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Designed for geologists and engineers engaged specifically in the search for gold deposits of all types and as a reference for academics in higher schools of learning, Handbook of gold exploration and evaluation provides principles and detailed explanations that underpin the correct interpretation of day-to-day experience in the field. Problems are addressed with regard to the analysis, interpretation and understanding of the general framework within which both primary and secondary gold resources are explored, developed and exploited. Handbook of gold exploration and evaluation covers a comprehensive range of topics including the nature and history of gold, geology of gold ore deposits, gold deposition in the weathering environment, sedimentation and detrital gold, gold exploration, lateritic and placer gold sampling, mine planning and practise for shallow deposits, metallurgical processes and design, and evaluation, risk and feasibility. Covers the nature and history of gold Addresses problems with regard to the framework in which gold resources are explored, developed and exploited Discusses topics including the geology of gold ore deposits, metallurgical processes and design, evaluation, risk and feasibility The Office of Industrial Technologies (OIT) of the U. S. Department of Energy commissioned the National Research Council (NRC) to undertake a study on required technologies for the Mining Industries of the Future Program to complement information provided to the program by the National Mining Association. Subsequently, the National Institute for Occupational Safety and Health also became a sponsor of this study, and the Statement of Task was expanded to include health and safety. The overall objectives of this study are: (a) to review available information on the U.S. mining industry; (b) to identify critical research and development needs related to the exploration, mining, and processing of coal, minerals, and metals; and (c) to examine the federal contribution to research and development in mining processes. This book is written as a practical field manual to effective. Each geolOgist has to develop his/her be used by geologists

engaged in mineral explo own techniques and will ultimately be judged on ration. It is also hoped that it will serve as a text results, not the process by which these results and reference for students in Applied Geology were reached. In mineral exploration, the only courses of universities and colleges. The book 'right' way of doing anything is the way that aims to outline some of the practical skills that locates ore in the quickest and most cost-effective turn the graduate geologist into an explo manner. It is preferable, however, for an individ rationist:. It is intended as a practical 'how to' ual to develop his/her own method of operation book, rather than as a text on geological or ore after having tried, and become aware of, those deposit theory. procedures which experience has shown to work An explorationist is a professional who search well and which are generally accepted in indus try as good exploration practice. es for ore bodies in a scientific and structured way. Although an awkward and artificial term, The chapters of the book approximately fol this is the only available word to describe the low the steps which a typical exploration pro totality of the skills which are needed to locate gramme would go through. In Chapter 1, the and define economic mineralization. This book provides a detailed overview of the operational principles of modern mining geology, which are presented as a good mix of theory and practice, allowing use by a broad range of specialists, from students to lecturers and experienced geologists. The book includes comprehensive descriptions of mining geology techniques, including conventional methods and new approaches. The attributes presented in the book can be used as a reference and as a guide by mining industry specialists developing mining projects and for optimizing mining geology procedures. Applications of the methods are explained using case studies and are facilitated by the computer scripts added to the book as Electronic Supplementary Material. Palaeontology, the scientific study of fossils, has developed from a descriptive science to an analytical science used to interpret relationships between earth and life history. This book provides a comprehensive

and thematic treatment of applied palaeontology, covering the use of fossils in the ordering of rocks in time and in space, in biostratigraphy, palaeobiology and sequence stratigraphy. Robert Wynn Jones presents a practical workflow for applied palaeontology, including sample acquisition, preparation and analysis, and interpretation and integration. He then presents numerous case studies that demonstrate the applicability and value of the subject to areas such as petroleum, mineral and coal exploration and exploitation, engineering geology and environmental science. Specialist applications outside of the geosciences (including archaeology, forensic science, medical palynology, entomopalynology and melissopalynology) are also addressed. Abundantly illustrated and referenced, Applications of Palaeontology provides a user-friendly reference for academic researchers and professionals across a range of disciplines and industry settings. The book introduces essential concept of mineral exploration, mine evaluation and resource assessment of the discovered mineral deposit to students, beginners and professionals. The book is divided into nine chapters which will help the readers to incorporate the concepts of search for mineral deposits and understand the chances of success. The book discusses the fundamental details like composition of earth and mineral resources, formation of rock and mineral deposits, and the attempt to search for ore deposits to advance applications of remote sensing in mineral exploration. It also covers the details on how to conduct system of survey, evaluation, and how to arrive at a decision to open and carryout further exploration in the operating mine. The book shall be of great interest to geologists and mining community. For some years I have felt there was a need for a single, comprehen sive, reference book on exploration geology. Numerous textbooks are available on subjects such as geophysical prospecting, exploration geochemistry, mining geology, photogeology and general economic geology, but, for the geologist working in mineral exploration, who does not require a specialist's knowledge, a general book on explora tion techniques is

