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The NALCO Guide to Boiler Failure Analysis Nalco Water Guide to Boiler Failure Analysis, Second Edition Nalco Guide to Boiler Failure Analysis, 2nd Edition Metallurgical Failures in Fossil Fired Boilers Failure Investigation of Boiler Tubes: A Comprehensive Approach Metallurgical Failures in Fossil Fired Boilers Failure Analysis of Boiler Tube Some Case Studies on Boiler Assessment and Failure Analysis Failure Analysis Boiler Tube Failures at New Boston Failure Analysis of Superheater Tubes Cracking of a Boiler in a Power Plant Metallurgical Failure Analysis Thermal Spray Coatings Handbook of Materials Failure Analysis with Case Studies from the Chemicals, Concrete and Power Industries The Nalco Guide to Cooling Water Systems Failure Analysis Microelectronics Failure Analysis Desk Reference, Seventh Edition Damage Mechanisms and Life Assessment of High Temperature Components Boiler Tube Failure Mechanisms Metallography in Failure Analysis Root Cause Failure Analysis Handbook of Case Histories in Failure Analysis, Volume 2 The Nalco Water Guide to Cooling Water Systems Failure Analysis, Second Edition Failure Analysis of Heat Treated Steel Components Applied Engineering Failure Analysis Stress Corrosion Cracking Failure Analysis of Materials: An Introduction Modern Physical Metallurgy and Materials Engineering Machinery Failure Analysis and Troubleshooting Metal Failures Failure Analysis and Prevention Practical Engineering Failure Analysis Circulating Fluidized Bed Boilers 2020 3rd International Conference on Electron Device and Mechanical Engineering (ICEDME) Why Metals Fail Records of steam boiler explosions Engineering Materials 3 Failure Mechanisms in Alloys Energy Research Abstracts Proceedings The Wonderful Wizard of Oz

Root Cause Failure Analysis provides the concepts needed to effectively perform industrial troubleshooting investigations. It describes the methodology to perform Root Cause Failure Analysis (RCFA), one of the hottest topics currently in maintenance engineering. It also includes detailed equipment design and troubleshooting guidelines, which are needed to perform RCFA on machinery found in most production facilities. This is the latest book in a new series published by Butterworth-Heinemann in association with PLANT ENGINEERING magazine. PLANT ENGINEERING fills a unique information need for the men and women who operate and maintain industrial plants. It bridges the information gap between engineering education and practical application. As technology advances at increasingly faster rates, this information service is becoming more and more important. Since its first issue in 1947, PLANT ENGINEERING has stood as the leading problem-solving information source for America's industrial plant engineers, and this book series will effectively contribute to that resource and reputation. Provides information essential to industrial troubleshooting investigations Describes the methods of root cause failure analysis, a hot topic in maintenance engineering Includes detailed equipment-design guidelines A guide to the identification and elimination of corrosion in cooling water systems and related equipment. This book features full-color photographs of actual failures, which illustrate the detailed description of each common failure mode presented. It includes case histories, and also presents a variety of environments and equipment. The era of lean production and excellence in manufacturing, advancing with sustainable development, demands the rational utilization of raw materials and energy resources, adopting cleaner and environmentally-friendly industrial processes. In view of the new industrial revolution, through digital transformation, the exploitation of smart and sophisticated materials systems, the need of minimizing scrap and increasing efficiency, reliability and lifetime and, on the other hand, the pursuit of fuel economy and limitation of carbon footprint, are necessary conditions for the imminent growth in a highly competitive economy. Failure analysis is an interdisciplinary scientific topic, reflecting the opinions and interpretations coming from a systematic evidence-gathering procedure, embracing various important sectors, imparting knowledge, and substantiating improvement practices. The deep understanding of material/component role (e.g., rotating shaft, extrusion die, gas pipeline) and properties will be of central importance for fitness for purpose in certain industrial processes and applications. Finally, it is hoped and strongly believed that the accumulation of additional

knowledge in the field of failure mechanisms and the adoption of the principles, philosophy, and deep understanding of failure analysis process approach will strongly promote the learning concept, as a continuously evolving process leading to personal and social progress and prosperity. The Electronic Device Failure Analysis Society proudly announces the Seventh Edition of the Microelectronics Failure Analysis Desk Reference, published by ASM International. The new edition will help engineers improve their ability to verify, isolate, uncover, and identify the root cause of failures. Prepared by a team of experts, this updated reference offers the latest information on advanced failure analysis tools and techniques, illustrated with numerous real-life examples. This book is geared to practicing engineers and for studies in the major area of power plant engineering. For non-metallurgists, a chapter has been devoted to the basics of material science, metallurgy of steels, heat