

Gas And Oil Reliability Engineering Modeling And Analysis

This book aims to give the readers a background about the reliability and safety engineering methods as well as discuss the importance of physical asset optimization and asset management during the operational phase applied for railway industry. The book starts describing the basic concept of reliability and safety engineering, RAMS and LCC program and process. In addition, the big challenges of the RAMS and LCC program implementation as well as the reliability pitfalls are also listed in the first chapter. The further chapters describe in detail the most importance methods applied in the RAMS and LCC program such as Failure Mode and Effect Analysis (FMEA), Reliability Centred Maintenance (RCM), Quantitative Accelerated Life Test (QALT), High Accelerated Life Test (HALT), Life Time Data Analysis (LDA), Reliability, Availability, Maintainability Analysis (RAM), Human Reliability Analysis (HRA), Integrated Logistic Support (ILS), risk analysis methods and asset management. In each chapter some case studies are presented to clarify the theoretical concepts. I hope you enjoy it and its enable you to put in practice some of the methods described here in your daily professional activities in railway industry.

The book makes the case for process safety and provides a brief overviews of the upstream industry and of CCPS Risk Based Process Safety. The majority of the book focuses on the concepts of implementing process safety in wells, onshore, offshore, and projects. Topics include Overview of Upstream Operations; Overview of Risk Based Process Safety (RBPS); Application of RBPS in Drilling, Completions, Work-Overs & Interventions, Application of RBPS in Onshore Production, Application of RBPS in Offshore Production, Application of RBPS to Engineering Design, Installation, and Construction, Future Developments in the Field

Engineering systems and products are an important element of the world economy and each year billions of dollars are spent to develop, manufacture, operate, and maintain systems and products around the globe. Because of this, global competition is requiring reliability professionals to work closely with other departments involved in engineering development during the product design and manufacturing phase. Applied Reliability for Engineers is an attempt to meet the need for a single volume that addresses a wide range of applied reliability topics. The material is treated in such a manner that the reader will require no previous knowledge to understand the text. The sources of most of the information presented are given in a reference section at the end of each chapter. At appropriate places, the book contains examples along with their solutions. At the end of each chapter there are numerous problems to test reader comprehension. This volume is thus suitable for use as a textbook as well as for reference. Applied Reliability for Engineers is useful to design professionals, system engineers, reliability specialists, graduate and senior undergraduate students, researchers and instructors of reliability engineering, and engineers-at-large.

Handbook of Materials Failure Analysis: With Case Studies from the Oil and Gas Industry provides an updated understanding on why materials fail in specific situations, a vital element in developing and engineering new alternatives. This handbook covers analysis of materials failure in the oil and gas industry, where a single failed pipe can result in devastating consequences for people, wildlife, the environment, and the economy of a region. The book combines introductory sections on failure analysis with numerous real world case studies of pipelines and other types of materials failure in the oil and gas industry, including joint failure, leakage in crude oil storage tanks, failure of glass fibre reinforced epoxy pipes, and failure of stainless steel components in offshore platforms, amongst others. 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 numerous compelling case studies of materials failure in oil and gas pipelines and drilling platforms

The Planning Committee on Connector Reliability for Offshore Oil and Natural Gas Operations held the Workshop on Bolting Reliability for Offshore Oil and Natural Gas Operations in Washington, D.C., on April 10-11, 2017. The workshop was designed to advance and develop a comprehensive awareness of the outstanding issues associated with fastener material failures and equipment reliability issues. Speakers and participants were also encouraged to discuss possible paths for ameliorating risks associated with fasteners used for subsea critical equipment in oil and gas operations. This publication summarizes the presentations and discussions from the workshop.