needed. Many undergraduate university courses tend to neglect economic geology and few deal with the more prac tical aspects in any detail. Graduate geologists embarking on a career in economic geology or mineral exploration are therefore often poorly equipped and have to learn a considerable amount 'on the job'. By providing a book that includes material which can be found in some of the standard texts together with a number of practical aspects not to be found elsewhere, I hope that both recent graduates and more experienced exploration geologists will find it a useful reference work and manual. In addition, students of economic geology and personnel working in related fields in the mining and mineral extraction in dustries will find it informative. J. H. REEDMAN v Acknowledgements The author would like to thank Dr K. Fletcher, geochemist with the Department of Geology, University of British Columbia, and Kari Savario, geophysicist with Finnish Technical Aid to Zambia, for reading the original drafts and offering constructive criticism and advice on the chapters on geochemical and geophysical prospecting respectively. This comprehensive textbook covers all major topics related to the utilization of mineral resources for human activities. It begins with general concepts like definitions of mineral resources, mineral resources and humans, recycling mineral resources, distribution of minerals resources across Earth, and international standards in mining, among others. Then it turns to a classification of mineral resources, covering the main types from a geological standpoint. The exploration of mineral resources is also treated, including geophysical methods of exploration, borehole geophysical logging, geochemical methods, drilling methods, and mineral deposit models in exploration. Further, the book addresses the evaluation of mineral resources, from sampling techniques to the economic evaluation of mining projects (i.e. types and density of sampling, mean grade definition and calculation, Sichel's estimator, evaluation methods – classical and geostatistical, economic evaluation – NPV, IRR, and PP, estimation of risk, and software for

evaluating mineral resources). It subsequently describes key mineral resource exploitation methods (open pit and underground mining) and the mineral processing required to obtain saleable products (crushing, grinding, sizing, ore separation, and concentrate dewatering, also with some text devoted to tailings dams). Lastly, the book discusses the environmental impact of mining, covering all the aspects of this very important topic, from the description of diverse impacts to the environmental impact assessment (EIA), which is essential in modern mining projects. This practical step-by-step guide describes the key geological field techniques needed by today's exploration geologists involved in the search for metallic deposits. The techniques described are fundamental to the collection, storage and presentation of geological data and their use to locate ore. This book explains the various tasks which the exploration geologist is asked to perform in the sequence in which they might be employed in an actual exploration project. Hints and tips are give. The steps are illustrated with numerous examples drawn from real projects on which the author has worked. The book emphasizes traditional skills and shows how they can be combined effectively with modern technological approaches. "Essentials of Mineral Exploration" "and Evaluation"offers a thorough overview of methods used in mineral exploration campaigns, evaluation, reporting and economic assessment processes. Fully illustrated to cover the state-of-the-art exploration techniques and evaluation of mineral assets being practiced globally, this up-to-date reference offers balanced coverage of the latest knowledge and current global trends in successful mineral exploration and evaluation. From mineral deposits, to remote sensing, to sampling and analysis, "Essentials of Mineral Exploration" "and Evaluation" offers an extensive look at this rapidly changing field. Covers the complete spectrum of all aspects of ore deposits and mining them, providing a "one-stop shop" for experts and studentsPresents the most up-to-date information on developments and methods in all areas of mineral explorationIncludes chapters on application of GIS, statistics, and geostatistics in

