



**National
Aeronautical
Laboratory**

Documentation Sheet

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RESTRICTED

Title : WING AND FIN LOAD CHARACTERISTICS OF
1/15 SCALE LCA SGE 26D FLOW THROUGH
MODEL TESTED AT 8' x 8' TRANSONIC
WIND-TUNNEL, CALSPAN U.S.A.

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Abstract : Experimental study has been made on the 1/15 scale LCA SGE26D model in the 8' x 8' CALSPAN transonic wind tunnel USA to determine normal load characteristics of metric wing and fin at Mach numbers of 0.5 to 1.3 in the angle of attack and angle of side slip range of -5 to 35 deg and -10 to 10 deg respectively. Effects of deployment of leading edge slat, deflection of elevons, rudders and installation of medium range missiles on these characteristics were studied.

A new calibration method which reduces the systematic errors by a factor of 20 over the traditional global linear least square method (used to fit calibration data) has been employed for the evaluation of normal load.

The result show that the wing load sharing varies from 64% at subsonic speeds to about 70% at transonic speeds. Further the deployment of leading edge slat has negligible effect on the sharing. Consistent trends in the measurement of wing normal load have been observed with regard to deflection of rudder, effects of side slip and installation of medium range missile.

Fin develops about 50% of model side force under side slipping conditions. With rudder deflection the fin load sharing varies from 80 to 180% depending on α and M_∞ . Correct trend in side force measurement was found with regard to anti symmetric deflection of elevons.