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Open Pit Mine Planning & Design Design of Underground Hard-Coal Mines Design of Supports in Mines Human-Centered Design for Mining Equipment and New Technology Extracting Accountability Explosion Pressure Design Criteria for New Seals in U.S. Coal Mines Environmental Engineering in Mines Design of Underground Hard-coal Mines Design Analysis in Rock Mechanics Mine Design, Planning and Sustainable Exploitation in the Digital Age Geotechnical Design for Sublevel Open Stoping Explosion Pressure Design Criteria for New Seals in U. S. Coal Mines Design of an Underground Mine Layout Design of Bulkheads for Controlling Water in Underground Mines Rockbursts and Seismicity in Mines 93 Design Practices for Multiple-seam Longwall Mines Mining Goes Digital Mine Design Guidelines for Open Pit Slope Design in Weak Rocks Methods and Techniques for Preventing and Mitigating Water Hazards in Mines Rock Mechanics Instrumentation for Mine Design Current practice of pillar design in US coal mines Experimental Longwall Mining in a Pennsylvania Anthracite Mine (in Two Parts). Mechanical Excavation in Mining and Civil Industries Ground Control Aspects of Coal Mine Design Wireless Communication in Underground Mines Shaft Design in the Coeur D'Alene Mining District, Idaho List of Bureau of Mines Publications and Articles ... with Subject and Author Index Engineered Rock Structures in Mining and Civil Construction Design of Bulkheads for Controlling Water in Underground Mines Mine Planning and Equipment Selection 1998 Strength Characteristics and Air Leakage Determinations for Alternative Mine Seal Designs Managing Coal Combustion Residues in Mines Rapid Response Pneumatic Fire Detection for Multilevel Metal Mines Field Evaluation of Three Longwall Pillar Systems in a Kentucky Coal Mine Coal Mine Roof Rating (CMRR) Proceedings, New Technology for Coal Mine Roof Support Explosions in Underground Coal Mines Tailings and Mine Waste 2002 Bureau of Mines Research

Design of an Underground Mine Layout Feb 18 2022

Strength Characteristics and Air Leakage Determinations for Alternative Mine Seal Designs Jun 29 2020

Design of Bulkheads for Controlling Water in Underground Mines Sep 01 2020

Engineered Rock Structures in Mining and Civil Construction Oct 02 2020 The book collates and sifts a vast amount of literature on the design of structures in the mining and construction industries to synthesize a comprehensive text on the subject area. The focus is on the application of theory to practice and the book is richly illustrated with worked out examples. The presentation is lucid and based on the extensive professional, teaching and research experience of the authors. The text seeks to address the key issues of design of 'engineered' structures in or on rock. The book will serve as a standard text for undergraduate courses in mining, civil engineering and engineering geology.

Design of Bulkheads for Controlling Water in Underground Mines Jan 17 2022

Experimental Longwall Mining in a Pennsylvania Anthracite Mine (in Two Parts). Apr 08 2021

Explosion Pressure Design Criteria for New Seals in U. S. Coal Mines Mar 19 2022 Seals are barriers constructed in underground coal mines throughout the United States to isolate abandoned mining panels or groups of panels from the active workings. Historically, mining regulations required seals to withstand a 140-kPa (20-psig) explosion pressure. However, the Mine Improvement and New Emergency Response Act (“MINER Act”) requires the Mine Safety and Health Administration (MSHA) to increase this design standard by the end of 2007. This report provides a sound scientific and engineering justification to recommend a three-tiered explosion pressure design criterion for new seals in coal mines in response to the MINER Act. Much of the information contained in this report also applies to existing seals.

