

Oreda Offshore Reliability Data Handbook 2009

Offshore Risk Assessment Guidelines for Chemical Process Quantitative Risk Analysis Reliability Data Collection and Analysis Uncertainty in Risk Assessment, Risk Management, and Decision Making Offshore and Onshore Reliability Data Handbook System Reliability Theory Reliability-centered Maintenance Design and Installation of Marine Pipelines Practical Industrial Safety, Risk Assessment and Shutdown Systems Offshore Wind Turbines The Maintenance Management Framework Reliability of Safety-Critical Systems OREDA Safety Critical Systems Handbook Guidelines for Process Safety Metrics Handbook of Performability Engineering Reliability Data Collection and Use in Risk and Availability Assessment Application of Risk Analysis to Offshore Oil and Gas Operations Offshore Reliability Data Handbook Reliability Data Bases Advances in Subsea Pipeline Engineering and Technology Maritime Technology and Engineering Safety and Reliability - Safe Societies in a Changing World Complex System Maintenance Handbook System Reliability Theory Guidelines for Process Equipment Reliability Data, with Data Tables Emergency Planning OREDA Subsea Engineering Handbook Electric Motor Handbook OREDA: Subsea equipment OREDA: Topside equipment Risk Assessment and Decision Analysis with Bayesian Networks The Reliability Data Handbook Reliability Engineering Handbook OREDA : OFFSHORE RELIABILITY DATA HANDBOOK Gas and Oil Reliability Engineering Dependability Metrics Guidelines for Process Equipment Reliability Data, with Data Tables OREDA

Offshore Risk Assessment

Dr C P Ellinas Advanced Mechanics & Engineering Ltd Major advances have been achieved in recent years in subsea pipeline design and installation. Inspection, maintenance and repair have also received much attention. The development of marginal fields has brought with it special problems, which have necessitated novel methods and solutions. In the meanwhile interest in the development of deepwater fields continues with the development of new technology. This Conference has placed emphasis in addressing developments in pipeline technology under four main headings: pipeline/seabed interaction; flexible pipelines; pipeline design, fabrication and installation; deepwater applications. Advances in North Sea technology over the last few years have been concerned mostly with marginal fields, small diameter pipelines and new materials, which are well covered in the first three topics. Economic development of marginal fields requires processing of oil and gas to take place not at the wellhead but at existing facilities, usually some distance away. Hydrocarbons are thus often transported at high pressure and temperature in small diameter pipelines, which need to be protected through trenching. However, such operational practice has brought to the fore a problem that in the past was of little concern namely, upheaval buckling.

Guidelines for Chemical Process Quantitative Risk Analysis

Written for professionals who work in electric motors; this covers updated traction applications; the latest on solid-state motor-drive controllers; electrical and mechanical parameters; specifications; shapes; performance; protection; and more. --

Reliability Data Collection and Analysis

This tutorial book gives an overview of the current state of the art in measuring the different aspects of dependability of systems: reliability, security and performance.

Uncertainty in Risk Assessment, Risk Management, and Decision Making

This is a book for engineers that covers the hardware and software aspects of high-reliability safety systems, safety instrumentation and shutdown systems as well as risk assessment techniques and the wider spectrum of industrial safety. Rather than another book on the discipline of safety engineering, this is a thoroughly practical guide to the procedures and technology of safety in control and plant engineering. This highly practical book focuses on efficiently implementing and assessing hazard studies, designing and applying international safety practices and techniques, and ensuring high reliability in the safety and emergency shutdown of systems in your plant. This book will provide the reader with the most up-to-date standards for and information on each stage of the safety life cycle from the initial evaluation of hazards through to the detailed engineering and maintenance of safety instrumented systems. It will help them develop the ability to plan hazard and risk assessment studies, then design and implement and operate the safety systems and maintain and evaluate them to ensure high reliability. Finally it will give the reader the knowledge to help prevent the massive devastation and destruction that can be caused by today's highly technical computer controlled industrial environments. * Helps readers develop the ability to plan hazard and risk assessment studies, then design, implement and operate the safety systems and maintain and evaluate them to ensure high reliability * Gives the reader the knowledge to help prevent the massive devastation that can be caused by today's highly technical computer controlled industrial environments * Rather than another book on the discipline of safety engineering, this is a thoroughly practical guide to the procedures and technology of safety in control and plant engineering

