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Bibliography on Aerodynamics of Airframe/Engine Integration of High-Speed Turbine-Powered Aircraft

Volume I

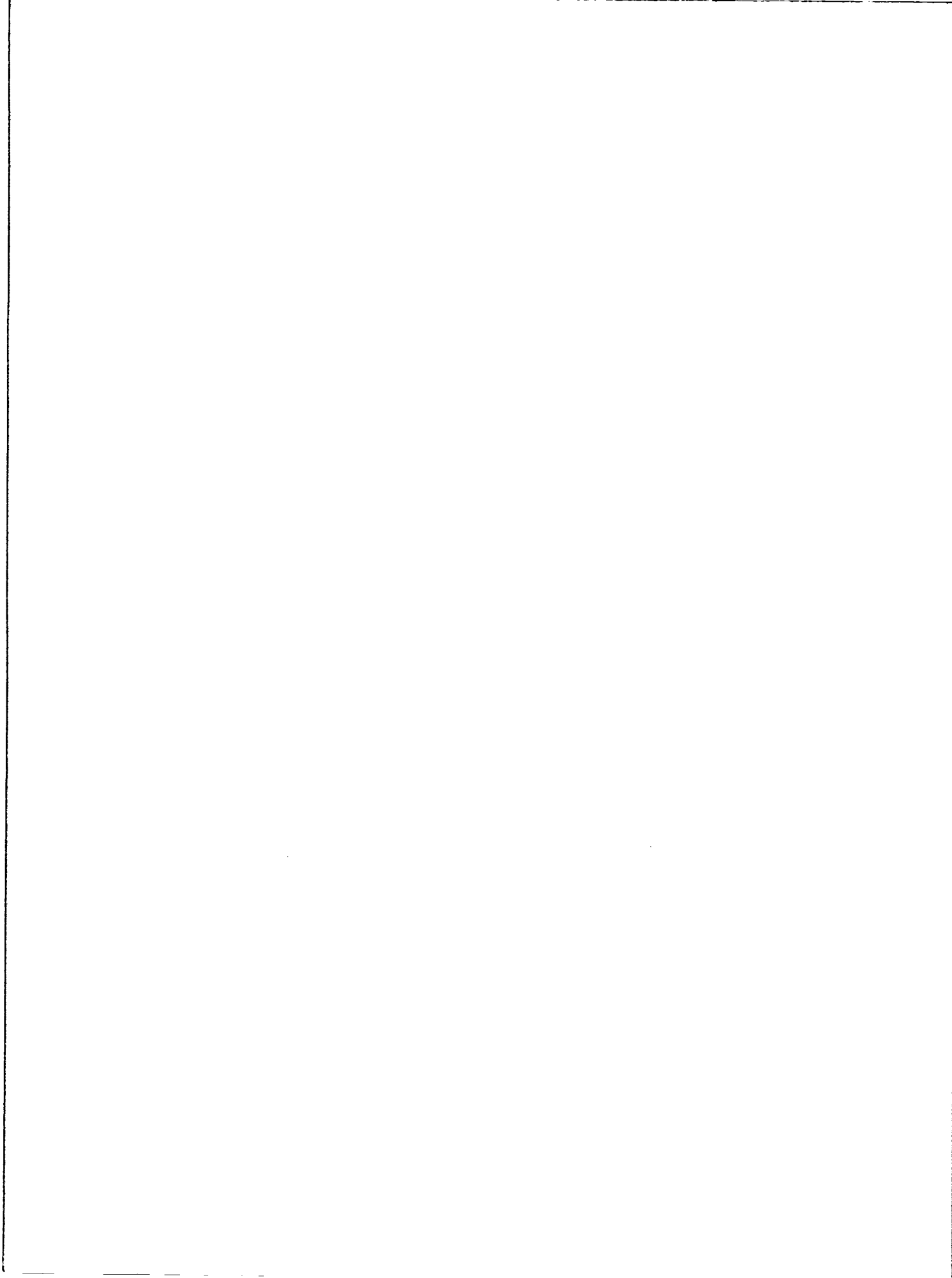
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Mark R. Nichols

