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Title : Static Analysis of Rotodomed Aircraft Using ASKA - Vertical Gust Load Case (V_g)

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Abstract : Stress analysis of an assemblage of HS-748 fuselage, pylons and platform is carried out employing relatively coarse finite element model, using ASKA (Automatic System for Kinematic Analysis) software package. Extensive results were earlier obtained by the NAL project team adopting a fine mesh using Automatic Multi-Stage Sub-structure (AMSS) scheme of CSA/NASTRAN (Nasa STRuctural ANalysis) software package for Symmetric Vertical Gust Load case (V_g). Deflection values obtained from simple beam analysis of some of the platform members were also reported.

The static analysis presented in this document has two distinct highlights. Firstly, the program package ASKA is used instead of NASTRAN and secondly the total number of nodes are determined at such that single step analysis can reasonably be performed without resorting to sub-structure scheme. The results namely displacements and stresses are presented in the form of tables and plots of deformed shapes.

Incidentally, during the course of the analysis a bug in the CSA/NASTRAN was detected namely the stress recovery for the BAR (beam) elements having linearly varying offset centroidal axis was largely erroneous. The revised results just obtained by the project team introducing constant offset of centroidal axis for all BAR (beam) elements are in good agreement with ASKA results presented in this report.