Offshore and Onshore Reliability Data Handbook

Presents the theory and methodology for reliability assessments of safety-critical functions through examples from a wide range of applications. Reliability of Safety-Critical Systems: Theory and Applications provides a comprehensive introduction to reliability assessments of safety-related systems based on electrical, electronic, and programmable electronic (E/E/PE) technology. With a focus on the design and development phases of safety-critical systems, the book presents theory and methods required to document compliance with IEC 61508 and the associated sector-specific standards. Combining theory and practical applications, Reliability of Safety-Critical Systems: Theory and Applications implements key safety-related strategies and methods to meet quantitative safety integrity requirements. In addition, the book details a variety of reliability analysis methods that are needed during all stages of a safety-critical system, beginning with specification and design and advancing to operations, maintenance, and modification control. The key categories of safety life-cycle phases are featured, including strategies for the allocation of reliability performance requirements; assessment methods in

relation to design; and reliability quantification in relation to operation and maintenance. Issues and benefits that arise from complex modern technology developments are featured, as well as: Real-world examples from large industry facilities with major accident potential and products owned by the general public such as cars and tools. Plentiful worked examples throughout that provide readers with a deeper understanding of the core concepts and aid in the analysis and solution of common issues when assessing all facets of safety-critical systems. Approaches that work on a wide scope of applications and can be applied to the analysis of any safety-critical system. A brief appendix of probability theory for reference. With an emphasis on how safety-critical functions are introduced into systems and facilities to prevent or mitigate the impact of an accident, this book is an excellent guide for professionals, consultants, and operators of safety-critical systems who carry out practical, risk, and reliability assessments of safety-critical systems. Reliability of Safety-Critical Systems: Theory and Applications is also a useful textbook for courses in reliability assessment of safety-critical systems and reliability engineering at the graduate-level, as well as for consulting companies offering short courses in reliability assessment of safety-critical systems.

System Reliability Theory

Reliability data collection and its use in risk and availability assessment is a subject of increasing importance. The founders of EuReData, and in particular, Arne Ullman, the originator and first Chairman of the Association, recognised the need for a body capable of acting as a catalyst and providing a unified approach to this subject. It is therefore a prevailing objective of the European Reliability Data Bank Association to initiate and support contact between experts, companies and institutions active in reliability engineering and research. Although the first and principle interest of EuReData is reliability data and data banks, the Association is aware that these are tools that are used with others to establish and maintain reliability and safety. It is with this objective that EuReData regularly holds conferences and seminars covering a range of reliability topics. C.A. Campbell H.J. Wingender EuReData Chairman Organiser, Editor Contents CHAPTER 1: OVERVIEWS Data Situation and the Quality of Risk Assessment (FRG) A. Birkhofer, K. Koberlein (GRS) 3 Reliability Engineering in Europe (CEC) G. Volta (JRC-Ispra) 16 1984: A Year of Industrial Catastrophies.

Reliability-centered Maintenance

The first book to specifically focus on offshore wind turbine technology and which addresses practically wind turbine reliability and availability. The book draws on the author's experience of power generation reliability and availability and the condition monitoring of that plant to describe the problems facing the developers of offshore wind farms and the solutions available to them to raise availability, reduce cost of energy and improve through life cost.

Design and Installation of Marine Pipelines

Dependability and cost effectiveness are primarily seen as instruments for

conducting international trade in the free market environment. These factors cannot be considered in isolation of each other. This handbook considers all aspects of performability engineering. The book provides a holistic view of the entire life cycle of activities of the product, along with the associated cost of environmental preservation at each stage, while maximizing the performance.

Practical Industrial Safety, Risk Assessment and Shutdown Systems

Designed to be used in engineering education and industrial practice, this book provides a comprehensive presentation of reliability engineering for optimized design engineering of products, parts, components and equipment.

Offshore Wind Turbines

Although many Bayesian Network (BN) applications are now in everyday use, BNs have not yet achieved mainstream penetration. Focusing on practical real-world problem solving and model building, as opposed to algorithms and theory, Risk Assessment and Decision Analysis with Bayesian Networks explains how to incorporate knowledge with data to develop and use (Bayesian) causal models of risk that provide powerful insights and better decision making. Provides all tools necessary to build and run realistic Bayesian network models Supplies extensive example models based on real risk assessment problems in a wide range of application domains provided; for example, finance, safety, systems reliability, law, and more Introduces all necessary mathematics, probability, and statistics as needed The book first establishes the basics of probability, risk, and building and using BN models, then goes into the detailed applications. The underlying BN algorithms appear in appendices rather than the main text since there is no need to understand them to build and use BN models. Keeping the body of the text free of intimidating mathematics, the book provides pragmatic advice about model building to ensure models are built efficiently. A dedicated website, www.BayesianRisk.com, contains executable versions of all of the models described, exercises and worked solutions for all chapters, PowerPoint slides, numerous other resources, and a free downloadable copy of the AgenaRisk software.

