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Title : STRUCTURAL STATIC TESTING OF LCA RUDDER

Author : M.A. FAROOK, R.GOPALAN, M. SUBBA RAO, B.RAMANIAH  
O.PRABHAKARAN NAIR, G.R.SUSHEELA, H.V.RAMACHANDRA

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Abstract :

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Structural static strength test was conducted on the CFRP Composite Co-cured rudder for LCA, to demonstrate the structural integrity of the rudder and to experimentally determine the deflections and strains at selected locations and to correlate the test values with those obtained by theoretical analysis.

The rudder was loaded upto the limit load (2614.0 kgs) and a limit reaction load (652.2 kgs) was also simultaneously applied. The load Vs deflection / strain behaviour was obtained. The rudder successfully withstood the limit load without any failure and the corresponding maximum tip deflection was 37.16 mm. The maximum strain recorded was 1998 micro strain on the shear web of the front spar of the rudder. The torque monitored on the link rod was 3874.20 N-m and the applied torque was 3675.17 N-m. Both the deflections and strains were well within design requirements. It was therefore concluded that the structural behaviour of the rudder is satisfactory and it was cleared for flight trials. This report deals with the results of the static testing of the rudder.