mineral exploration and evaluationIncludes case studies to enhance practical application of concepts" This special volume offers a snapshot of the latest developments in mineral exploration, in particular, geophysical, geochemical, and computational methods. It reflects the cutting-edge applications of geophysics and geochemistry, as well as novel technologies, such as in artificial intelligence and hyperspectral exploration, methods that have profoundly changed how exploration is conducted. This special volume is a representation of these cutting-edge and pioneering methods to consider and conduct exploration, and should serve both as a valuable compendium of the most innovative exploration methodologies available and as a foreshadowing of the form of future exploration. As such, this volume is of significant importance and would be useful to any exploration geologist and company This book will help direct mining operations through the use of innovative economic strategies. The text covers what is meant by a cost-effective mining scheme, the economics of information, and the procedures for rational evaluation of uncertain projects. Finally - Mining in Clear and Understandable Language How Mining Works explains complex mining concepts in a way simple enough for those who are not familiar with the industry, yet thorough enogh to be useful to long-time professionals. This colorful book presents a logical and sensible sequence for acquiring a strong working knowledge of the world of mining. Chapter 1 provides a quick geology review, explaining how the earth is structured ... how, why, and where mineral ores are created ... and how technological advances help us make educated guesses about where to locate new mines. The next three chapters present mining and refining operations. Chapter 2 offers in-depth explanations about the different types of mining, the equipment and procedures needed for both surface and deep mining, and Chapter 3 follows with six methods for processing the ore into usable refined metal. And, since not all mines produce metals, Chapter 4 covers nonmetallic operations that produce coal, diamonds, and aggregates such as clays and feldspars. The second half

of the book puts mining in the context of the wider world. Chapter 5 examines four types of mining waste (including several subcategories) and how to deal with each. Chapter 6 looks at labor practices, environmental sustainability, and worker and community health and safety--all critical in today's highly regulated environment. Chapter 7 highlights mining economics, with detailed information on how mine products are priced, monetary arrangements between mines and smelters, and even the impact of reserves on mining's future. Chapter 8 takes a visionary yet practical look at the future of mining, covering not only advances in expected areas (like robotics) but also in biotechnology, with a fascinating look at how plants, insects, and various microbes could be used to extract metals. Appendix A provides a crash course in the chemistry sometimes needed to understand why rock goes in and metal comes out. For some years I have felt there was a need for a single, comprehen sive, reference book on exploration geology. Numerous textbooks are available on subjects such as geophysical prospecting, exploration geochemistry, mining geology, photogeology and general economic geology, but, for the geologist working in mineral exploration, who does not require a specialist's knowledge, a general book on explora tion techniques is needed. Many undergraduate university courses tend to neglect economic geology and few deal with the more prac tical aspects in any detail. Graduate geologists embarking on a career in economic geology or mineral exploration are therefore often poorly equipped and have to learn a considerable amount 'on the job'. By providing a book that includes material which can be found in some of the standard texts together with a number of practical aspects not to be found elsewhere, I hope that both recent graduates and more experienced exploration geologists will find it a useful reference work and manual. In addition, students of economic geology and personnel working in related fields in the mining and mineral extraction in dustries will find it informative. J. H. REEDMAN v Acknowledgements The author would like to thank Dr K. Fletcher, geochemist with the Department of

Geology, University of British Columbia, and Kari Savario, geophysicist with Finnish Technical Aid to Zambia, for reading the original drafts and offering constructive criticism and advice on the chapters on geochemical and geophysical prospecting respectively. In recent decades, remote sensing technology has been incorporated in numerous mineral exploration projects in metallogenic provinces around the world. Multispectral and hyperspectral sensors play a significant role in affording unique data for mineral exploration and environmental hazard monitoring. This book covers the advances of remote sensing data processing algorithms in mineral exploration, and the technology can be used in monitoring and decision-making in relation to environmental mining hazard. This book presents state-of-the-art approaches on recent remote sensing and GIS-based mineral prospectivity modeling, offering excellent information to professional earth scientists, researchers, mineral exploration communities and mining companies. Presents effective methods for using Lotus 1-2-3 techniques to solve problems in exploration and mining geology. 1-2-3 programmes are provided in conjunction with named worksheets or templates, together with brief explanatory text. Problem solving is based on a well-established and maintained software package. A floppy diskette is supplied enabling users, following brief instructions, to solve problems immediately. This book is written as a practical field manual to effective. Each geolOgist has to develop his/her be used by geologists engaged in mineral explo own techniques and will ultimately be judged on ration. It is also hoped that it will serve as a text results, not the process by which these results and reference for students in Applied Geology were reached. In mineral exploration, the only courses of universities and colleges. The book 'right' way of doing anything is the way that aims to outline some of the practical skills that locates ore in the quickest and most cost-effective turn the graduate geologist into an explo manner. It is preferable, however, for an individ rationist:. It is intended as a practical 'how to' ual to develop his/her own

