

PREFACE

This report contains the edited transcripts of the Review of Progress in Quantitative NDE held at the Scripps Institution of Oceanography, July 8-13, 1979. The Review was sponsored by the Advanced Research Projects Agency and the Air Force Materials Laboratory as a part of the Interdisciplinary Program for Quantitative Flaw Definition, Contract No. F33615-74-C-5180. Arrangements for the Review were made by the Science Center, Rockwell International, host organization for the Interdisciplinary Program, and the Scripps Institution of Oceanography, Dr. William A. Nierenberg, Director.

The format selected for this review was the same as that adopted for previous meetings at Cornell University and at the Scripps Institution of Oceanography. This format included a number of poster sessions in addition to the more traditional technical sessions. It has been found that the poster sessions provide a good way to accommodate the increased activity in this field while maintaining a forum that is highly conducive to technical interchange. As a further means of stimulating this exchange, a number of papers were included which are directly related to the principal technical interests of ARPA/AFML program even though they were not directly sponsored by ARPA/AFML.

The program emphasized several areas of progress in quantitative NDE. In addition to the work in quantitative ultrasonics, which has been a main program activity, new work in quantitative eddy current research and the methodology for the generation of rational accept/reject criteria were reported. In all these areas, strong emphasis is placed upon the physical interpretation of the quantitative measurements and their evaluation in terms of appropriate failure models. Emphasis is also given in the program to presentations and discussions which address state-of-the-art knowledge related to the development of failure models for both ceramic and metallic materials, and the difference in such models required by the nature of the materials.

Prof. J. E. Gordon, University of Reading, England, provided an excellent paper on structural design concepts and comments upon improved design concepts which incorporate early awareness of NDE advances. Prof. Gordon is well known for his humorous and witty books which compare modern design practices with those "structures" provided by nature.

The organizers of the Review wish to acknowledge the financial support and encouragement provided by the Advanced Research Projects Agency and the Air Force Materials Laboratory and the technical participation of members of the Materials Research Council. Special thanks are due to Prof. Gordon for his overview. The organizers also wish to thank speakers, session chairmen, authors of poster presentations, and participants who collaborated to provide a stimulating meeting. They wish to acknowledge with thanks the assistance of Mrs. Diane Harris who managed the organizational matters of the meeting and who organized these Proceedings, and Mrs. Pat Apadoca for her assistance at the meeting. They are also indebted to the management of the Scripps Institution of Oceanography, particularly Dr. William Nierenberg and Mrs. Shirlee Long, UCSD, for their cooperative support in the conduct of the meeting.