Piping and valve engineers rely on common industrial standards for selecting and maintaining valves, but these standards are not specific to the subsea oil and gas industry. Subsea Valves and Actuators for the Oil and Gas Industry delivers a needed reference to go beyond the standard to specify how to select, test, and maintain the right subsea oil and gas valve for the project. Each chapter focuses on a specific type of valve with a built-in structured table on valve selection, helping guide the engineer to the most efficient valve. Covering subsea-specific protection, the reference also gives information on high pressure protection systems (HIPPS) and discusses corrosion management within the subsea sector, such as Hydrogen Induced Stress Cracking Corrosion (HISC). Additional benefits include understanding the concept of different safety valves in subsea, selecting different valves and actuators located on subsea structures such as Christmas trees, manifolds, and HIPPS modules, with a full detail review including sensors, logic solver, and solenoid which is designed to save cost and improve the reliability in the subsea system. Rounding out with chapters on factory acceptance testing (FAT) and High Integrity Pressure Protection Systems (HIPPS), Subsea Valves and Actuators for the Oil and Gas Industry gives subsea engineers and managers a much-needed tool to better understand today's subsea technology. Understand practical information about all types of subsea valves and actuators with over 600 visuals and several case studies Learn and review the applicable standards and specifications from API and ISO in one convenient location Protect your assets with a high-pressure protection system (HIPPS) and

subsea-specific corrosion management including Hydrogen Induced Stress Cracking Corrosion (HISC)

Risk Analysis and Control for Industrial Processes - Gas, Oil and Chemicals provides an analysis of current approaches for preventing disasters, and gives readers an overview on which methods to adopt. The book covers safety regulations, history and trends, industrial disasters, safety problems, safety tools, and capital and operational costs versus the benefits of safety, all supporting project decision processes. Tools covered include present day array of risk assessment, tools including HAZOP, LOPA and ORA, but also new approaches such as System-Theoretic Process Analysis (STPA), Blended HAZID, applications of Bayesian data analytics, Bayesian networks, and others. The text is supported by valuable examples to help the reader achieve a greater understanding on how to perform safety analysis, identify potential issues, and predict the likelihood they may appear. Presents new methods on how to identify hazards of low probability/high consequence events Contains information on how to develop and install safeguards against such events, with guidance on how to quantify risk and its uncertainty, and how to make economic and societal decisions about risk Demonstrates key concepts through the use of examples and relevant case studies

Industry underestimates the extent to which behaviour at work is influenced by the design of the working environment. Designing for Human Reliability argues that greater awareness of the contribution of design to human error can significantly enhance HSE performance and improve return on investment. Illustrated with many examples, Designing for Human Reliability explores why work systems are designed and implemented such that "design-induced human error" becomes more-or-less inevitable. McLeod demonstrates how well understood psychological processes can lead people to make decisions and to take actions that otherwise seem impossible to understand. Designing for Human Reliability sets out thirteen key elements to deliver the levels of human reliability expected to achieve the return on investment sought when decisions are made to invest in projects. And it demonstrates how investigation of the human contribution to incidents can be improved by focusing on what companies expected and intended when they chose to rely on human performance as a barrier, or control, against incidents. Recognise some 'hard truths' of human performance and learn about the importance of applying the principles of Human Factors Engineering on capital projects Learn from analysis of real-world incidents how differences between 'fast' and 'slow' styles of thinking can lead to human error in industrial processes Learn how controls and barrier against major incidents that rely on human performance can be strengthened throughout the design and development of assets and equipment

Reliability Analysis and Asset Management of Engineering Systems explains methods that can be used to evaluate reliability and availability of complex systems, including simulation-based methods. The increasing digitization of mechanical processes driven by Industry 4.0 increases the interaction between machines and monitoring and control systems, leading to increases in system complexity. For those systems the reliability and availability analyses are increasingly challenging, as the interaction between machines has become more complex, and the analysis of the flexibility of the production systems to respond to machinery failure may require advanced simulation techniques. This book fills a gap on how to deal with such complex systems by linking the concepts of systems reliability and asset management, and then making these solutions more accessible to industry by explaining the availability analysis of complex systems based on simulation methods that emphasise Petri nets. Explains how to use a monitoring database to perform important tasks including an update of complex systems reliability Shows how to diagnose probable machinery-based causes of system performance degradation by using a monitoring database and reliability estimates in an integrated way Describes practical techniques for the application of AI and machine learning methods to fault detection and diagnosis problems