treatment, and structure-property correlation. A chapter on materials for boiler tubes covers composition and application of different grades of steels and high temperature alloys currently in use as boiler tubes and future materials to be used in supercritical, ultra-supercritical and advanced ultra-supercritical thermal power plants. A comprehensive discussion on different mechanisms of boiler tube failure is the heart of the book. Additional chapters detailing the role of advanced material characterization techniques in failure investigation and the role of water chemistry in tube failures are key contributions to the book. · Explains operation and scientific fundamentals of circulating fluidized bed (CFB) boilers · Outlines practical issues in industrial use · Teaches how to optimize design for maximum reliability and efficiency · Discusses operating and maintenance issues and how to troubleshoot them This book provides practicing engineers and students with insight into the design and operation of circulating fluidized bed (CFB) boilers through a combination of theoretical concepts and practical experience. An emphasis on combustion, hydrodynamics, heat transfer, and material issues illustrates these concepts with numerous examples from actual operating plants. The relevance of design and feed-stock parameters to the operation of a CFB boiler are also examined, along with their impacts on designs of mechanical components, including cyclones, air distributor grids, and solid recycle systems. This versatile resource explains how fluidized bed equipment works and how the basic principles of thermodynamics and fluid mechanics influence design, while providing insight into planning new projects, troubleshooting existing equipment, and appreciating the capabilities and limitations of the process. From hydrodynamics to construction and maintenance, the author covers all of the essential information needed to understand, design, operate, and maintain a complete fluidized bed system. It is a must for clean coal technology as well as for biomass power generation. Detailed analyses of failures of material components have proved to be valuable in many ways; by preventing further failures, by assessing the validity of designs and the selection of materials, by uncovering shortcomings in the processing of the materials involved through characterizations of defects, and by revealing problems introduced during the manufacture or fabrication of the component. Increased recognition of the value of performing failure analyses has caused the field to develop into a very active area of technical endeavor. Failure analysis has been employed in numerous different technical disciplines and has proven beneficial. The increased activity has caused many new and improved methods for performing these analyses to be developed. Among these are many methods which can be characterized as generally belonging to the field of metallography. In recognition of the important role that metallography plays in the performance of failure analyses, the absence of a text that specifically discusses this subject, and the belief that communication of information on the subject would be of technical interest, The American Society for Metals and The International Metallographic Society co-sponsored a symposium. The intent was to bring together world-recognized authorities working in various aspects of the failure analysis and metallographic fields to share methods they use, results they have obtained, and the purposes to which they utilized these results. The symposium, entitled "Metallography in Failure Analysis", was held in Houston, Texas, USA, July 17-18, 1977. Filling a gap in the literature, Practical Engineering Failure Analysis vividly demonstrates the correct

methodology to conduct successful failure analyses, as well as offering the background necessary for these investigations. This authoritative reference covers procedures to reduce the occurrence of component failures due to errors in material selection. For many years, various editions of Smallman's Modern Physical Metallurgy have served throughout the world as a standard undergraduate textbook on metals and alloys. In 1995, it was rewritten and enlarged to encompass the related subject of materials science and engineering and appeared under the title Metals & Materials: Science, Processes, Applications offering a comprehensive amount of a much wider range of engineering materials. Coverage ranged from pure elements to superalloys, from glasses to engineering ceramics, and from everyday plastics to in situ composites. Amongst other favourable reviews, Professor Bhadeshia of Cambridge University commented: "Given the amount of work that has obviously gone into this book and its extensive comments, it is very attractively priced. It is an excellent book to be recommended strongly for purchase by undergraduates in materials-related subjects, who should benefit greatly by owning a text containing so much knowledge." The book now includes new chapters on materials for sports equipment (golf, tennis, bicycles, skiing, etc.) and biomaterials (replacement joints, heart valves, tissue repair, etc.) - two of the most exciting and rewarding areas in current materials research and development. As in its predecessor, numerous examples are given of the ways in which knowledge of the relation between fine structure and properties has made it possible to optimise the service behaviour of traditional engineering materials and to develop completely new and exciting classes of materials. Special consideration is given to the crucial