method of operation book, rather than as a text on geological or ore after having tried, and become aware of, those deposit theory. procedures which experience has shown to work An explorationist is a professional who search well and which are generally accepted in indus try as good exploration practice. es for ore bodies in a scientific and structured way. Although an awkward and artificial term, The chapters of the book approximately fol this is the only available word to describe the low the steps which a typical exploration pro totality of the skills which are needed to locate gramme would go through. In Chapter 1, the and define economic mineralization. Mineral Deposits of Finland is the only up-to-date and inclusive reference available that fully captures the scope of Finland's mineral deposits and their economic potential. Finland hosts Europe's most mature rocks and large cratonic blocks, analogous to western Australia and Southern Africa, which are the most mineralized terrains on Earth. Authored by the world's premier experts on Finnish mineral exploration and mining, Mineral Deposits of Finland offers a thorough summary of the mineral deposits and their petrogenesis, helping readers to map, explore, and identify Finland's renewed potential for mineral exploration and extraction. Presents a thoroughly inclusive catalogue of Finland's mineral deposits and their economic potential Features full-color figures, illustrations, working examples and photographs to aid the reader in retaining key concepts to underscore major advances in the exploration of Finland's mineral resources Offers concise chapter summaries authored by leaders in geological research, which provide accessible overviews of deposit classes Mining is a significant economic activity. The recent advances in technology have aided the tools and techniques used in mining processes. This book is an extensive source of knowledge which discusses the technological advances in mining and mineral engineering. It also throws light on new minerals, gem deposits, biomineralogy, etc. This text will prove beneficial to students, geologists, researchers and professionals engaged in this field. International Mineral

Economics provides an integrated overview of the concepts important for mineral exploration, mine valuation, mineral market analysis, and international mineral policies. The treatment is interdisciplinary, drawing on the fields of economics, geology, business, and mining engineering. Part I, Economic Geology and Mineral Development, examines the technical concepts important for understanding the geology of ore deposits, the methods of exploration and deposit evaluation, and the activities of mining and mineral processing. Part II, Mineral Economics, focuses on the economic and related concepts important for understanding mineral development, the evaluation of exploration and mining projects, and mineral markets and market models. Finally, Part III, International Mineral Policies, reviews and traces the historical development of the policies of international organizations, the industrialized countries, and the developing countries. Innovative Exploration Methods for Mineral, Oil, Gas, and Groundwater for Sustainable Development provides an integrated approach to exploration encompassing geology, geophysics, mining, and mineral processing. In addition, groundwater exploration is included, as it is central to the development of earth resources. As the demand for coal, minerals, oil and gas, and water continues to grow globally, researchers must prioritize sustainable exploration methods. Old technologies are being replaced speedily and exploration work has become fast, focused, meaningful, and readily reproducible keeping in pace with the changing global scenario. The themes of exploration of energy resources, exploration of minerals, groundwater exploration and processing and mineral engineering are separated out into sections and chapters included in these sections include case studies focusing on tools and techniques for exploration. Innovative Exploration Methods for Mineral, Oil, Gas, and Groundwater for Sustainable Development gives insight to modern concepts of exploration for those working in the various fields of energy, mineral, and groundwater exploration. Presents innovative research that will both challenge and complement the traditional concepts of