The Gas Turbine Engineering Handbook has been the standard for engineers involved in the design, selection, and operation of gas turbines. This revision includes new case histories, the latest techniques, and new designs to comply with recently passed legislation. By keeping the book up to date with new, emerging topics, Boyce ensures that this book will remain the standard and most widely used book in this field. The new Third Edition of the Gas Turbine Engineering Hand Book updates the book to cover the new generation of Advanced gas Turbines. It examines the benefit and some of the major problems that have been encountered by these new turbines. The book keeps abreast of the environmental changes and the industries answer to these new regulations. A new chapter on case histories has been added to enable the engineer in the field to keep abreast of problems that are being encountered and the solutions that have resulted in solving them. Comprehensive treatment of Gas Turbines from Design to Operation and Maintenance. In depth treatment of Compressors with emphasis on surge, rotating stall, and choke; Combustors with emphasis on Dry Low NOx Combustors; and Turbines with emphasis on Metallurgy and new cooling schemes. An excellent introductory book for the student and field engineers A special maintenance section dealing with the advanced gas turbines, and special diagnostic charts have been provided that will enable the reader to troubleshoot problems he encounters in the field The third edition consists of many Case Histories of Gas Turbine problems. This should enable the field engineer to avoid some of these same generic problems

This book presents a risk management framework designed to achieve better decisions and more desirable outcomes. It presents an in-depth discussion of some fundamental principles of risk management related to the use of expected values, uncertainty handling, and risk acceptance criteria. Several examples from the offshore petroleum industry are included to illustrate the use of the framework, but it can also be applied in other areas.

The advancement of methods and technologies in the oil and gas industries calls for new insight into the corrosion problems these industries face daily. With the application of more precise instruments and laboratory techniques as well as the development of new scientific paradigms, corrosion professionals are also witnessing a new era in the way d

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Dynamic Risk Analysis in the Chemical and Petroleum Industry focuses on bridging the gap between research and industry by responding to the following questions: What are the most relevant developments of risk analysis? How can these studies help industry in the prevention of major accidents? Paltrinieri and Khan provide support for professionals who plan to improve risk analysis by introducing innovative techniques and exploiting the potential of data share and process technologies. This concrete reference within an ever-growing variety of innovations will be most helpful to process safety managers, HSE managers, safety engineers and safety engineering students. This book is divided into four parts. The Introduction provides an overview of the state-of-the-art risk analysis methods and the most up-to-date popular definitions of accident scenarios. The second section on Dynamic Risk Analysis shows the dynamic evolution of risk analysis and covers Hazard Identification, Frequency Analysis, Consequence Analysis and Establishing the Risk Picture. The third section on Interaction with Parallel Disciplines illustrates the interaction between risk analysis and other disciplines from parallel fields, such as the

nuclear, the economic and the financial sectors. The final section on Dynamic Risk Management addresses risk management, which may dynamically learn from itself and improve in a spiral process leading to a resilient system. Helps dynamic analysis and management of risk in chemical and process industry Provides industry examples and techniques to assist you with risk- based decision making Addresses also the human, economic and reputational aspects composing the overall risk picture