processing stage that enables materials to be produced as marketable commodities. Whilst attempting to produce a useful and relatively concise survey of key materials and their interrelationships, the authors have tried to make the subject accessible to a wide range of readers, to provide insights into specialised methods of examination and to convey the excitement of the atmosphere in which new materials are conceived and developed. The problem of stress corrosion cracking (SCC), which causes sudden failure of metals and other materials subjected to stress in corrosive environment(s), has a significant impact on a number of sectors including the oil and gas industries and nuclear power production. Stress corrosion cracking reviews the fundamentals of the phenomenon as well as examining stress corrosion behaviour in specific materials and particular industries. The book is divided into four parts. Part one covers the mechanisms of SCC and hydrogen embrittlement, while the focus of part two is on methods of testing for SCC in metals. Chapters in part three each review the phenomenon with reference to a specific material, with a variety of metals, alloys and composites discussed, including steels, titanium alloys and polymer composites. In part four, the effect of SCC in various industries is examined, with chapters covering subjects such as aerospace engineering, nuclear reactors, utilities and pipelines. With its distinguished editors and international team of contributors, Stress corrosion cracking is an essential reference for engineers and designers working with metals, alloys and polymers, and will be an invaluable tool for any industries in which metallic components are exposed to tension, corrosive environments at ambient and high temperatures. Examines the mechanisms of stress corrosion cracking (SCC) presenting recognising testing methods and materials resistant to SCC. Assesses the effect of SCC on particular metals featuring steel, stainless steel, nickel-based alloys, magnesium alloys, copper-based alloys and welds in steels. Reviews the monitoring and management of SCC and the effect of SCC in different industries such as petrochemical and aerospace. A failure analysis was performed on a power plant's boiler superheater tubes that had burst. The macromorphology, chemical composition, microstructure, and mechanical properties were analyzed by experimental testing. Results showed that the superheater tube bursts can be classified as creep ductile cracks because the two tubes operated in overtemperature and low heat transfer efficiency conditions for a long time, and one of the tubes did not meet the material requirements. Finally, preventative measures were put forward. This book covers recent advancement methods used in analysing the root cause of engineering failures and the proactive suggestion for future failure prevention. The techniques used especially non-destructive testing such X-ray are well described. The failure analysis covers materials for metal and composites for various applications in mechanical, civil and electrical applications. The modes of failures that are well explained include fracture, fatigue, corrosion and high-temperature failure mechanisms. The administrative part of failures is also presented in the chapter of failure rate analysis. The book will bring you on a tour on how to apply mechanical, electrical and civil

engineering fundamental concepts and to understand the prediction of root cause of failures. The topics explained comprehensively the reliable test that one should perform in order to investigate the cause of machines, component or material failures at the macroscopic and microscopic level. I hope the material is not too theoretical and you find the case study, the analysis will assist you in tackling your own failure investigation case. This book provides the latest information about the research being conducted and established solutions available in the field of thermal spray coatings for various engineering applications. The readers of this book will be mainly the graduates, engineers and researchers who are pursuing their carrier in the field of thermal spraying. This book will cover the studies and research works of reputed scientists and engineers who have developed thermal spray coatings for thermal protection, bio-implants, renewal energy, wear and corrosion in hydraulic turbines and jet engines, hydrophobic surfaces etc. Hence, the book serves as a valuable resource of latest advancement in thermal spray technology and consolidated references for aspirants and professionals of surface engineering community. The book covers following topics for different industrial applications: Introduction: Historical developments, Science and Engineering aspects of thermal spray coating technology and different thermal spray coatings techniques and its comparison with other fabrication processes. Recent advancements and applications of thermal spray coatings Cold spray technology for additive manufacturing. High-temperature corrosion and erosion resistant coatings and thermal barrier coatings for power plants, automotive sector, and jet engines. Erosion and corrosion-resistant coatings for hydro-power plants, offshore, chemical and oil industries. Bio-coatings for human body implants. Thermal spray coating for super-hydrophobic surface. 