BOOK REVIEWS

Nondestructive Testing Techniques

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REFERENCE: *Nondestructive Testing Techniques*, D. E. Bray and D. McBride, Eds., John Wiley and Sons, New York, 1992, ISBN: 0-471-52513-8.

This book represents a distillation of a multivolume document produced by Northrop Services, Inc. for the U.S. Army Missile Command. As such, the book is broad in scope, aimed at application-oriented personnel, and geared towards flaw detection.

The purpose of the text "is to provide technical guidance to engineering personnel who have responsibility for specifying, monitoring, or assessing nondestructive testing and evaluation programs." The book meets this purpose by the broad scope; the general treatment of more than 20 different nondestructive techniques including advantages, disadvantages, basic theory and fundamental equations, example applications, ample references, and glossaries; the concise treatment of personnel qualification and certification; and the mention of human factors associated with nondestructive testing. The text is heavily referenced with military and regulatory standards which is consistent with the stated purpose and which are generally overlooked in texts of this type.

While the text is broad in scope, each chapter deals with a generalized nondestructive technology in a systematic fashion. The nondestructive technologies discussed include: visual, video imaging, optical, X-radiography, gamma-radiography, neutron radiography, Mossbauer Analysis, neutron activation, ultrasonic, acoustic emission, acoustics, modal analysis, magnetic, eddy current, electromagnetic, penetrant, leak detection, chemical, thermal, and microwave techniques. Additionally a chapter is devoted to training, qualification, and certification of nondestructive testing personnel with emphasis on SNT-TC-1A "The Recommended Practice for Training and Certification of Personnel in NDT" and MIL-STD-410D.

In any specific chapter an overall nondestructive testing technology is introduced. Next, the basic physics associated with the testing technology is described by the use of fundamental equations, the referencing of specialized texts for a more comprehensive treatment of the subject matter, and the tabulation of standard physical properties. Then, specific methods and techniques that employ the testing technology are described with line drawings added to clarify instrumentation setup. Notional as well as typical responses are provided to guide a user in expected results. The text generally follows with example applications of the nondestructive techniques and supplies helpful technique-dependent information. References, bibliographies, and glossaries associated with each nondestructive technology complete each chapter. For the chapter dealing with radiography, a comprehensive listing of specifications and standards is included.

This style of treatment enables the text to be used in a number of manners. First, since the book provides a broad overview of the multidisciplinary field of nondestructive testing, the text is appropriate for engineers or designers not versed in the field but needing basic guidance as to principles, methods, specifications, and other sources of information. Second, the book provides an excellent introductory level reading in nondestructive testing for senior level undergraduates in an engineering discipline. Third, the book may be used by the specialist to gain insights and familiarity into other techniques which that specialist does not normally use, or to identify standards and specifications used by various regulatory agencies. Lastly, since the book is composed of self-contained, technology-specific chapters, the text may be used as a guide to modify techniques, enabling additional nondestructive testing information to be generated without extensive equipment modification.

Clearly, this book is successful in achieving its stated purpose and is well written and organized for its intended audience.