A Practical Guide to Piping and Valves for the Oil and Gas Industry covers how to select, test and maintain the right oil and gas valve. Each chapter focuses on a specific type of valve with a built-in structured table on valve selection. Covering both onshore and offshore projects, the book also gives an introduction to the most common types of corrosion in the oil and gas industry, including CO₂, H₂S, pitting, crevice, and more. A model to evaluate CO₂ corrosion rate on carbon steel piping is introduced, along with discussions on bulk piping components, including fittings, gaskets, piping and flanges. Rounding out with chapters devoted to valve preservation to protect against harmful environments and factory acceptance testing, this book gives engineers and managers a much-needed tool to better understand today's valve technology. Presents oil and gas examples and challenges relating to valves, including many illustrations from valves in different stages of projects Helps readers understand valve materials, testing, actuation, packing and preservation, also including a new model to evaluate CO₂ corrosion rates on carbon steel piping Presents structured valve selection tables in each chapter to help readers pick the right valve for the right project

This book represents the proceedings of the 10th annual symposium of the Society of Reliability Engineers, Scandinavian Chapter, and was held in Stavanger, Norway, 9-11 October 1989. The theme of the symposium emphasised the need for obtaining a competitive edge through reliability in systems engineering and addressed the role of reliability in marketing, contracts, customer support and product liability. This book will be of interest to those involved in reliability engineering, risk assessment, safety and maintenance engineering.

This book collects a high-quality selection of contemporary research and case studies on the complexity resulting from human/reliability management in industrial plants and critical infrastructures. It includes: Human-error management issues—considering how to reduce human errors as much as possible. Reliability management issues—considering the ability of a system or component to function under certain conditions for a specified period of time. Thus, the book analyses globally the problem regarding the human and reliability management to reduce human errors as much as possible and to ensure safety and security in critical infrastructures. Accidents continue to be the major concern in “critical infrastructures”, and human factors have been proved to be the prime causes to accidents. Clearly, human dynamics are a challenging management function to guarantee reliability, safety and costs reduction in critical infrastructures. The book is enriched by figures, examples and extensive case studies and is a valuable reference resource for those with involved in disaster and emergency planning as well as researchers interested both in theoretical and practical aspects.

Prevention of Actuator Emissions in the Oil and Gas Industry delivers a critical reference for oil and gas engineers and managers to get up-to-speed on all the factors in actuator fugitive emissions. Packed with a selection process, the benefits of switching to an electric system, and the technology around open and closed loop hydraulic systems helps today's engineer understand all their options. Rounding with a detailed explanation around High Integrity Pressure Protection Systems (HIPPS), this book gives provides the knowledge necessary to lower emissions on today's equipment. Gives readers all they need to understand all the sources and key factors contributing to fugitive emissions and leakage from oil and gas actuators Teaches how to select environmentally friendly actuators, particularly all electric systems Introduces the High Integrity Pressure Protection System (HIPPS) and the ways it reduces flaring

Delves into the core and functional areas in the upstream oil and gas industry covering a wide range of operations and processes Oil and gas exploration and production (E&P) activities are costly, risky and technology-intensive. With the rise in global demand for oil and fast depletion of easy reserves, the search for oil is directed to more difficult areas – deepwater, arctic region, hostile terrains; and future production is expected to come from increasingly difficult reserves – deeper horizon, low quality crude. All these are making E&P activities even more challenging in terms of operations, technology, cost and risk. Therefore, it is necessary to use scarce resources judiciously and optimize strategies, cost and capital, and improve business performance in all spheres of E&P business. Optimization and Business Improvement Studies in Upstream Oil and Gas Industry contains eleven real-life optimization and business improvement studies that delve into the core E&P activities and functional areas covering a wide range of operations and processes. It uses various quantitative and qualitative techniques, such as Linear Programming, Queuing theory, Critical Path Analysis, Economic analysis, Best Practices Benchmark, Business Process Simplification etc. to optimize Productivity of drilling operations Controllable rig time loss Deepwater exploration strategy Rig move time and activity schedule Offshore supply vessel fleet size Supply chain management system Strategic workforce and human resource productivity Base oil price for a country Standardize consumption of materials Develop uniform safety standards for offshore installations Improve organizational efficiency through business process simplification The book will be of immense interest to practicing managers, professionals and employees at all levels/ disciplines in oil and gas industry. It will also be useful to academicians, scholars, educational institutes, energy research institutes, and consultants dealing with oil and gas. The work can be used as a practical guide to upstream professionals and students in petroleum engineering programs.