Rock Mechanics Instrumentation for Mine Design Jun 10 2021

Guidelines for Open Pit Slope Design in Weak Rocks Aug 12 2021 Weak rocks encountered in open pit mines cover a wide variety of materials, with properties ranging between soil and rock. As such, they can provide a significant challenge for the slope designer. For these materials, the mass strength can be the primary control in the design of the pit slopes, although structures can also play an important role. Because of the typically weak nature of the materials, groundwater and surface water can also have a controlling influence on stability. Guidelines for Open Pit Slope Design in Weak Rocks is a companion to Guidelines for Open Pit Slope Design, which was published in 2009 and dealt primarily with strong rocks. Both books were commissioned under the Large Open Pit (LOP) project, which is sponsored by major mining companies. These books provide summaries of the current state of practice for the design, implementation and assessment of slopes in open pits, with a view to meeting the requirements of safety, as well as the recovery of anticipated ore reserves. This book, which follows the general cycle of the slope design process for open pits, contains 12 chapters. These chapters were compiled and written by industry experts and contain a large number of case histories. The initial chapters address field data collection, the critical aspects of determining the strength of weak rocks, the role of groundwater in weak rock slope stability and slope design considerations, which can differ somewhat from those applied to strong rock. The subsequent chapters address the principal weak rock types that are encountered in open pit mines, including cemented colluvial sediments, weak sedimentary mudstone rocks, soft coals and chalk, weak limestone, saprolite, soft iron ores and other leached rocks, and hydrothermally altered rocks. A final chapter deals with design implementation aspects, including mine planning, monitoring, surface water control and closure of weak rock slopes. As with the other books in this series, Guidelines for Open Pit Slope Design in Weak Rocks provides guidance to practitioners involved in the design and implementation of open pit slopes, particularly geotechnical engineers, mining engineers, geologists and other personnel working at operating mines.

Methods and Techniques for Preventing and Mitigating Water Hazards in Mines Jul 11 2021 This book summarizes the advances in mine hydrogeology in terms of the development of new technologies and sustainable mining to prevent water inrush disasters during coal-mine construction and production in China. It presents holistic topics that balance safe coal mining and the minimization of impacts on the environment and human beings. Systematically describing the methods and techniques used in China’s coal mines to predict, prevent and mitigate water inrushes, it includes nine case studies to illustrate the practical engineering solutions using state-of-art methods and technologies under various conditions. It also discusses how the approaches could help solve the world’s water problems, not only in mining, but also in tunneling, disposing of nuclear waste, storing natural gas, and sequestering CO2, as well as their impact on mining industries and related fields around the world. The book intended for students, researchers and practitioners working in the mining industries.

Human-Centered Design for Mining Equipment and New Technology Nov 27 2022 This book introduces Human-Centered Design (HCD) and outlines the benefits of the approach for mining equipment and new technology. It is a process that aims to make equipment and systems more usable and acceptable by focusing on the end user, their tasks, their work environment, or use context. This process requires that users and other stakeholders are involved throughout the design and development process of the equipment or system. To date, HCD has not been widely applied to the design, development, and deployment of mining equipment or new technology.

Ground Control Aspects of Coal Mine Design Feb 06 2021

Design of Supports in Mines Dec 28 2022 This concise guide to designing mining support structures emphasizes wooden gallery and longwall supports, roof bolts and roof trusses, and powered supports. Deals with the engineering characteristics of supporting materials such as timber, steel, concrete, and stowing. Illustrated text supplies tables and formulas for making specific design calculations.

Mine Design Sep 13 2021 Solve everyday mining problems quickly and easily by applying the computer language GPSS (General Purpose Simulation System). Part I of the book reviews mining simulation in general and explains why the GPSS/H simulation language was selected. Part II is an overview of the

language itself to help you obtain maximum benefit from the mining examples, which are contained on the included CD. Each of the 30 examples on the CD comes from a variety of mining operations (large, small, surface, underground) and includes GPSS/H programs that can be kept in a file to be run with no programming. Computer language experience isn't required, as all the programs are run by keying in a simple list of instructions. If you are more experienced with the language, you can modify one or more of the programs to suit your particular problem. All examples are interactive; you are prompted to input data for the simulation and then run the animation to view your mining operation. Mine Design can also be used as a supplemental text for mining engineering classes, including those on mine design, mine equipment selection, and computer applications in mining. Most chapters offer numerous examples--with answers--in addition to the programs. Ease of access to the program and clear visualization of the results set this book apart from other mining texts.

