DATA ITEM DESCRIPTION

Title: FLUTTER ANALYSIS REPORT

Number: DI-MISC-81390A
Approved Date: 20070927
AMSC Number: F9006
Limitation: N/A
DTIC Applicable: No
GIDEP Applicable: No
Office of Primary Responsibility: 11 (ASC/ENFS)
Applicable Forms: N/A

Use/Relationship: The Flutter Analysis Report will be used to document the determination of the air vehicle aeroelastic and aeroservoelastic characteristics. The principal use is to substantiate that the air vehicle meets the design requirements for the prevention of aeroelastic and aeroservoelastic instabilities.

a. This Data Item Description (DID) is applicable to any contract where flutter analysis is required.

b. This DID contains the format, content, and intended use information for the data deliverable resulting from the work task described in the contract.

c. DI-MISC-81390A supersedes DI-MISC-81390.

Requirements:

1. Reference Documents. The applicable issue of the documents cited herein, including their approval dates and dates of any applicable amendments, notices and revisions, shall be as specified in the contract.

2. Format. The Flutter Analysis Report shall be in the contractor's format.

3. Content. This report shall contain, when applicable, results of the following:

   a. Flutter analyses of the air vehicle including control surfaces.

   b. Aeroservoelastic analyses.

   c. Panel flutter analyses.

   d. Control surface buzz analyses.

   e. Whirl flutter analyses.

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f. Divergence analyses.

g. Component flutter analyses, other than control surfaces, which are exposed to the airstream.

h. Flutter analyses of the air vehicle with external stores.

3.1. Analyses results for both normal and design failure conditions shall be presented. The methods used in the analyses shall be clearly described. The methods of representing the inertial and elastic characteristics (such as the finite element structural model used), as well as the methods of representing the aerodynamic forces and flight control augmentation system effects, shall be described in detail.

3.2. Presentation of results shall include:

a. Representative plots of mode shapes and frequencies of the structural modes used in the flutter analyses.

b. Representative plots of damping coefficient, g, and variation in frequency of each mode versus air speed.

c. Plots or tables of flutter speed versus the variation in important parameters resulting from parametric studies.

d. Summary plots showing predicted flutter speed and air vehicle limit speed versus Mach number for various altitudes.

e. Root locus plots, Nyquist plots, or other suitable stability presentation forms for aeroservoelastic analysis results.

3.3. Where the approach to flutter substantiation involves supporting test effort (model tests, ground vibration tests, flight control augmentation system ground tests, and other tests that have been completed), their interpretation and relation or correction to the analyses results shall be presented or included.

4. End of DI-MISC-81390A