As an overview of reliability performance and specification in new product development, Product Reliability is suitable for managers responsible for new product development. The methodology for making decisions relating to reliability performance and specification will be of use to engineers involved in product design and development. This book can be used as a text for graduate courses on design, manufacturing, new product development and operations management and in various engineering disciplines.

Reliability and Maintainability of In-Service Pipelines helps engineers understand the best structural analysis methods and more accurately predict the life of their pipeline assets. Expanded to cover real case studies from oil and gas, sewer and water pipes, this reference also explains inline inspection and how the practice influences reliability analysis, along with various reliability models beyond the well-known Monte Carlo method. Encompassing both numerical and analytical methods in structural reliability analysis, this book gives engineers a stronger point of reference covering both pipeline maintenance and monitoring techniques in a single resource. Provides tactics on cost-effective pipeline integrity management decisions and strategy for a variety of different pipes Presents readers with rational tools for strengthening and rehabing existing pipelines Teaches how to optimize materials selection and design parameters for designing future pipelines with a longer service life

During the last decade there have been increasing societal concerns over sustainable developments focusing on the conservation of the environment, the welfare and safety of the individual and at the same time the optimal allocation of available natural and financial resources. As a consequence the methods of risk and reliability analysis are becomi

Nuclear Radioactive Materials in the Oil and Gas Industry comprehensively discusses the TENORMs generated from various types of oil and gas processes and their associated adverse human health effects, effective TENORM waste management strategies, and the quantitative risk analysis. The book thoroughly investigates current knowledge, addressing the three main gaps identified in available studies: 1) Exposure to radioactivity, 2) High volume waste as a source of radiation exposure, and 3) A lack of uniform, international safety regulations. This book offers researchers, scientists and graduate and undergraduate students a comprehensive and well-researched reference that covers fundamental concepts, problem identification and solutions development. It is an ideal, comprehensive guideline for professionals involved in the oil and gas and nuclear industries who are concerned about radiological issues. Demystifies NORM and TENORM concepts and redefines TENORM from technical and nuclear

scientific perspectives Addresses statistically representative data of quantitative risk assessment and dynamic accident modeling Stresses the need for legislation and consistency of safety standards relating to radiological risks posed by TENORM on health and the environment

An Insightful Guide to Avoiding Offshore Oil- and Gas-Industry Disaster Designing, constructing, operating, and maintaining offshore oil and gas industry equipment and systems can sometimes result in accidents, injuries, and other serious problems. *Safety and Reliability in the Oil and Gas Industry: A Practical Approach* focuses on oil and gas industry equipment reliability, offers useful and up-to-date information on the subject, and covers in a single volume the most common safety and reliability engineering issues in the oil and gas industry. The book introduces the latest developments in the area, and provides relevant methods and approaches. It also presents important aspects of various case studies on major accidents in the oil and gas industry, and considers human factors that contribute to accidents and fatalities in the area of oil and gas. Additionally, this book describes: Mathematical concepts Oil and gas industry equipment reliability characteristics Accident data and analysis Mathematical models used for performing safety and reliability-related analyses in the industry *Safety and Reliability in the Oil and Gas Industry: A Practical Approach* covers important aspects of safety in the offshore oil and gas industry. A reference designed with engineering professionals in mind, this book can also be used in oil- and gas-industry-related courses, and serves as a guide for anyone concerned with safety and reliability in the area of oil and gas.

The objective of the book is to provide all the elements to evaluate the performance of production availability and reliability of a system, to integrate them and to manage them in its life cycle. By the examples provided (case studies) the main target audience is that of the petroleum industries (where I spent most of my professional years). Although the greatest rigor is applied in the presentation, and justification, concepts, methods and data this book is geared towards the user.