NOVEMBER 1980





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Bibliography on Aerodynamics of
Airframe/Engine Integration of
High-Speed Turbine-Powered Aircraft

Volume I

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INTRODUCTION

Airframe-engine integration gained general recognition somewhat before World War II as an independent specialty field of the aerodynamicist. A number of excellent books written in the following decade, such as "Aerodynamics of Propulsion" by Küchemann and Weber, "Principles of Jet Propulsion and Gas Turbines" by Zucrow, and "Aerodynamic Drag" by Hoerner (refs. 1 to 3), devoted extensive attention to the explanation and correlation of propulsion-system installation information accumulated during the war years. The post-war period saw rapid changes in this vital area which accompanied the intensive development of the high-speed turbine-powered airplane. An extensive search of the literature, however, has failed to uncover any single document which covers the extensions of the art of airframe-engine integration in a completely satisfactory manner from an educational viewpoint. As a result, some consideration has been given to the development of a monograph on the subject. The first step in this effort has been the compilation of the present bibliography, which is being published at this time because of its potential value to the advanced student and the researcher.

The bibliography is limited to coverage of engine-integration problems of the high-subsonic-cruise airplane, the supersonic-cruise airplane, and the maneuvering fighter. Problems unique to VTOL and hypersonic aircraft are not covered in this compilation. Most of the documents listed were published after 1955. Extensive bibliographies of earlier internal-aerodynamics research are given in references 4 and 5. Other more current bibliographies, which overlap the objectives of the present one or supplement it in specialized areas, are presented in references 6 to 13.

The primary objective in the development of the present bibliography was to locate documents concerned with the aerodynamic problems and interferences encountered in the process of airframe-engine integration. Less intensive searches were conducted relative to the individual elements of the overall propulsion system. The goal in the first case was reasonably complete coverage of the available literature, whereas that in the second case was merely sufficient coverage to explain the characteristics of isolated system components. Classified references and unclassified documents published by or for the services and intended for use by government agencies only or government agencies and their contractors only are not included in this listing. Both classes of documents frequently contain the basic data and back-up studies on which the related open-literature studies are based; consequently, they may be of great interest to the person attempting to understand or use the open-literature documents. In most cases, they can be obtained only by direct request to the originating agency. A listing of unclassified documents pertinent to this bibliography but available to government agencies only or to government agencies and their contractors only is presented in Volume II of the present compilation.

The bibliography is organized into the categories specified in the Contents, which follows a possible topic outline for a monograph on airframe-engine integration. Annotation obviously would be of help to the user but was considered impractical because of the length of the listing. The need for annotation is alleviated to some extent, however, by use of a detailed topic breakdown, coupled with careful assignment of documents within this structure. The primary contents of each such document is indicated adequately for most purposes by the combination of its title and its location within the framework of the bibliography. An attempt was made to list each document only once, in the category to which it is considered most pertinent. Sometimes this approach was not practical because of extensive coverage by a given document of two or more subjects or the lack of coverage of a given subject if relevant documents were all listed in other areas. In such instances, the document has been listed in each category of pertinence.

An explanation of the order of listing of documents in the bibliography may be helpful to the user. When a variety of material was covered by a category identified in the Contents, the books and papers presented thereunder were divided, wherever practical, into topic-related subgroups. Documents that provided broad coverage or appeared particularly useful for the purpose of explaining principles or phenomena generally were listed at the beginning of the identified category, or, if more pertinent, at the beginning of one of its subgroups. Documents within a subgroup, except for minor deviations occasioned by such factors as relationship of content or common authorship, were presented in approximately reverse chronological order. Exact reverse chronological listing was not achievable because of the continuing process of reissuance of papers in upgraded form. For most entries, the accession number on the last line indicates the number by which the document can be ordered from the following address:

NASA Scientific and Technical Information Facility
P.O. Box 8757
B. W. I. Airport, MD 21240

