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Applied Subsurface Geological Mapping with Structural Methods Applied Subsurface Geological Mapping Applied Subsurface Geological Mapping Applied Three Dimensional Subsurface Geological Mapping Applied Three-Dimensional Subsurface Geological Mapping Applied Three-Dimensional Subsurface Geological Mapping Applied Subsurface Geological Mapping with Structural Methods Applied Subsurface Geological Mapping with Structural Methods, Second Edition Subsurface Geological Mapping Course Integrated Subsurface Geological Mapping in the Presence of a Velocity Gradient in the North Lansing Field, Harrison and Gregg Counties, Texas 3-D Structural Geology Preliminary Results of Shallow Subsurface Geological Mapping, Sabine Peninsula, Western Arctic Islands Subsurface Geological Mapping of Second Wall Creek (F2WC) Reservoir of Frontier Formation, Teapot Dome Oil Field, Wyoming, USA Subsurface Geological Mapping with Airborne and Ground Magnetic and Electromagnetic Datasets at Mount Beasley, Western Australia 3-D Structural Geology Subsurface Geologic Map of Southwest Alabama Applied Multidimensional Geological Modeling Subsurface Mapping Surface and Subsurface Mapping in Hydrogeology Introduction to Well Logs and Subsurface Maps Quick Look Techniques for Prospect Evaluation The Mapping of the Subsurface Geological Formations of South-eastern England with the Reflection Seismograph Applied Multidimensional Geological Modeling Geologic Maps Subsurface-controlled Geological Maps for the Y-12 Plant and Adjacent Areas of Bear Creek Valley Elements of Petroleum Geology Meeting Challenges with Geologic Maps Late Cretaceous Fruitland Formation Geologic Mapping, Outcrop Measured Sections and Subsurface Stratigraphic Cross Sections, Northern La Plata County, Colorado Putting All Your EGGS in One Basket Subsurface Geology of Northwestern Arkansas Digital Mapping and 3D Visualization/modelling of Subsurface Geology Using ArcGIS 9.2 and Well Log Data Geologic Mapping and Subsurface Well Log Correlations of the Late Cretaceous Fruitland Formation Coal Beds and Carbonaceous Shales Geologic Mapping of Lake County, Tennessee Subsurface Geology and Paleogeography of Queens County, Long Island, New York A Basin-specific Characterization of the Subsurface Geology of Potential Reservoir Locations in George County, Mississippi Surface and Subsurface Lithostratigraphic Relationships of the Kurnub Sandstone Group in Jordan Geologic Maps Subsurface Geology of Pre-Mesozoic Strata, Great Bear River Map Area, District of Mackenzie Mapping Subsurface Sedimentary Rocks Engineering Geological Mapping

M->CREATED The book includes new material, in particular examples of 3-D models and techniques for using kinematic models to predict fault and ramp-anticline geometry. The book is geared toward the professional user concerned about the accuracy of an interpretation and the speed with which it can be obtained from incomplete data. Numerous analytical solutions are given that can be easily implemented with a pocket calculator or a spreadsheet. Over the past decades, geological survey organizations have digitized their data handling and holdings, unlocking vast amounts of data and information for computer processing. They have undertaken 3-D modeling alongside, and in some cases instead of, conventional geological mapping and begun delivering both data and interpretations to increasingly diverse stakeholder communities. Applied Multidimensional Geological Modeling provides a citable central source that documents the current capabilities and

