NGHT
5. LANDING GEAR, NOSE GEAR - FATIGUE

-----Probable Cause-----

The National Transportation Safety Board determines that the Probable Cause(s) of this accident is/are findings(s) 1,3,5

Factor(s) relating to this accident is/are findings(s) 2,4