The Maintenance Management Framework

The subject of this volume--uncertainties in risk assessment and management--reflects an important theme in health, safety, and environmental decision making. Most technological hazards are characterized by substantial uncertainty. Recent examples include nuclear waste disposal, acid rain, asbestos in schools, carcinogens in food, and hazardous waste. Dealing with such uncertainty is arguably the most difficult and challenging task facing risk assessors and managers today. Four primary sources of uncertainty in risk assessment and management can be identified: (1) uncertainties about definitions; (2) uncertainties about scientific facts; (3) uncertainties about risk perceptions and attitudes; and (4) uncertainties about values. Uncertainties about definitions derive primarily from disagreements about the meaning and interpretation of key

concepts, such as probability. Uncertainties about scientific facts derive primarily from disagreements about failure modes, the probability and magnitude of adverse health or environmental consequences, cause and effect relationships, dose-response relationships, and exposure patterns. Uncertainties about risk perceptions and attitudes derive primarily from disagreements about what constitutes a significant or acceptable level of risk. Uncertainties about values derive primarily from disagreements about the desirability or worth of alternative risk management actions or consequences. The papers in this volume address each of these sources of uncertainty from a variety of perspectives. Reflecting the broad scope of risk assessment and risk management research, the papers include contributions from safety engineers, epidemiologists, toxicologists, chemists, biostatisticians, biologists, decision analysts, economists, psychologists, political scientists, sociologists, ethicists, and lawyers.

Reliability of Safety-Critical Systems

Offshore Risk Assessment was the first book to deal with quantified risk assessment (QRA) as applied specifically to offshore installations and operations. This book is a major revision of the first edition. It has been informed by a major R&D programme on offshore risk assessment in Norway (2002-2006). Not only does this book describe the state-of-the-art of QRA, it also identifies weaknesses and areas that need development.

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Safety Critical Systems Handbook

Guidelines for Process Safety Metrics

Handbook of Performability Engineering

Reliability Data Collection and Use in Risk and Availability Assessment

The Reliability Data Handbook is exceptional in both its approach and coverage, giving a uniquely comprehensive account of the subject. Component failure rate data are a vital part of any reliability or safety study and highly relevant to the engineering community across many disciplines. The Reliability Data Handbook focuses on the complete process of data collection, analysis and quality control. The subject of reliability data is covered in great depth, reflecting the author's considerable experience and expertise in this field. Rarely is reliability data 'clean'. There are problems in its collection due to poor recording of the exact cause of failure. The time to failure of many items in the data collection scheme may not be known due to censoring and truncation issues. For new equipment or very reliable equipment there may be no data available at all. All of these practical facets of

data used in real-world reliability studies are contained in this book. Analysis methods are not presented in a clinical way - they are put into context, considering the difficulties that can arise when performing assessments of actual systems. A unique feature is that the text is always fully illustrated with worked examples, many from the author's own experience in industry. CONTENTS INCLUDE Introduction - objectives and scope Component, equipment and system reliability, reliability models for non-repairable and repairable equipment Failure patterns, failure rate calculations Discreet and continuous distributions, scatter diagrams and histograms The Weibull distribution and Weibull analysis The Duane reliability growth model Reliability forecasting, basic models, data requirements Reliability statistics, sources of generic data, tables of equipment and component failure rates Data collection and quality control Reliability testing, inspection and maintenance decision analysis.

Application of Risk Analysis to Offshore Oil and Gas Operations

Offshore Reliability Data Handbook

The book supplements Guidelines for Chemical Process Quantitative Risk Analysis by providing the failure rate data needed to perform a chemical process quantitative risk analysis.

Reliability Data Bases

Proceedings of the ISPRA-Course Held at the Joint Research Centre, Ispra, Italy, October 21-25, 1985, in Collaboration with EuReData

Advances in Subsea Pipeline Engineering and Technology

This utterly comprehensive work is thought to be the first to integrate the literature on the physics of the failure of complex systems such as hospitals, banks and transport networks. It has chapters on particular aspects of maintenance written by internationally-renowned researchers and practitioners. This book will interest maintenance engineers and managers in industry as well as researchers and graduate students in maintenance, industrial engineering and applied mathematics.