3. Case study of boiler tubes failure and prevention by thermal spray coatings. This book illustrates and explains virtually all common failure modes which adversely affect boiler reliability. Each failure mode is well illustrated with case histories. The corrective steps necessary to reduce or eliminate each failure type, as well as precautionary notes, are provided. The book is a comprehensive, authoritative field guide for the identification and elimination of boiler failures. Boilers of virtually all pressures and many construction designs are presented. This book presents failure mechanisms of different boiler components and preventive measures. It illustrates the basic steam flow and circuit design of steam boiler, boiler design parameters, boiler components materials and their behavior at different temperatures. The book aims to identify the cause(s) of in-service failure of secondary superheater tube, platen superheater tube and furnace water wall tube and also presents the solutions to avoid the future failures. This volume will be of interest to researchers and professionals working in the areas of energy, power generation, electric power plants, thermodynamics, industrial chemistry, etc. Presents more than 120 expert failure analysis case histories from industries including automotive, aerospace, utilities, oil and gas, petrochemical, biomedical, ground transportation, off-highway vehicles, and more. Volume 2 builds on the tremendous acceptance of Volume 1 by the failure analysis community. The two volumes can also be purchased as a set for a special discounted price. Learn how others have investigated and solved failures in various industries involving a wide range of failure modes, materials, and analysis techniques. Due to a dramatic increase in the interest and understanding of boiler-tube failure analysis, this edition has been updated and expanded. New features include material on fluid dynamics, heat transfer and stress calculations; remaining life assessment of boilers being used beyond their original design expectations; mechanical engineering aspects of boiler design; more information on fatigue, creep, thermal stress for carbon as well as stainless steels; suggestions to prevent future failures. Publisher's Note: Products purchased from Third Party sellers are not guaranteed by the publisher for quality, authenticity, or access to any online entitlements included with the product. The Most Complete, Current Guide to Failure Analysis for Cooling Water Systems Fully updated for the latest technologies and techniques, this new edition describes proven procedures for determining the root cause of cooling system failure, correcting the problem, and preventing future occurrences. The first section covers cooling water system design and operation and features ten new chapters on the various materials most commonly found in cooling systems. The remaining four sections discuss waterside corrosion, cracking, mechanical damage, and material and design issues. This authoritative resource explains how to identify failure locations and mechanisms, recognize critical factors influencing failure, carry out inspection procedures, and implement preventive measures to

reducedamage. Illustrative case histories are provided in each chapter. The Nalco Guide to Cooling Water Systems Failure Analysis, Second Edition, covers: Carbon and alloy steel Cast iron Stainless steel Copper alloys Aluminum alloys Corrosion-resistant alloys Coatings Nonmetallic materials Brazed and soldered joints Corrosion monitoring Crevice and underdeposit corrosion Oxygen corrosion Biologically influenced corrosion Acid corrosion Alkaline corrosion Galvanic corrosion Dealloying Intergranular corrosion Graphitic corrosion Localized and pitting corrosion Corrosion fatigue Stress corrosion cracking Erosion-corrosion Cavitation Manufacturing defects Weld defects Design and operating conditions Practical, up-to-date techniques for identifying and eliminating common causes of boiler failure Filled with more than 200 color images, The Nalco Guide to Boiler Failure Analysis, Second Edition categorizes distinct failure modes that typify nearly all boiler problems and walks you, step by step, through their solutions. Each type of failure is classified according to its location, general description, critical factors, identification, elimination, cautions, and related problems. Real-world case histories are included throughout. This authoritative resource contains new chapters on: Phosphate corrosion Stress-assisted corrosion Steam and condensate damage Flow-accelerated corrosion Comprehensive coverage includes: Water- and steam-formed deposits * Short- and long-term overheating * Caustic corrosion * Low-pH corrosion * Hydrogen damage * Chelant complexing * Oxygen corrosion * Corrosion during cleaning * Corrosion fatigue cracking * Stress corrosion cracking * Graphitic corrosion * Dealloying * Cavitation * Erosion * Waterwall fireside corrosion * High-temperature furnace corrosion * Cold-end corrosion * Dew point corrosion * Fireside corrosion * Welding defects Practical, up-to-date techniques for identifying and eliminating common causes of boiler failure Filled with more than 200 color images, The Nalco Guide to Boiler Failure Analysis, Second Edition categorizes distinct failure modes that typify nearly all boiler problems and walks you, step by step, through their solutions. Each type of failure is classified according to its location, general description, critical factors, identification, elimination, cautions, and related problems. Real-world case histories are included throughout. This authoritative resource contains new chapters on: Phosphate corrosion Stress-assisted corrosion Steam and condensate damage Flow-accelerated corrosion Comprehensive coverage includes: Water- and steam-formed deposits * Short- and