Design of Underground Hard-coal Mines Jul 23 2022 The escalating worldwide demand for energy has had the effect, among other things, of promoting the development of coal mining. In some countries specialist design offices were set up and students trained as specialists in mine design and construction. Poland, a country having mining traditions stretching over many centuries, is a good example, and has gained a place in the forefront, not only as a coal producer and exporter, but also as an originator and exporter of technical mining know-how. The author of this book has himself had 25 years of practical experience in mine design, in the supervision of mining investment implementation both at home and abroad, and also in directing the activities of the Chief Mine Design and Studies Office in Poland, plus more than 20 years' teaching experience in the training of mining engineers, in particular as head of the Mine Design Department of the Mining Faculty at the Silesian Polytechnic University in Gliwice. This vast wealth of experience has prompted him to write the present book which discusses the basic problems met with in the design of underground hard-coal mines.

Rockbursts and Seismicity in Mines 93 Dec 16 2021 These proceedings include the latest developments in research and practice in the area of mining-induced seismicity. Three themes are explored: strong ground motion and rockburst hazard; mechanics of seismic events and stochastic methods; and monitoring of seismicity and geomechanical modelling.

Tailings and Mine Waste 2002 Nov 22 2019 The proceedings in this work present 60 papers on mine and mill tailings and mine waste, as well as current and future issues facing the mining and environmental communities. This includes matters dealing with technical capabilities and developments, regulations, and environmental concerns.

Current practice of pillar design in US coal mines May 09 2021

Field Evaluation of Three Longwall Pillar Systems in a Kentucky Coal Mine Mar 27 2020

Shaft Design in the Coeur D'Alene Mining District, Idaho Dec 04 2020

Open Pit Mine Planning & Design Mar 02 2023

Design Practices for Multiple-seam Longwall Mines Nov 15 2021

Explosions in Underground Coal Mines Dec 24 2019 This book addresses the hazard of gas explosions in sealed underground coal mines, and how the risk of explosion can be assessed, modeled, and mitigated. With this text, coal mine operators and managers will be able to identify the risks that lead to underground mine gas explosions, and implement practical strategies to optimize mining safety for workers. In six chapters, the book offers a framework for understanding the sealed coal mine atmosphere, the safety characteristics that are currently in place, and the guidelines to be followed by engineers to improve upon these characteristics. The first part of the book describes the importance and characteristics of underground gas mine explosions in a historical context with data showing the high number of fatalities from explosion incidents, and how risk has been mitigated in the past. Chapters also detail mathematical models and explosibility diagrams for determining and understanding the risk factors involved in mine explosions. Readers will also learn about safety operations, and assessments for the sealed mine atmosphere. With descriptions of chapter case studies, mining engineers and researchers will learn how to apply safety measures in underground coal mines to improve mining atmospheres and save lives.

Extracting Accountability Oct 26 2022 How engineers in the mining and oil and gas industries attempt to reconcile competing domains of public accountability. The growing movement toward corporate social responsibility (CSR) urges corporations to promote the well-being of people and the planet rather than the sole pursuit of profit. In Extracting Accountability, Jessica Smith investigates how the public accountability of corporations emerges from the everyday practices of the engineers who work for them. Focusing on engineers who view social responsibility as central to their profession, she finds the corporate context of their work prompts them to attempt to reconcile competing domains of accountability—to formal guidelines, standards, and policies; to professional ideals; to the public; and to themselves. Their efforts are complicated by the distributed agency they experience as corporate actors: they are not always authors of their actions and frequently act through others. Drawing on extensive interviews, archival research, and fieldwork, Smith traces the ways that engineers in the mining and oil and gas industries accounted for their actions to multiple publics—from critics of their industry to their own friends and families. She shows how the social license to operate and an underlying pragmatism lead engineers to ask how resource production can be done responsibly rather than whether it should be done at all. She analyzes the liminality of engineering consultants, who experienced greater professional autonomy but often felt hamstrung when positioned as outsiders. Finally, she explores how critical participation in engineering education can nurture new accountabilities and chart more sustainable resource futures.

