

 National Aeronautical Laboratory	Documentation Sheet	Document Classification Restricted
Title : Failure of Cheetah Helicopter Body Structure at Mixing Unit Attachment		Document No. PD MT 8825 Date of issue: Dec. 1988
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Division : Materials Science		No. of copies: 12
External participation :		NAL Project No. MT-9-001, MT-1-167
Sponsor :		Sponsor's Project No.
Approval : V. Ramachandran		
Remarks :		
Keywords : Cheetah helicopter, mixing unit attachment, lug joint, fatigue crack, flexural load.		
Abstract : In Cheetah helicopters, the mixing unit assembly is a critical part of the flight control system. It is held through fasteners to four lugs which are welded to two horizontal members of the tubular frame. The tubular frame is charged with nitrogen gas under pressure. Development of a crack in the tubular structure results in nitrogen gas leak which can be detected by a tell-tale indicator. In a few Cheetah helicopters flying at high altitudes, gas leakage at the welded joint of a lug has been reported. One such joint was examined in detail. Microscopic examination confirmed the presence of a crack on the tube wall, directly below the lug. Investigation revealed that the tube had cracked by fatigue due to excessive flexural load.		