



## Propulsion System Structural Integration and Engine Integrity Editorial

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IN September 1974, a Symposium was held at the Naval Postgraduate School on the topic of Propulsion System Structural Integration and Engine Integrity. Critically reviewed papers, which were selected from the Symposium, appear in this special issue of the *Journal of Aircraft*. The persons involved with the Symposium are listed above except for O. H. Johnson of the Naval Air Systems Command. Dr. Johnson was a member of the Symposium Committee prior to his retirement. There were nine sponsors who are identified by their shields appearing here.

Among our regular subscribers to the *Journal of Aircraft* we have engineers who have deep interest in this issue. Other subscribers are not involved with propulsion, but with, say, aircraft navigation. These subscribers will not be enthusiastic about this special issue. Assurance is given to these subscribers that the total pages of the *Journal of Aircraft* devoted in 1975 to the broad range of air-

craft technology are not diminished by this special issue. It is a bonus to subscribers.

Many of the current problems in aircraft gas turbines involve the mechanical integrity of the engine and related components, e.g., the blades and disks. There are several approaches to improving propulsion system life and to reducing costs. The most direct is to build long life into the initial engines. Computers make feasible involved calculations for loads, stresses, deflections, etc. Computer programs, which have been and are being developed, provide valuable insight to potential problem areas and greatly facilitate the design process. Testing techniques are becoming more realistic; e.g., externally exciting vibrations in an engine while in the test stand to determine resonances and responses. Closely related to testing techniques is instrumentation; in recent times there have been new instruments developed and old instruments improved. Test-

ing philosophy is dictated largely by MILSPECS and the PFRT/MQT procedure. A new approach to testing may yield better assurance of the propulsion system reliability.

Information exchange was a goal of the Symposium. This special issue of the *Journal of Aircraft* should become a benchmark in the scientific and engineering literature on engine integrity and propulsion system structures.

The papers contained in this issue constitute an unique collection of information. Attention has been focused on a serious and continuing problem in propulsion system development and, hence, in aircraft development. This issue of the *Journal of Aircraft* may well stimulate new concepts and motivate new research efforts by providing the background and current state-of-the-art as a prelude to technological advances.

In colleges of engineering, a feature which sets apart a high-quality, distinctive course from the run-of-the-mill,

somewhat mediocre course is the introduction of material relevant to current and future engineering activity. The information presented in this special issue provides source material on oft-neglected topics. Many standard course offerings can be enriched by introduction of the problems and solutions presented herein. To assemble similar information from the diverse engineering and scientific literature would require many, many hours of effort by the professor. In fact, some colleges of engineering may want to offer electives involving the marriage of propulsion, materials science, dynamics and structures; this issue is a suitable textbook or supplemental text.

Allen E. Fuhs  
Editor-in-Chief  
Symposium Chairman

