

NATIONAL TRANSPORTATION SAFETY BOARD  
WASHINGTON, D.C.

LOG 1225

ISSUED: September 4, 1980

Forwarded to:

Honorable Langhorne M. Bond  
Administrator  
Federal Aviation Administration  
Washington, D.C. 20591

SAFETY RECOMMENDATION(S)

A-80-82 through -84

On July 28, 1980, an Aerospatiale Lama 315B helicopter, N67103, crashed and burned near Dillon, Montana. The pilot was killed. The aircraft had just lifted a 1,000-lb external sling load and was transitioning to forward flight when directional control was lost. The aircraft descended rapidly while rotating about its vertical axis, and crashed.

Subsequent disassembly and inspection of the main transmission revealed that the lower vertical bevel pinion gear (PN 319A62-01-010-0), which meshes with the tail rotor quill gear, was free to rotate on the vertical shaft (PN 319A62-02-009) splines. The gear and shaft splines were stripped and the pinion gear retaining nut was loose. The stripped splines resulted in loss of continuity in the tail rotor gear train. The transmission had accumulated about 400 hours since its third overhaul. The normal overhaul interval is 1,200 hours. A detailed metallurgical examination of the pinion gear and shaft is planned.

On August 10, 1980, the Safety Board was notified that another 315B helicopter, belonging to the same operator, was reported to have excessive free play in the tail rotor drive gear train within the main transmission. Subsequent disassembly of this transmission, under the supervision of Safety Board field investigators, revealed excessive wear on the pinion gear and shaft splines and a loose retaining nut. The transmission had accumulated about 700 hours since its third overhaul.

The Safety Board is concerned that other main transmissions installed on these model helicopters may have excessive wear in the area of the gear/shaft splines. The manufacturer has indicated that more than 0.25 inch of radial free play measured at the tail rotor drive output flange should be considered excessive, and on August 14, 1980, issued a telegraphic bulletin to all operators of 315 Lama and 316B, 316C, and 319 Allouette III helicopters recommending an inspection procedure that will reveal excessive wear in the area of gear/shaft splines.

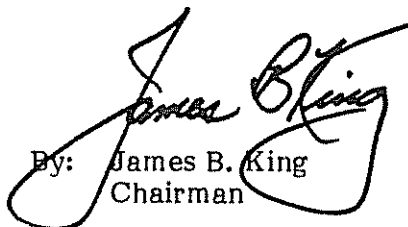
Therefore, the National Transportation Safety Board recommends that the Federal Aviation Administration:

Issue a telegraphic Airworthiness Directive to require immediate compliance with the tail rotor drive system inspection criteria specified in the telegraphic bulletin issued by the Aerospatiale Helicopter Company on August 14, 1980. The inspection is applicable to the 315 Lama and 316B, 316C, and 319 Alouette III model helicopters. (Class I, Urgent Action) (A-80-82)

Based on the results of the initial inspection specified in the manufacturer's telegraphic bulletin, consider a requirement for an inspection for excessive radial motion in the tail rotor drive system as part of the existing preflight inspection. (Class II, Priority Action) (A-80-83)

Notify all main transmission overhaul facilities of these two occurrences and emphasize the need for strict adherence to the manufacturer's buildup instructions for pinion gear installation and proper torquing of the retaining nut. (Class II, Priority Action) (A-80-84)

KING, Chairman, McADAMS, GOLDMAN, and BURSLEY, Members, concurred in these recommendations. DRIVER, Vice Chairman, did not participate.

  
By: James B. King  
Chairman