Using clear language, this book shows you how to build in, evaluate, and demonstrate reliability and availability of components, equipment, and systems. It presents the state of the art in theory and practice, and is based on the author's 30 years' experience, half in industry and half as professor of reliability engineering at the ETH, Zurich. In this extended edition, new models and considerations have been added for reliability data analysis and fault tolerant reconfigurable repairable systems including reward and frequency / duration aspects. New design rules for imperfect switching, incomplete coverage, items with more than 2 states, and phased-mission systems, as well as a Monte Carlo approach useful for rare events are given. Trends in quality management are outlined. Methods and tools are given in such a way that they can be tailored to cover different reliability requirement levels and be used to investigate safety as well. The book contains a large number of tables, figures, and examples to support the practical aspects.

Offshore Risk Assessment is the first book to deal with quantified risk assessment (QRA) as applied specifically to offshore installations and operations. Risk assessment techniques have been used for some years in the offshore oil and gas industry, and their use is set to expand increasingly as the industry moves into new areas and faces new challenges in older regions. The book starts with a thorough discussion of risk analysis methodology. Subsequent chapters are devoted to analytical approaches to escalation, escape, evacuation and rescue analysis of safety and emergency systems. Separate chapters analyze the main hazards of offshore structures: Fire, explosion, collision and falling objects. Risk mitigation and control are then discussed, followed by an outline of an alternative approach to risk modelling that focuses especially on the risk of short-duration activities. Not only does the book describe the state of the art of QRA, it also identifies weaknesses and areas that need development.

Readership: Besides being a comprehensive reference for academics and students of marine/offshore risk assessment and management, the book should also be owned by professionals in the industry, contractors, suppliers, consultants and regulatory authorities.

Petroleum engineering now has its own true classic handbook that reflects the profession's status as a mature major engineering discipline. Formerly titled the *Practical Petroleum Engineer's Handbook*, by Joseph Zaba and W.T. Doherty (editors), this new, completely updated two-volume set is expanded and revised to give petroleum engineers a comprehensive source of industry standards and engineering practices. It is packed with the key, practical information and data that petroleum engineers rely upon daily. The result of a fifteen-year effort, this handbook covers the gamut of oil and gas engineering topics to provide a reliable source of engineering and reference information for analyzing and solving problems. It also reflects the growing role of natural gas in industrial development by integrating natural gas topics throughout both volumes. More than a dozen leading industry experts-academia and industry-contributed to this two-volume set to provide the best , most comprehensive source of petroleum engineering information available.

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.

The job of any reservoir engineer is to maximize production from a field to obtain the best economic return. To do this, the engineer must study the behavior and characteristics of a petroleum reservoir to determine the course of future development and production that will maximize the profit. Fluid flow, rock properties, water and gas coning, and relative permeability are only a few of the concepts that a reservoir engineer must understand to do the job right, and some of the tools of the trade are water influx calculations, lab tests of reservoir fluids, and oil and gas performance calculations. Two new chapters have been added to the first edition to make this book a complete resource for students and professionals in the petroleum industry: *Principles of Waterflooding, Vapor-Liquid Phase Equilibria*.

Petrochemical Machinery Insights is a priceless collection of solutions and advice from Heinz Bloch on a broad range of equipment management themes, from wear to warranty issues, organizational problems and oil mist lubrication, and professional growth and pre-purchase of machinery. The author draws on his industry experience to hone in on important problems that do not get addressed in other books, providing actionable details that engineers can use. Mechanical, reliability, and process engineers will find this book the next best thing to having Heinz Bloch on speed dial. Focuses on pieces of hard-won experience from the industry that are rarely included in other books Presents not just a guide to technical problems, but also to crucial themes in management and organization Includes an informal and honest style, making author Heinz Bloch's 40 years of experience accessible to a broad audience of readers Contains a unifying theme that successful asset management requires the separation of application and implementation details

Utilize your assets effectively, safely, and profitably.