exploration Covers a wide range of instruments and their applications, as well as the tools and processes that need to be followed for modern exploration work Includes research on groundwater exploration with a focus on conservation and sustainable exploration and development Applied Geochemistry: Advances in Mineral Exploration Techniques is a book targeting all levels of exploration geologists, geology students and geoscientists working in the mining industry. This reference book covers mineral exploration techniques from multiple dimensions, including the application of statistics - both principal component analysis and factor analysis - to multifractal modeling. The book explains these approaches step-by-step and gives their limitations. In addition to techniques and applications in mineral exploration, Applied Geochemistry describes mineral deposits and the theories underpinning their formation through worldwide case studies. Includes both conventional and nonconventional techniques for mineral exploration, including lithogeochemical methods Highlights the importance and applications of multifractal models, 3D - mineral prospectivity modeling Features case studies from mines and mineral exploration ventures around the world The Business of Mining complete set of three Focus books provides readers with a holistic all-embracing appraisal of the analytical tools available for assessing the economic viability of prospective mines. Each volume has a discrete focus. This third volume commences with "Our Earth, its Minerals and Ore Bodies", followed by a review of mineral exploration and sampling of mineral deposits. It continues with detailed sections covering the reporting of mineral resources and reserves in Australia, and concludes with the basic principles and application of the various methods of estimating the in-situ mineral resources and ore reserves. The books were written primarily for undergraduate applied geologists, mining engineers and extractive metallurgists and those pursuing course-based postgraduate programs in mineral economics. However, the complete series will also be an extremely useful reference text for practicing mining professionals as well as for

consultant geologists, mining engineers or primary metallurgists. Essentials of Mineral Exploration and Evaluation offers a thorough overview of methods used in mineral exploration campaigns, evaluation, reporting and economic assessment processes. Fully illustrated to cover the state-of-the-art exploration techniques and evaluation of mineral assets being practiced globally, this up-to-date reference offers balanced coverage of the latest knowledge and current global trends in successful mineral exploration and evaluation. From mineral deposits, to remote sensing, to sampling and analysis, Essentials of Mineral Exploration and Evaluation offers an extensive look at this rapidly changing field. Covers the complete spectrum of all aspects of ore deposits and mining them, providing a "one-stop shop" for experts and students Presents the most up-to-date information on developments and methods in all areas of mineral exploration Includes chapters on application of GIS, statistics, and geostatistics in mineral exploration and evaluation Includes case studies to enhance practical application of concepts Oceans have been the subject of scientific inquiry for hundreds of years, but significant study of mineral occurrences on the deep ocean floor has only begun to take place. Man's present knowledge of the ocean floor had to await the development of sophisticated research equipment capable of probing the ocean to great depths. This began in the 1940's and since then the accelerated pace of ocean research has generated a large amount of data on the ocean environment - mostly through the work of academic and governmental scientific organizations around the globe. These new scientific disclosures confirmed the wide-spread occurrence of metal-bearing lumps on the deep ocean floor that hold great promise as an important new source of raw material. Encouraged by these events, several groups of private, semi-private, and public enterprises became active; a transition occurred from scientific interest in the metal-bearing lumps to commercial interest. But these pioneer developers faced a formidable task. Information about the minerals and their environment of deposition was inadequate; technology

for mining them continuously was non-existent and very little was known about the adaptability of processing technologies for land-based ores to these minerals. Mineral Exploration: Principles and Applications, Second Edition, presents an interdisciplinary approach on the full scope of mineral exploration. Everything from grass root discovery, objective base sequential exploration, mining, beneficiation, extraction, economic evaluation, policies and acts, rules and regulations, sustainability, and environmental impacts is covered. Each topic is presented using theoretical approaches that are followed by specific applications that can be used in the field. This new edition features updated references, changes to rules and regulations, and new sections on oil and gas exploration and classification, air-core drilling, and smelting and refining techniques. This book is a key resource for both academics and professionals, offering both practical and applied knowledge in mineral exploration. Offers important updates to the previous edition, including sections on the cyclical nature of mineral industry, exploration for oil and gas, CHIM-electro-geochemical survey, air-core drilling, classification of oil and gas resources, smelting, and refining technologies Presents global case studies that allow readers to quickly apply exploration concepts to real-world scenarios Includes 385 illustrations and photographs to aid the reader in understanding key procedures and applications Platinum-Nickel-Chromium Deposits: Geology, Exploration, and Reserve Base is the first reference book to combine information on the discovery of numerous minerals within existing deposits. This book recognizes the close affinity and great natural coexistence of platinum, palladium, chromium, nickel, copper, gold, and silver hosted by unique stratigraphy (mafic-ultramafic intrusive of layered ingenious complex) in a diverse structural set up. The chapters are organized in a logical sequence of introductory physical and chemical properties, demand-supply scenario, price trend, substitution-recycling and uses of these metals, stratigraphy and host rocks, geochemistry, global