Design Analysis in Rock Mechanics Jun 22 2022 This comprehensive introduction to rock mechanics treats the basics of rock mechanics in a clear and straightforward manner and discusses important design problems in terms of the mechanics of materials. This extended third edition includes an additional chapter on Foundations on Jointed Rock. Developed for a complete class in rock engineering, this volume uniquely combines the design of surface and underground rock excavations and addresses: • rock slope stability in surface excavations, from planar block and wedge slides to rotational and toppling failures • shaft and tunnel stability, ranging from naturally-supported openings to analysis and design of artificial support and reinforcement systems • entries and pillars in stratified ground • three-dimensional caverns, with emphasis on cable bolting and backfill • geometry and forces of chimney caving, combination support and trough subsidence • rock bursts and bumps in underground excavations, with focus on dynamic phenomena and on fast and sometimes catastrophic failures. The numerous exercises and examples familiarize the reader with solving basic practical problems in rock mechanics through various design analysis techniques and their applications. Supporting the main text, appendices provide supplementary information about rock, joint, and composite properties, rock mass classification schemes, useful formulas, and an extensive literature list. The large selection of problems at the end of each chapter can be used for home assignment. A solutions manual is available to course instructors. Explanatory and illustrative in character, this volume is suited for courses in rock mechanics, rock engineering and geological engineering design for undergraduate and first year graduate students in mining, civil engineering and applied earth sciences. Moreover, it will form a good introduction to the subject of rock mechanics for earth scientists and engineers from other disciplines.

Environmental Engineering in Mines Aug 24 2022 This is a detailed study on the design, operation and maintenance of mines in relationship to the total environment.

Bureau of Mines Research Oct 22 2019

Mine Planning and Equipment Selection 1998 Jul 31 2020 This work details the findings of the 7th International Conference on Mine Planning and Equipment Selection of 1998, held in Calgary. Topics include: design and planning of surface and underground mines; geotechnical stability in surface and underground mines; and mining and the environment.

Design of Underground Hard-Coal Mines Jan 29 2023 The escalating worldwide demand for energy has had the effect, among other things, of promoting the development of coal mining. In some countries specialist design offices were set up and students trained as specialists in mine design and construction. Poland, a country having mining traditions stretching over many centuries, is a good example, and has gained a place in the forefront, not only as a coal producer and exporter, but also as an originator and exporter of technical mining know-how. The author of this book has himself had 25 years of practical experience in mine design, in the supervision of mining investment implementation both at home and abroad, and also in directing the activities of the Chief Mine Design and Studies Office in Poland, plus more than 20 years' teaching experience in the training of mining engineers, in particular as head of the Mine

Design Department of the Mining Faculty at the Silesian Polytechnic University in Gliwice. This vast wealth of experience has prompted him to write the present book which discusses the basic problems met with in the design of underground hard-coal mines. The author's primary aim has been to deal with all those questions in mine design which have not yet been answered in mining textbooks and which, from his own personal experience, he considers to be of importance. Accordingly, he presents the general principles governing the design of new mines and the reconstruction of working mines, the development of mining regions, the design of coal-preparation plant, and energy economy in mines. Making use of the broad experience gained by the Polish mining industry in the implementation of mining investment projects, he has quoted several examples of technical and organizational solutions which effectively shorten the mine construction cycle. The book is addressed chiefly to investors and engineers engaged in preparing plans for the development of mining regions, for the construction of new mines, and the reconstruction of existing mines and preparation plants, as well as to students in mining departments of technical schools and universities. The information offered here is of great practical value and may well stimulate the development of new ideas for design and implementation concepts.

Wireless Communication in Underground Mines Jan 05 2021 Wireless communication has emerged as an independent discipline in the past decades. Everything from cellular voice telephony to wireless data transmission using wireless sensor networks has profoundly impacted the safety, production, and productivity of industries and our lifestyle as well. After a decade of exponential growth, the wireless industry is one of the largest industries in the world. Therefore, it would be an injustice if the wireless communication is not explored for mining industry. Underground mines, which are characterized by their tough working conditions and hazardous environments, require fool-proof mine-wide communication systems for smooth functioning of mine workings and ensuring better safety. Proper and re- able communication systems not only save the machine breakdown time but also help in immediate passing of messages from the vicinity of underground working area to the surface for day-to-day normal mining operations as well as for speedy rescue operations in case of disaster. Therefore, a reliable and effective commu- cation system is an essential requisite for safe working, and maintaining requisite production and productivity of underground mines. Most of the existing systems generally available in underground mines are based on line (wired) communication principle, hence these are unable to withstand in the disaster conditions and dif?cult to deploy in inaccessible places. Therefore, wireless communication is an indispe- able, reliable, and convenient system and essential in case of day-to-day normal duty or disaster situations.