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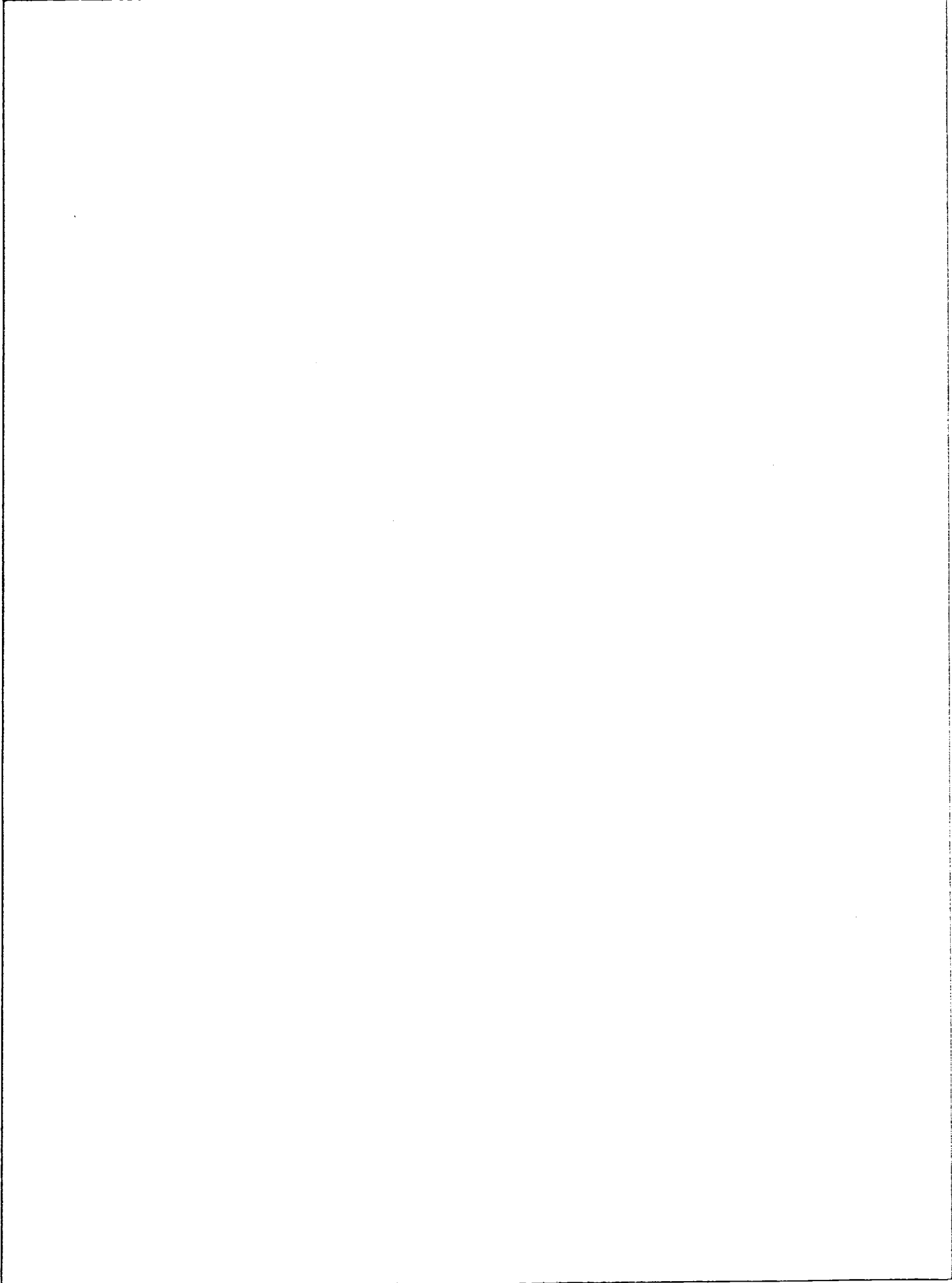




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