Maritime Technology and Engineering

Subsea production systems, overview of subsea engineering, subsea field development, subsea distribution system. Flow assurance and system engineering. Subsea structure and equipment. Subsea umbilical, risers and flowlines.

Safety and Reliability - Safe Societies in a Changing World

"The Maintenance Management Framework" describes and reviews the concept, process and framework of modern maintenance management of complex systems; concentrating specifically on modern modelling tools (deterministic and empirical)

for maintenance planning and scheduling. It will be bought by engineers and professionals involved in maintenance management, maintenance engineering, operations management, quality, etc. as well as graduate students and researchers in this field.

Complex System Maintenance Handbook

Concise and easy to understand, this is the first book to apply reliability value improvement practices and process enterprises lifecycle analysis to the oil and gas industry. With this book in hand, engineers also gain a powerful guide to the most important methods used by software modeling tools which aid in the planning and execution of an effective reliability target for equipment, equipment development, inspection and maintenance programs, system performance analysis, also human factors and safety assessment.

System Reliability Theory

Process safety metrics is a topic of frequent conversation within chemical industry associations. Guidelines for Process Safety Metrics provides basic information on process safety performance indicators, including a comprehensive list of metrics for measuring performance and examples as to how they can be successfully applied over both the short and long term. For engineers, insurers, corporate trainers, military personnel, government officials, students, and managers involved in production, product and process development, Guidelines for Process Safety Metrics can help determine appropriate metrics useful in monitoring performance and improving process safety programs. Note: CD-ROM/DVD and other supplementary materials are not included as part of eBook file.

Guidelines for Process Equipment Reliability Data, with Data Tables

A comprehensive introduction to reliability analysis. The first section provides a thorough but elementary prologue to reliability theory. The latter half comprises more advanced analytical tools including Markov processes, renewal theory, life data analysis, accelerated life testing and Bayesian reliability analysis. Features numerous worked examples. Each chapter concludes with a selection of problems plus additional material on applications.

Emergency Planning

This comprehensive handbook on submarine pipeline systems covers a broad spectrum of topics from planning and site investigations, procurement and design, to installation and commissioning. It considers guidelines for the choice of design parameters, calculation methods and construction procedures. It is based on limit state design with partial safety coefficients.

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Safety Critical Systems Handbook: A Straightfoward Guide to Functional Safety, IEC

61508 (2010 Edition) and Related Standards, Including Process IEC 61511 and Machinery IEC 62061 AND ISO 13849, Third Edition, offers a practical guide to the functional safety standard IEC 61508. The book is organized into three parts. Part A discusses the concept of functional safety and the need to express targets by means of safety integrity levels. It places functional safety in context, along with risk assessment, likelihood of fatality, and the cost of conformance. It also explains the life-cycle approach, together with the basic outline of IEC 61508 (known as BS EN 61508 in the UK). Part B discusses functional safety standards for the process, oil, and gas industries; the machinery sector; and other industries such as rail, automotive, avionics, and medical electrical equipment. Part C presents case studies in the form of exercises and examples. These studies cover SIL targeting for a pressure let-down system, burner control system assessment, SIL targeting, a hypothetical proposal for a rail-train braking system, and hydroelectric dam and tidal gates. The only comprehensive guide to IEC 61508, updated to cover the 2010 amendments, that will ensure engineers are compliant with the latest process safety systems design and operation standards. Helps readers understand the process required to apply safety critical systems standards. Real-world approach helps users to interpret the standard, with case studies and best practice design examples throughout.

Subsea Engineering Handbook

A thoroughly updated and revised look at system reliability theory. Since the first edition of this popular text was published nearly a decade ago, new standards have changed the focus of reliability engineering and introduced new concepts and terminology not previously addressed in the engineering literature. Consequently, the Second Edition of System Reliability Theory: Models, Statistical Methods, and Applications has been thoroughly rewritten and updated to meet current standards. To maximize its value as a pedagogical tool, the Second Edition features: Additional chapters on reliability of maintained systems and reliability assessment of safety-critical systems. Discussion of basic assessment methods for operational availability and production regularity. New concepts and terminology not covered in the first edition. Revised sequencing of chapters for better pedagogical structure. New problems, examples, and cases for a more applied focus. An accompanying Web site with solutions, overheads, and supplementary information. With its updated practical focus, incorporation of industry feedback, and many new examples based on real industry problems and data, the Second Edition of this important text should prove to be more useful than ever for students, instructors, and researchers alike.