Coal Mine Roof Rating (CMRR) Feb 24 2020

Mine Design, Planning and Sustainable Exploitation in the Digital Age May 21 2022 Mine Design, Planning and Sustainable Exploitation in the Digital Age covers mine planning, design and exploitation taking cognizance of new developments, especially those associated with the Fourth Industrial Revolution and the positive influence that it has, and will have, on the mining industry. It refers to latest best practices with emphasis on the social license to operate and sustainable (green) mining. The book covers surface and underground mining in some detail and addresses relevant associated aspects such as risk management, green mining and the importance of real community relations. It is organized as follows: Surface Mining Underground Soft Rock Mining Underground Hard Rock (Metal/Non-metal) Mining Green and Sustainable Mining It has many relevant photos and figures that help the reader and includes appropriate support design and types commonly used in the various mining methods. Mine Design, Planning and Sustainable Exploitation in the Digital Age is mainly aimed at mining, geological engineering and other undergraduate and postgraduates interested in the mining resources industry. It will also serve as a useful reference book for practitioners in the mining industry who want an easy-to-use book.

Proceedings, New Technology for Coal Mine Roof Support Jan 25 2020

Mechanical Excavation in Mining and Civil Industries Mar 07 2021 The secret to streamlined scheduling of mining and civil engineering projects is a solid understanding of the basic concepts of rock cutting mechanics. Comparing theoretical values with experimental and real-world results, Mechanical Excavation in Mining and Civil Industries thoroughly explains various rock cutting theories developed for chisel, co

Geotechnical Design for Sublevel Open Stoping Apr 20 2022 The first comprehensive work on one of the most important underground mining methods worldwide, Geotechnical Design for Sublevel Open Stoping presents topics according to the conventional sublevel stoping process used by most mining houses, in which a sublevel stoping geometry is chosen for a particular mining method, equipment availability, and work force experience. Summarizing state-of-the-art practices encountered during his 25+ years of experience at industry-leading underground mines, the author: Covers the design and operation of sublevel open stoping, including variants such as bench stoping Discusses increases in sublevel spacing due to advances in the drilling of longer and accurate production holes, as well as advances in explosive types, charges, and initiation systems Considers improvements in slot rising through vertical crater retreat, inverse drop rise, and raise boring Devotes a chapter to rock mass characterization, since increases in sublevel spacing have meant that larger, unsupported stope walls must stand without collapsing Describes methodologies to design optimum open spans and pillars, rock reinforcement of development access and stope walls, and fill masses to support the resulting stope voids Reviews the sequencing of stoping blocks to minimize in situ stress concentrations Examines dilution control action plans and techniques to back-analyze and optimize stope wall performance Featuring numerous case studies from the world-renowned Mount Isa Mines and examples from underground mines in Western Australia, Geotechnical Design for Sublevel Open Stoping is both a practical reference for industry and a specialized textbook for advanced undergraduate and postgraduate mining studies.

Rapid Response Pneumatic Fire Detection for Multilevel Metal Mines Apr 27 2020

List of Bureau of Mines Publications and Articles ... with Subject and Author Index Nov 03 2020

Managing Coal Combustion Residues in Mines May 29 2020 Burning coal in electric utility plants produces, in addition to power, residues that contain constituents which may be harmful to the environment. The management of large volumes of coal combustion residues (CCRs) is a challenge for utilities, because they must either place the CCRs in landfills, surface impoundments, or mines, or find alternative uses for the material. This study focuses on the placement of CCRs in active and abandoned coal mines. The committee believes that placement of CCRs in mines as part of the reclamation process may be a viable option for the disposal of this material as long as the placement is properly planned and carried out in a manner that avoids significant adverse environmental and health impacts. This report discusses a variety of steps that are involved in planning and managing the use of CCRs as minefills, including an integrated process of CCR characterization and site characterization, management and engineering design of placement activities, and design and implementation of monitoring to reduce the risk of contamination moving from the mine site to the ambient environment. Enforceable federal standards are needed for the disposal of CCRs in minefills to ensure that states have adequate, explicit authority and that they implement minimum safeguards.