Offshore Operation Facilities: Equipment and Procedures provides new engineers with the knowledge and methods that will assist them in maximizing efficiency while minimizing cost and helps them prepare for the many operational variables involved in offshore operations. This book clearly presents the working knowledge of subsea operations and demonstrates how to optimize operations offshore. The first half of the book covers the fundamental principles governing offshore engineering structural design, as well as drilling

operations, procedures, and equipment. The second part includes common challenges of deep water oil and gas engineering as well as beach (shallow) oil engineering, submarine pipeline engineering, cable engineering, and safety system engineering. Many examples are included from various offshore locations, with special focus on offshore China operations. In the offshore petroleum engineering industry, the ability to maintain a profitable business depends on the efficiency and reliability of the structure, the equipment, and the engineer. Offshore Operation Facilities: Equipment and Procedures assists engineers in meeting consumer demand while maintaining a profitable operation. Comprehensive guide to the latest technology, strategies, and best practices for offshore operations Step-by-step approach for dealing with common challenges such as deepwater and shallow waters Includes submarine pipeline, cable engineering, and safety system engineering Unique examples from various offshore locations around the world, with special focus on offshore China

Offshore Pipelines covers the full scope of pipeline development from pipeline designing, installing, and testing to operating. It gathers the authors' experiences gained through years of designing, installing, testing, and operating submarine pipelines. The aim is to provide engineers and management personnel a guideline to achieve cost-effective management in their offshore and deepwater pipeline development and operations. The book is organized into three parts. Part I presents design practices used in developing submarine oil and gas pipelines and risers. Contents of this part include selection of pipe size, coating, and insulation. Part II provides guidelines for pipeline installations. It focuses on controlling bending stresses and pipe stability during laying pipelines. Part III deals with problems that occur during pipeline operations. Topics covered include pipeline testing and commissioning, flow assurance engineering, and pigging operations. This book is written primarily for new and experienced engineers and management personnel who work on oil and gas pipelines in offshore and deepwater. It can also be used as a reference for college students of undergraduate and graduate levels in Ocean Engineering, Mechanical Engineering, and Petroleum Engineering. * Pipeline design engineers will learn how to design low-cost pipelines allowing long-term operability and safety. * Pipeline operation engineers and management personnel will learn how to operate their pipeline systems in a cost effective manner. * Deepwater pipelining is a new technology developed in the past ten years and growing quickly.

This book presents a unique collection of contributions from some of the foremost scholars in the field of risk and reliability analysis. Combining the most advanced analysis techniques with practical applications, it is one of the most comprehensive and up-to-date books available on risk-based engineering. All the fundamental concepts needed to conduct risk and reliability assessments are covered in detail, providing readers with a sound understanding of the field and making the book a powerful tool for students and researchers alike. This book was prepared in honor of Professor Armen Der Kiureghian, one of the fathers of modern risk and reliability analysis.

"Designing, constructing, operating, and maintaining offshore oil and gas industry equipment and systems can sometimes result in accidents, injuries, and other serious problems. Safety and Reliability in the Oil and Gas Industry: A Practical Approach focuses on oil and gas industry equipment reliability, offers useful and up-to-date information on the subject, and covers in a single volume the most common safety and reliability engineering issues in the oil and gas industry. The book introduces the latest developments in the area, and provides relevant methods and approaches. It also presents important aspects of various case studies on major accidents in the oil and gas industry, and considers human factors that contribute to accidents and fatalities in the area of oil and gas. Additionally, this book describes: -Mathematical concepts -Oil and gas industry equipment reliability characteristics -Accident data and analysis -Mathematical models used for performing safety and reliability-related analyses in the industry Safety and Reliability in the Oil and Gas Industry: A Practical Approach covers important aspects of safety in the offshore oil and gas industry. A reference designed with engineering professionals in mind, this book can also be used in oil- and gas-industry-related courses, and serves as a guide for anyone concerned with safety and reliability in the area of oil and gas."--