Electric Motor Handbook

OREDA: Subsea equipment

Maritime Technology and Engineering includes the papers presented at the 2nd International Conference on Maritime Technology and Engineering (MARTECH 2014, Lisbon, Portugal, 15-17 October 2014). The contributions reflect the internationalization of the maritime sector, and cover a wide range of topics: Ports;

Maritime transportation; Inland navigat

OREDA: Topside equipment

The ever increasing public demand and the setting-up of national and international legislation on safety assessment of potentially dangerous plants require that a correspondingly increased effort be devoted by regulatory bodies and industrial organisations to collect reliability data in order to produce safety analyses. Reliability data are also needed to assess availability of plants and services and to improve quality of production processes, in particular, to meet the needs of plant operators and/or designers regarding maintenance planning, production availability, etc. The need for an educational effort in the field of data acquisition and processing has been stressed within the framework of EuReData, an association of organisations operating reliability data banks. This association aims to promote data exchange and pooling of data between organisations and to encourage the adoption of compatible standards and basic definitions for a consistent exchange of reliability data. Such basic definitions are considered to be essential in order to improve data quality. To cover issues directly linked to the above areas ample space is devoted to the definition of failure events, common cause and human error data, feedback of operational and disturbance data, event data analysis, lifetime distributions, cumulative distribution functions, density functions, Bayesian inference methods, multivariate analysis, fuzzy sets and possibility theory, etc.

Risk Assessment and Decision Analysis with Bayesian Networks

The book supplements Guidelines for Chemical Process Quantitative Risk Analysis by providing the failure rate data needed to perform a chemical process quantitative risk analysis.

The Reliability Data Handbook

Over 40 papers and posters that share the latest practices in emergency planning related to fixed chemical, pharmaceutical, LNG, and petroleum facilities, storage facilities, transportation, and security.

Reliability Engineering Handbook

Safety and Reliability – Safe Societies in a Changing World collects the papers presented at the 28th European Safety and Reliability Conference, ESREL 2018 in Trondheim, Norway, June 17-21, 2018. The contributions cover a wide range of methodologies and application areas for safety and reliability that contribute to safe societies in a changing world. These methodologies and applications include: - foundations of risk and reliability assessment and management - mathematical methods in reliability and safety - risk assessment - risk management - system reliability - uncertainty analysis - digitalization and big data - prognostics and system health management - occupational safety - accident and incident modeling - maintenance modeling and applications - simulation for safety and reliability analysis - dynamic risk and barrier management - organizational factors and safety

culture - human factors and human reliability - resilience engineering - structural reliability - natural hazards - security - economic analysis in risk management
Safety and Reliability – Safe Societies in a Changing World will be invaluable to academics and professionals working in a wide range of industrial and governmental sectors: offshore oil and gas, nuclear engineering, aeronautics and aerospace, marine transport and engineering, railways, road transport, automotive engineering, civil engineering, critical infrastructures, electrical and electronic engineering, energy production and distribution, environmental engineering, information technology and telecommunications, insurance and finance, manufacturing, marine transport, mechanical engineering, security and protection, and policy making.

OREDA : OFFSHORE RELIABILITY DATA HANDBOOK

Completely reorganised and comprehensively rewritten for its second edition, this guide to reliability-centred maintenance develops techniques which are practised by over 250 affiliated organisations worldwide.

Gas and Oil Reliability Engineering

Chemical process quantitative risk analysis (CPQRA) as applied to the CPI was first fully described in the first edition of this CCPS Guidelines book. This second edition is packed with information reflecting advances in this evolving methodology, and includes worked examples on a CD-ROM. CPQRA is used to identify incident scenarios and evaluate their risk by defining the probability of failure, the various consequences and the potential impact of those consequences. It is an invaluable methodology to evaluate these when qualitative analysis cannot provide adequate understanding and when more information is needed for risk management. This technique provides a means to evaluate acute hazards and alternative risk reduction strategies, and identify areas for cost-effective risk reduction. There are no simple answers when complex issues are concerned, but CPQRA2 offers a cogent, well-illustrated guide to applying these risk-analysis techniques, particularly to risk control studies. Special Details: Includes CD-ROM with example problems worked using Excel and Quattro Pro. For use with Windows 95, 98, and NT.

Dependability Metrics

Guidelines for Process Equipment Reliability Data, with Data Tables

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