long-term overheating * Caustic corrosion * Low-pH corrosion * Hydrogen damage * Chelant complexing * Oxygen corrosion * Corrosion during cleaning * Corrosion fatigue cracking * Stress corrosion cracking * Graphitic corrosion * Dealloying * Cavitation * Erosion * Waterwall fireside corrosion * High-temperature furnace corrosion * Cold-end corrosion * Dew point corrosion * Fireside corrosion * Welding defects The Wonderful Wizard of Oz chronicles the adventure of Dorothea in the land of Oz. A cyclone picks her up from her Kansas home, where she lives with her aunt and uncle, and deposits her in the fantastical land. She begins a journey along the yellow brick road to seek help from the Wizard of Oz. On her way she meets her fair share of witches (good and bad) and a scarecrow without a brain, a tinman without a heart and a cowardly lion. They travel together to the Emerald City to seek audience with the wizard. Metallurgical Failure Analysis: Techniques and Case Studies explores how components fail and what measures should be taken to avoid future failures. The book introduces the subject of failure analysis; covers the fundamentals and methodology of failure analysis, including fracture and fractography of metals and alloys and the tools and techniques used in a failure investigation; examines 37 case studies on high performance engineering components; features experimental results comprised of visual-, fractographic-, or metallographic- examination, hardness measurements and chemical analysis; includes illustrations and evidence obtained through test results to enhance understanding; and suggests suitable remedial measures when possible. The various case studies are classified according to the major causes of failures. The case studies pertain to: Improper Material Selection, Manufacturing Defects, Casting Defects, Overload, Fatigue, Corrosion Induced Failures, Hydrogen Embrittlement and Stress Corrosion Cracking, Wear and Elevated Temperature Failures. The book contains information gathered over three decades of the author's experience handling a variety of failure cases and will go a long way toward inspiring practicing failure analysts. The book is designed for scientists, metallurgists, engineers, quality control inspectors, professors and students alike. Explores the fundamentals and methodology of failure analysis Examines the major causes of component failures Teaches a systematic approach to investigation to determine the cause of a failure Features 37 case studies on high performance engineering

components comprehensive coverage of both the "how" and "why" of metal failures Metal Failures gives engineers the intellectual tools and practical understanding needed to analyze failures from a structural point of view. Its proven methods of examination and analysis enable investigators to: * Reach correct, fact-based conclusions on the causes of metal failures * Present and defend these conclusions before highly critical bodies * Suggest design improvements that may prevent future failures Analytical methods presented include stress analysis, fracture mechanics, fatigue analysis, corrosion science, and nondestructive testing. Numerous case studies illustrate the application of basic principles of metallurgy and failure analysis to a wide variety of real-world situations. Readers learn how to investigate and analyze failures that involve: * Alloys and coatings * Brittle and ductile fractures * Thermal and residual stresses * Creep and fatigue * Corrosion, hydrogen embrittlement, and stress-corrosion cracking This useful professional reference is also an excellent learning tool for senior-level students in mechanical, materials, and civil engineering. Handbook of Materials Failure Analysis: With Case Studies from the Chemicals, Concrete and Power Industries provides an in-depth examination of materials failure in specific situations, a vital component in both developing and engineering new solutions. This handbook covers analysis of materials failure in the chemical, power, and structures arenas, where the failure of a single component can result in devastating consequences and costs. Material defects, mechanical failure as a result of improper design, corrosion, surface fracture, and other failure mechanisms are described in the context of real world case studies involving steam generators, boiler tubes, gas turbine blades, welded structures, chemical conversion reactors and more. This book is an indispensable reference for engineers and scientists studying the mechanisms of failure in these fields. Introduces readers to modern analytical techniques in materials failure analysis Combines foundational knowledge with current research on the latest developments and innovations in the field Includes many compelling case studies of materials failure in chemical processing plants, concrete structures, and power generation systems Power electronics Power conversion DC AC power converters Voltage source converters Fault current limiters Bipolar transistors Power engineering and energy Power system control Trans active energy Power engineering Power engineering computing Distributed power generation Power grids Smart grid Circuits and systems Analog circuits Analog integrated circuits Circuit faults Circuit synthesis Digital integrated circuits Failures or forced shutdowns in power plants are often due to boilers, and particularly failure of boiler tubes. This comprehensive resource deals with the subject of failure investigation of boiler tubes from basic fundamentals to practical applications. Coverage includes properties and selection