distribution of existing deposits in six mega continents, genetic system, reserves-resources overview, common characteristic features aiding as exploration guides for new targets, hazards, and sustainable development. This reference book is a must for students, research scholars, teachers, and professional explorers in economic geology, geography, and allied subjects. Presents over 150 full color illustrations including maps, diagrams, and charts Illustrates the key concepts in a clear and informative manner Authored by one of the world's leading geoscientists Provides unique coverage of high value mineral deposits through an approach accessible to industry professionals, academic researchers, and students alike How has exploration for minerals evolved in recent years? Is it as productive an activity as it once was? Why have changes occurred? Roderick G. Eggert explores these and other questions about the complex set of circumstances surrounding metallic mineral exploration. Originally published in 1987, Eggert documents trends in the level and the distribution of expenditures by mining companies for metallic mineral exploration and examines a number of factors that may be responsible for these trends. This significant study serves as a handy introduction to the subject for students interested in environmental studies, natural resources, and economics. Analytical Chemistry in the Exploration, Mining and Processing of Materials is a collection of plenary lectures presented at the International Symposium on Analytical Chemistry in the Exploration, Mining, and Processing of Materials, held in Johannesburg, South Africa, on August 23-27, 1976. Contributors explore the applications of analytical chemistry in the exploration, mining, and processing of materials and cover topics ranging from the role of reference materials in analytical chemistry to analytical requirements in exploration geochemistry, along with activation analysis of ores and minerals. This book is comprised of 15 chapters and begins with a discussion on the analytical needs for primary coal covering three sets of parameters associated with chemical quality, physical

nature and condition, and rank fundamental properties. The reader is then introduced to coal products (coke, tar, gas) and their analysis; analytical chemistry of the noble metals; use of chromatography in the analysis of inorganic materials; and developments in wavelength and energy dispersive spectrometry, Subsequent chapters deal with optical emission spectrochemical analysis; automated on-line analysis for controlling industrial processes; and atomic absorption spectroscopy and its applications. This monograph will be a useful resource for chemists, metallurgists, materials scientists, and mining engineers. For some years I have felt there was a need for a single, comprehen sive, reference book on exploration geology. Numerous textbooks are available on subjects such as geophysical prospecting, exploration geochemistry, mining geology, photogeology and general economic geology, but, for the geologist working in mineral exploration, who does not require a specialist's knowledge, a general book on explora tion techniques is needed. Many undergraduate university courses tend to neglect economic geology and few deal with the more prac tical aspects in any detail. Graduate geologists embarking on a career in economic geology or mineral exploration are therefore often poorly equipped and have to learn a considerable amount 'on the job'. By providing a book that includes material which can be found in some of the standard texts together with a number of practical aspects not to be found elsewhere, I hope that both recent graduates and more experienced exploration geologists will find it a useful reference work and manual. In addition, students of economic geology and personnel working in related fields in the mining and mineral extraction in dustries will find it informative. J. H. REEDMAN v Acknowledgements The author would like to thank Dr K. Fletcher, geochemist with the Department of Geology, University of British Columbia, and Kari Savario, geophysicist with Finnish Technical Aid to Zambia, for reading the original drafts and offering constructive criticism and advice on the chapters on geochemical and geophysical prospecting respectively. Introduction to

Mineralogy and Petrology, second edition, presents the essentials of both disciplines through an approach accessible to industry professionals, academic researchers, and students alike. This new edition emphasizes the relationship between rocks and minerals, right from the structures created during rock formation through the economics of mineral deposits. While petrology is classified on the lines of geological evolution and rock formation, mineralogy speaks to the physical and chemical properties, uses, and global occurrences for each mineral, emphasizing the need for the growth of human development. The primary goal is for the reader to identify minerals in all respects, including host-rocks, and mineral deposits, with additional knowledge of mineral-exploration, resource, extraction, process, and ultimate use. To help provide a comprehensive analysis across ethical and socio-economic dimensions, a separate chapter describes the hazards associated with minerals, rocks, and mineral industries, and the consequences to humanity along with remedies and case studies. New to the second edition: includes coverage of minerals and petrology in extra-terrestrial environments as well as case studies on the hazards of the mining industry. Addresses the full scope of core concepts of mineralogy and petrology, including crystal structure, formation and grouping of minerals and soils, definition, origin, structure and classification of igneous, sedimentary and metamorphic rocks Features more than 250 figures, illustrations and color photographs to vividly explore the fundamental principles of mineralogy and petrology Offers a holistic approach to both subjects, beginning with the formation of geologic structures that is followed by the hosting of mineral deposits and the exploration and extraction of lucrative, usable products that improve the health of global economies Includes new content on minerals and petrology in extraterrestrial environments and case studies on hazards in the mining industry Using the concepts and practices of applied geology as its central theme, here is a balanced and comprehensive treatment of the geological, geochemical,