Explosion Pressure Design Criteria for New Seals in U.S. Coal Mines Sep 25 2022 Seals are barriers constructed in underground coal mines throughout the United States to isolate abandoned mining panels or groups of panels from the active workings. Historically, mining regulations required seals to withstand a 140-kPa (20-psig) explosion pressure. However, the Mine Improvement and New Emergency Response Act ("MINER Act") requires the Mine Safety and Health Administration (MSHA) to increase this design standard by the end of 2007. This report provides a sound scientific and engineering justification to recommend a three-tiered explosion pressure design criterion for new seals in coal mines in response to the MINER Act. Much of the information contained in this report also applies to existing seals. Engineers from the National Institute for Occupational Safety and Health (NIOSH) examined seal design criteria and practices used in the United States, Europe, and Australia and then classified seals into their various applications. Next, the engineers considered various kinds of explosive atmospheres that can accumulate within sealed areas and used thermodynamic calculations and simple gas explosion models to estimate worst-case explosion pressures that could impact seals. Three design pressure-time curves were developed for the dynamic structural analysis of new seals under the conditions in which those seals may be used: unmonitored seals where there is a possibility of methane-air detonation or high-pressure nonreactive shock waves and their reflections behind the seal; unmonitored seals with little likelihood of detonation or high-pressure nonreactive shock waves and their reflections; and monitored seals where the amount of potentially explosive methane-air is strictly limited and controlled. Figure I is a simple flowchart that illustrates the key decisions in choosing between the monitored or unmonitored seal design approaches and

the three design pressure-time curves. For the first condition, an unmonitored seal with an explosion run-up length of more than 50 m (165 ft), the possibility of detonation or high-pressure nonreactive shock waves and their reflections exists. The recommended design pressure-time curve rises to 4.4 MPa (640 psig) and then falls to the 800-kPa (120-psig) constant volume (CV) explosion overpressure. For unmonitored seals with an explosion run-up length of less than 50 m (165 ft), the possibility of detonation or high-pressure nonreactive shock waves and their reflections is less likely. A less severe design pressure-time curve that simply rises to the 800-kPa (120-psig) CV explosion overpressure may be employed. For monitored seals, engineers can use a 345-kPa (50-psig) design pressure-time curve if monitoring can ensure that (1) the maximum length of explosive mix behind a seal does not exceed 5 m (16 ft) and (2) the volume of explosive mix does not exceed 40% of the total sealed volume. Use of this 345-kPa (50-psig) design pressure-time curve requires monitoring and active management of the sealed area atmosphere. These design pressure-time curves apply to new seal design and construction. NIOSH engineers used these design pressure-time curves along with the Wall Analysis Code (WAC) from the U.S. Army Corps of Engineers and a simple plug analysis to develop design charts for the minimum required seal thickness to withstand each of these explosion pressure-time curves. These design charts consider a range of practical construction materials used in the mining industry and specify a minimum seal thickness given a certain seal height. Results of these analyses show that resistance to even the 4.4-MPa (640-psig) design pressure time curve can be achieved using common seal construction materials at reasonable thickness, demonstrating the feasibility and practical applications of this report. Engineers can also use other structural analysis programs to analyze and design seals by using the appropriate design pressure-time curve for the structural load and a design safety factor of 2 or more. Finally, this report also provides criteria for monitoring the atmosphere behind seals. NIOSH will continue research efforts to improve underground coal mine sealing strategies and to prevent explosions in sealed areas of coal mines. In collaboration with the U.S. National Laboratories, NIOSH will further examine the dynamics of methane and coal dust explosions in mines and the dynamic response of seals to these explosion loads. This upcoming project seeks to better understand the detonation phenomena and simple techniques to protect seals from transient pressures. Additional work will include field measurements of the atmosphere within sealed areas. Successful implementation of the seal design criteria and the associated recommendations in this report for new seal design and construction should significantly reduce the risk of seal failure due to explosions in abandoned areas of underground coal mines.

Mining Goes Digital Oct 14 2021 Covers recent ICT-related developments in Geostatistics and Resource Estimation, Mine Planning, Scheduling and Dispatch, Mine Safety and Mine Operation, Internet of Things, Robotics, Emerging Technologies, Synergies from other industries, General aspects of Digital Transformation in Mining.