of materials for boiler tubes from a metallurgical view point, damage mechanisms responsible for failure of boiler tubes, and characterization techniques employed for investigating failures of boiler tubes in thermal power plants and utility boilers of industrial/commercial/institutional (ICI) boilers. A large number of case studies based on the actual failures from the field are described, along with photographs and microstructures to allow for easy comprehension of the theory behind the failures. This book is geared to practicing engineers and for studies in the major area of power plant engineering. For non-metallurgists, a chapter has been devoted to the basics of material science, metallurgy of steels, heat treatment, and structure-property correlation. A chapter on materials for boiler tubes covers composition and application of different grades of steels and high temperature alloys currently in use as boiler tubes and future materials to be used in supercritical, ultra-supercritical and advanced ultra-supercritical thermal power plants. A comprehensive discussion on different mechanisms of boiler tube failure is the heart of the book. Additional chapters detailing the role of advanced material characterization techniques in failure investigation and the role of water chemistry in tube failures are key contributions to the book. The authors have long-standing experience in the field of metallurgy and materials technology, failure investigation, remaining life assessment (RLA) and fitness for service (FFS) for industrial plant and equipment, including power plants. They have conducted a large number of failure investigations of boiler tubes and have recommended effective remedial measures in problem solving for power and utility boilers. Due to a dramatic increase in the interest and understanding of boiler-tube failure analysis, this edition has been updated and expanded. New features include material on fluid dynamics, heat transfer and stress calculations; remaining life assessment of boilers being used beyond their original design expectations; mechanical engineering aspects of boiler design;

more information on fatigue, creep, thermal stress for carbon as well as stainless steels; suggestions to prevent future failures. Semiannual, with semiannual and annual indexes. References to all scientific and technical literature coming from DOE, its laboratories, energy centers, and contractors. Includes all works deriving from DOE, other related government-sponsored information, and foreign nonnuclear information. Arranged under 39 categories, e.g., Biomedical sciences, basic studies; Biomedical sciences, applied studies; Health and safety; and Fusion energy. Entry gives bibliographical information and abstract. Corporate, author, subject, report number indexes. This textbook covers the important steps in conducting a failure analysis, without boring the student to death. A material failure is defined as a part breaking unexpectedly. The part can be metal, plastic, ceramic or glass, and by breaking we mean that there is a fracture face or a damaged surface to examine. Failure analysis is the science of determining how and why the part broke. An accurate failure analysis is key to making a better product. If one does not understand why a part failed, then it is only guesswork as to how to fix it. Failure analysis of materials is a multi-disciplinary field because it requires people skills in asking the right questions, engineering skills in calculating the stresses, and metallurgical skills in understanding the alloys and interpreting the micrographs. The final skill is writing a comprehensive report. These topics and more are covered in this book. Applied Engineering Failure Analysis: Theory and Practice provides a point of reference for engineering failure analysis (EFA) cases, presenting a compilation of case studies covering a 35-year period, from the 1970s to 2012. This period spans the era from the time when slide rules were used routinely for engineering calculations, and when hard-copy photographs taken by film cameras were pasted onto typewritten sheets to make reports, to the present time when all these functions have become much less onerous through computer assistance. The cases are drawn from such diverse fields as mechanical engineering, metallurgy, mining, civil/structural engineering, electrical power systems, and radiation damage; the last two topics are quite scarce in current publications. It includes theoretical content that deals with useful topics in basic theory, material properties, failure mechanisms, EFA methodology, and applications. It provides high-quality illustrations throughout, which greatly helps to promote the understanding of the failure characteristics described. This book offers an integrated approach that serves as a useful first reference in the above topics, for undergraduate and postgraduate students, as well as for practicing engineers. The book provides a hands-on approach to EFA, which helps the user to develop an understanding of potential failure situations, to explore the consequences, and to better understand how to solve similar problems; it also helps users to develop their own techniques for most other engineering failure problems. The authors include a section on technical report writing, which will assist failure investigators in getting their findings across. They also present simple engineering calculations that may serve as illustrative examples, and typical problems and solutions are included at the end of each chapter.

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