Effects of Environment and Complex Load History on Fatigue Life

ASTM STP 462

AMERICAN SOCIETY FOR TESTING AND MATERIALS

EFFECTS OF ENVIRONMENT AND COMPLEX LOAD HISTORY ON FATIGUE LIFE

A symposium
presented at the
Fall Meeting
AMERICAN SOCIETY FOR
TESTING AND MATERIALS
Atlanta, Ga., 29 September–4 October, 1968

ASTM SPECIAL TECHNICAL PUBLICATION 462

List Price $22.00

AMERICAN SOCIETY FOR TESTING AND MATERIALS
1916 Race Street, Philadelphia, Pa. 19103

Library of Congress Catalog Card Number: 73-89676
SBN 8031-0050-7

NOTE

The Society is not responsible, as a body,
for the statements and opinions
advanced in this publication.

Printed in Lutherville-Timonium, Md.
January, 1970

Foreword

The Symposium on Effects of Environment and Complex Load History on Fatigue Life was presented at the Fall Meeting of ASTM held in Atlanta, Ga., 29 September–4 October, 1968. Committee E-9 on Fatigue sponsored the symposium. M. S. Rosenfeld, U.S. Naval Air Engineering Center, was responsible for the session on Cumulative Damage and Life Estimation. S. R. Swanson, MTS Systems, was responsible for the session on Fatigue Under Random Loads. D. W. Hoeppner, Battelle Memorial Institute and R. I. Stephens, University of Iowa, were responsible for the two sessions on Influence of Environment on Fatigue.

Related ASTM Publications

Structural Fatigue in Aircraft, STP 404 (1966), $18.50

Fatigue Crack Propagation, STP 415 (1967), $30.00

Low Cycle Fatigue Bibliographic Survey, STP 449 (1968), Microfiche, $3.00

Fatigue at High Temperature, STP 459 (1969), $11.25

Contents

Introduction

In keeping with a well established precedent, Committee E-9 on Fatigue again sponsored a triennial symposium on aircraft structural fatigue problems at the Fall Meeting held in Atlanta, Ga., 29 Sept.–4 Oct. 1968.

Previous symposia have concentrated on the basic mechanism of fatigue, the effects of stress concentrations, and the behavior of full-scale structural assemblies and components under simulated service loadings.

This symposium was divided into three broad categories: (1) cumulative damage; (2) random load effects; and (3) the effects of corrosive environments.

In general, the papers in the first two categories approach the basic problem of life estimation in a more rational manner than heretofore. The papers on the effects of corrosive environments reflect the current concern with the superposition of environmental simulation on the fatigue problem.

M. S. Rosenfeld

Research Aerospace Engineer,
Aero Structures Department,
Naval Air Development
Center; symposium chairman.