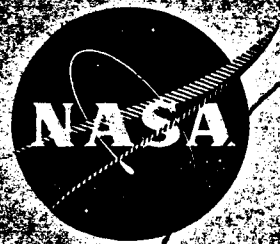


NASA CR-134751  
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N75-21668  
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(NASA-CR-134751) LIFE PREDICTION OF  
MATERIALS EXPOSED TO MONOTONIC AND CYCLIC  
LOADING: BIBLIOGRAPHY (Martin Marietta  
Aerospace, Orlando, Fla.)

LIFE PREDICTION OF  
MATERIALS EXPOSED TO MONOTONIC AND  
CYCLIC LOADING - BIBLIOGRAPHY

By James L. Carpenter, Jr., Nestor Moya, and William F. Stuhrke

MARTIN MARIETTA AEROSPACE  
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LEWIS RESEARCH CENTER  
AEROSPACE SAFETY RESEARCH AND DATA INSTITUTE  
CLEVELAND, OHIO 44135

George Mandel, Project Manager

Contract NAS 3-17640  
January 1975

1. Report No. NASA CR-134751	2. Government Accession No.	3. Recipient's Catalog No. <i>N75 A668</i>
4. Title and Subtitle LIFE PREDICTION OF MATERIALS EXPOSED TO MONOTONIC AND CYCLIC LOADING - A BIBLIOGRAPHY	5. Report Date January 1975	6. Performing Organization Code
	7. Author(s) James L. Carpenter, Jr., Nestor Moya, and William F. Stuhrke	8. Performing Organization Report No. OR 13,320
9. Performing Organization Name and Address Martin Marietta Aerospace Orlando, Florida 32805	10. Work Unit No.	11. Contract or Grant No. NAS 3-17640
	12. Sponsoring Agency Name and Address National Aeronautics and Space Administration Washington, D. C. 20546	13. Type of Report and Period Covered Contractor Report
14. Sponsoring Agency Code		
15. Supplementary Notes Project Manager: George Mandel Aerospace Safety Research and Data Institute, Lewis Research Center, Cleveland, Ohio 44135		
16. Abstract <p>This <u>Bibliography</u> is comprised of approximately 1200 reference citations related to the mechanics of failure in aerospace structures. Most of the references are for information on life prediction for materials exposed to monotonic and cyclic loading in elevated temperature environments such as that in the hot end of a gas turbine engine. Additional citations listed are for documents on the thermal and mechanical effects on solar cells in the cryogenic vacuum environment; radiation effects on high temperature mechanical properties; and high cycle fatigue technology as applicable to gas turbine engine bearings.</p> <p>The bibliography represents a search of the literature published in the period April 1962 through April 1974 and is largely limited to documents published in the United States. It is a companion volume to NASA CR-134750, Life Prediction of Materials Exposed to Monotonic and cyclic Loading - A Technology Survey.</p> <p style="text-align: center;">Reproduced by <b>NATIONAL TECHNICAL INFORMATION SERVICE</b> US Department of Commerce Springfield, VA. 22151</p> <p style="text-align: right;"><b>PRICES SUBJECT TO CHANGE</b></p>		
17. Key Words (Suggested by Author(s)) Anagnosis Methods Bearings Bibliographies Creep Cyclic Loads Environmental Effects	Gas Turbine Engine High Temperature Life Prediction Low-Cycle Fatigue Thermal Fatigue	18. Distribution Statement  Unclassified - Unlimited
19. Security Classif. (of this report) Unclassified	20. Security Classif. (of this page) Unclassified	

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## FOREWORD

This Bibliography is comprised of approximately 1200 reference citations related to life prediction of materials in the environments defined in the Introduction. The literature search which resulted in the bibliography was begun as a part of NASA Lewis Research Center Contract NAS 3-16681 and continued under Contract NAS 3-17640.

The purpose of this publication is to provide, in easy reference form, a survey of the pertinent literature published in the period 1962-1974. Documents referenced that are dated earlier than this period have been included because of the frequency of their citation as referenced, usually because they are regarded as "classics". It therefore provides a basis for broadening the information base produced for the Aerospace Safety Research and Data Institute.

It is recognized that the bibliography is an incomplete listing as any bibliography for such a broad subject must always be. Nevertheless, it is hoped that it will contribute as a guide to those who seek related information. This Bibliography is a companion volume to NASA CR-134752, Life Prediction of Materials Exposed to Monotonic and Cyclic Loading – A Technology Survey.

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## INTRODUCTION

This bibliography contains more than 1200 reference citations pertaining to life prediction for materials exposed to monotonic and cyclic loading in a selected environment. These reference citations document the work and conclusions of more than 1500 specialists working on the life prediction of aerospace structural materials subject to creep, low-cycle fatigue, and thermal fatigue. Particular areas of emphasis include the thermal-mechanical environment of the hot end of the gas turbine engine and the initiation and propagation of fatigue cracks in smooth and precracked specimens. Other areas included are the interactions between creep, fatigue, and the environment at elevated temperatures, thermal and mechanical fatigue effects on solar cells in the cryogenic vacuum environment, radiation effects on high temperature mechanical properties, and high cycle fatigue technology as applicable to gas turbine bearings.

The bibliography is comprised of citations previously published in NASA CR 121202 under NASA Contract NAS 3-16681 and new citations resulting from significant research of the primary subject under NASA Contract NAS 3-17640. All references are listed alphabetically using the surname of the principal author. When an author could not be identified, a corporate source is cited. The last section of the bibliography is a complete author index, including the names of co-authors.

Each entry includes the author or corporate source, the title, a publication source, and the date. The format used is unique to the purpose of the bibliography. All entries preceded by an asterisk (\*) are included in the Aerospace Safety Research and Data Institute data base, i.e., ASRDI Forms 102A were completed for them. The remaining citations are either references cited by authors whose work has been abstracted or are valid references that could not be researched under the current contract because of funding limitations. When it could be readily established, the entry has been qualified to show its availability from one or more of the several government or government-sponsored information distribution centers:

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1. Author(s)
2. Title
3. Original source, i.e., technical report number of proceedings, journals, etc.
4. Date of publication
5. Alternative source

A particular effort has been made to highlight the date of publication because of its relevance in a field of research that is continually changing.

In general, the source for all references is an activity in the United States of America. It is recognized that considerable Russian, Japanese, and British literature exists in this subject area and that only a fragment of it is referenced. The problem of translation is a constraint, but more significantly, time did not permit an adequate survey of foreign literature of interest.

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Life prediction of materials exposed to monotonic and cycle loading – The works of experts in the life prediction of materials subject to creep, low-cycle fatigue and thermal fatigue are represented. Particular areas of emphasis include the thermal/mechanical environment of the hot end of the gas turbine engine and the initiation and propagation of fatigue cracks in smooth and precracked specimens. Other areas included are the interactions between creep, fatigue, and the environment at elevated temperatures; thermal and mechanical fatigue effects on solar cells in the cryogenic vacuum environment; radiation effects on high temperature mechanical properties; and high cycle fatigue technology as applicable to gas turbine engine bearings.



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