geophysical, and economic elements of exploration and mining. Offers an overview of the methods and aims in mineral exploration and production and gives coverage of the geologic principles of ore deposits and the geomorphic environment. Deals with ``hard'' minerals and the nonfluid sources of materials and energy in the continental masses and in ocean basins. This edition has been expanded to include recent advances in applications of satellite imagery, lithogeochemical surveys, isotope geochemistry, and other developments in the field. Also covers current uses of computers in mineral exploration programs. Features case histories, a current references section, and financial data. Statistical evaluations of exploration data are the basis for decisions to be made at various stages of an exploration project. In contrast to other geostatistical books, Statistical Evaluations in Exploration for Mineral Deposits focuses not only on theory, but examples are also given, frequently originating from experience in mineral exploration by the author who worked worldwide for a mining company. Together with its companion volume, Economic Evaluations in Exploration, the book illustrates methods used in exploration campaigns and mining activities. It is intended as a vademecum for geologists who are forced to make quick decisions regarding an exploration project. It also addresses scientists and students involved in teaching or in mineral economic evaluations, recommendations or decisions. Oceans have been the subject of scientific inquiry for hundreds of years, but significant study of mineral occurrences on the deep ocean floor has only begun to take place. Man's present knowledge of the ocean floor had to await the development of sophisticated research equipment capable of probing the ocean to great depths. This began in the 1940's and since then the accelerated pace of ocean research has generated a large amount of data on the ocean environment - mostly through the work of academic and governmental scientific organizations around the globe. These new scientific disclosures confirmed the wide-spread occurrence of metal-bearing lumps on the deep ocean floor that hold great promise as an important new

source of raw material. Encouraged by these events, several groups of private, semi-private, and public enterprises became active; a transition occurred from scientific interest in the metal-bearing lumps to commercial interest. But these pioneer developers faced a formidable task. Information about the minerals and their environment of deposition was inadequate; technology for mining them continuously was non-existent and very little was known about the adaptability of processing technologies for land-based ores to these minerals. This new, up dated edition of Introduction to Mineral Exploration provides a comprehensive overview of all aspects of mineral exploration. Covers not only the nature of mineral exploration but also considers other factors essential to successful exploration, from target evaluation to feasibility studies for extraction and production. Includes six detailed case studies, selected for the range of different problems and considerations they present to the mineral explorationist. Features new chapters on handling mineral exploration data and a new case study on the exploration for diamonds. Essential reading for upper level undergraduates studying ore geology, mineral exploration, mining geology, coal exploration, and industrial minerals, as well as professional geologists. Artwork from the book is available to instructors online at www.blackwellpublishing.com/moon. Mineral Exploration: Principles and Applications, Second Edition, presents an interdisciplinary approach to addressing the full scope of mineral exploration: from grass root discovery, objective base sequential exploration, mining, beneficiation, and extraction, to economic evaluation, Policies and Acts, rules and regulations, sustainability, and environmental impacts. Each topic is presented first using theoretical approaches, followed by specific applications that can be used in the field. The new edition features updated references, changes to rules and regulations associated with Policies and Acts, as well as new sections on oil and gas exploration and classification, air-core drilling, and smelting and refining techniques. Mineral Exploration:

Principles and Applications, 2e, is a key resource for both academics and professionals, offering both practical and applied knowledge in mineral exploration. Offers important updates to the previous edition, including sections on the cyclical nature of mineral industry, exploration for oil and gas, CHIM-electro-geochemical survey, air-core drilling, classification of oil and gas resources, and smelting and refining technologies Presents case studies - including new global studies - that allow readers to quickly apply exploration concepts to real-world scenarios in the field Includes more than 150 illustrations and full-color photographs to aid the reader in understanding key procedures and applications

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