The advent of reliability engineering tools coupled with the cost of oil and gas operations has changed the paradigm of maintenance technology. A simple strategy of efficient replacement of failed equipment/component has been transformed into a more complex but proactive approach for keeping equipment running at peak efficiency concept of "total process" reliability engineering and maintenance. Applied Oil and Gas Reliability Engineering: Modeling and Analysis 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 commonly used software modeling tools which aid in the planning and execution of an effective maintenance program. Easy to understand, the book identifies equipment and procedural problems inherent to oil and gas operations then applied a systematic approach for solving them. In this book, the author combines qualitative and quantitative methods with powerful software modeling tools to assist engineers in formulating a custom maintenance policy which will ensure process efficiency, reduce projects cost, reduce redundancies and optimum equipment replacement time. Mathematic methods for analyzing failure historical data Instruction for utilizing modeling systems such as MAROS, TARO, and BLOCKSIM and interpret results Step by Step approach for formulating an cost effective maintenance program Identifies equipment and procedural problems inherent to oil and gas operations Easily understood methods and software tools that will save time and money Provides a tutorial for using the most used software programs such as: MAROS, TARO, and BLOCKSIM Step by step instruction to create a custom maintenance policy Reduce project cost, reduce redundancies and optimize equipment life

Performance Management for the Oil, Gas, and Process Industries: A Systems Approach is a practical guide on the business cycle and techniques to undertake step, episodic, and breakthrough improvement in performance to optimize operating costs. Like many industries, the oil, gas, and process industries are coming under increasing pressure to cut costs due to ongoing construction of larger, more integrated units, as well as the application of increasingly stringent environmental policies. Focusing on the 'value adder' or

'revenue generator' core system and the company direction statement, this book describes a systems approach which assures significant sustainable improvements in the business and operational performance specific to the oil, gas, and process industries. The book will enable the reader to: utilize best practice principles of good governance for long term performance enhancement; identify the most significant performance indicators for overall business improvement; apply strategies to ensure that targets are met in agreed upon time frames. Describes a systems approach which assures significant sustainable improvements in the business and operational performance specific to the oil, gas, and process industries Helps readers set appropriate and realistic short-term/ long-term targets with a pre-built facility health checker Elucidates the relationship between PSM, OHS, and Asset Integrity with an increased emphasis on behavior-based safety Discusses specific oil and gas industry issues and examples such as refinery and gas plant performance initiatives and hydrocarbon accounting

Facility Integrity Management: Effective Principles and Practices for the Oil, Gas and Petrochemical Industries presents the information needed to completely understand common failures in the facility integrity management process. By understanding this more comprehensive approach, companies will be able to better identify shortcomings within their respective system that they did not realize existed. To introduce this method, the book provides managers and engineers with a model that ensures major process incidents are avoided, aging facilities are kept in a safe and reliable state and are operating at maximum levels, and any gaps within the integrity management system are identified and addressed, such as the all too common fragmented reliability programs. The book approaches oil and gas facility management from a universal perspective, effectively charting out existing oil and gas facilities and their associated work processes, including maintenance, operations, and reliability, and then reconstructs them in order to optimize the way integrity is managed, creating a synergy across the various elements. Easy to read, packed with practical applications applied to real process plant scenarios such as key concepts, process flow charts, handy checklists, real-world case studies and a dictionary, provides a high quality guide for a breakdown free facility, maximizing productivity and return to shareholders. Helps readers gain a practical and industry specific approach to facility integrity management supported with real-world case studies from oil, gas, and petrochemical facility locations Presents a facility integrity excellence model, a holistic approach for oil and gas companies to drive towards integrity assurance unit monitoring, creating a failure-free environment Identifies and addresses failure of facility processes and equipment before the onset of performance degradation, keeping equipment maintenance costs low and reliability high

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