contributions of leading geological survey organization and other practitioners in industry and academia that are producing multidimensional geological models. This book focuses on applications related to human interactions with conditions in the shallow subsurface, within 100-200 m of the surface. The 26 chapters, developed by 100 contributors associated with 37 organizations, discuss topics relevant to any geologist, scientist, engineer, urban planner, or decision maker whose practice includes assessment or planning of underground space. The Colorado Oil and Gas Conservation Commission (COGCC) secured Severance Tax Funding for a series of scientific studies known collectively as the 3M Project (Mapping, Modeling, and Monitoring). The Colorado Geological Survey (CGS) was asked to provide the basic mapping components in the form of a geological map of the Fruitland Formation coals as well as subsurface well log cross sections from the outcrop to the Colorado-New Mexico border. A 1:16,000 geologic map was produced along the Fruitland Formation and Pictured Cliffs Sandstone outcrop. It shows the surface extent of the various Fruitland coal beds from the north end of the Southern Ute Indian Reservation at Ridges Basin to the Archuleta County line, a distance of approximately 26 miles. The stratigraphic relationship and lateral continuity of these coalbeds is demonstrated, as are areas of major seeps, distressed vegetation, clinker, springs, coal mines, and high soil gas readings. Over the past decades, geological survey organizations have digitized their data handling and holdings, unlocking vast amounts of data and information for computer processing. They have undertaken 3-D modeling alongside, and in some cases instead of, conventional geological mapping and begun delivering both data and interpretations to increasingly diverse stakeholder communities. Applied Multidimensional Geological Modeling provides a citable central source that documents the current capabilities and contributions of leading geological survey organization and other practitioners in industry and academia that are producing multidimensional geological models. This book focuses on applications related to human interactions with conditions in the shallow subsurface, within 100-200 m of the surface. The 26 chapters, developed by 100 contributors associated with 37 organizations, discuss topics relevant to any geologist, scientist, engineer, urban planner, or decision maker whose practice includes assessment or planning of underground space. "Effective mineral, energy and groundwater resource management and exploration rely on accurate geological maps. While geological maps of the surface exist and increase in resolution, maps of the subsurface are sparse, and the underpinning geological and geophysical constraints are disordered or non-existent. The Estimates of Geological and Geophysical Surfaces (EGGS) database seeks to enable robust subsurface geological mapping by establishing an ordered collection of precious geological and geophysical interpretations of the subsurface. EGGS stores the depth to geological boundaries derived from boreholes as well as interpretations of depth to magnetic top assessments, airborne electromagnetics inversions and reflection seismic profiles. Since geological interpretation is iterative, links to geophysical datasets and processing streams used to image the subsurface are stored. These metadata allow interpretations to be readily associated with the datasets from which they are derived and re-examined. The geological basis for the interpretation is also recorded. Stratigraphic consistency is maintained by linking each interpretation to the Australian Stratigraphic Units Database. As part of the Exploring for the Future program, >170 000 points were entered into the EGGS database. These points underpin construction of cover thickness models and economic fairway assessments." -- Online abstract. The Gold-Standard "Bible" for Subsurface Geological Mapping: Extensively Updated for the Field's Latest Advances Long recognized as the most authoritative, practical, and comprehensive guide to structural mapping methods, Applied Three-Dimensional Subsurface Geological Mapping, Third Edition, has been thoroughly updated to reflect recent technical developments, with an emphasis on shale play basins, unconventional resources, and modern workflows. The authors of this edition have more than a century of collective experience in hydrocarbon exploration and development, and in this long-awaited update, they present new chapters on computer mapping, shale basin exploration, and prospect reserves and risk analysis. They introduce key innovations related to shale reservoirs, hydraulic fracturing, deviated wells, and directional wells, and expanded discussions of computer geologic interpretation and mapping.

Throughout, the book links theory and practice to help you integrate all available geologic, engineering, and geophysical data, generate more reasonable subsurface interpretations, and build maps that successfully identify reserves. Master core principles and proven methods for accurate subsurface interpretation and mapping Construct subsurface maps and cross-sections from well logs, seismic sections, and outcrops Work effectively with directionally drilled wells and directional surveys Use powerful log correlation techniques Build fault and structure maps Balance and interpret compressional and extensional structures Characterize strike-slip faults and growth structures Understand isochore and isopach maps This book is indispensable for every geologist, geophysicist, and engineer who prepares subsurface geological interpretations and maps, as well as for every manager, executive, and investor who uses or evaluates them This is a handbook of practical techniques for making the best possible interpretation of geological structures at the map scale and for extracting the maximum amount of information from surface and subsurface maps. Quantitative methods are emphasized throughout and analytical solutions are given. Interpretation strategies are defined for GIS or CAD users, yet are simple enough to be done by hand. This book will help users produce better geological maps, judge the quality of existing maps, and locate and fix mapping errors. Describes the surface and near outcrop subsurface extent of the coalbeds within the Fruitland Formation in the northern San Juan Basin. This is a step-by-step instruction manual of digital mapping and 3D visualization/modelling of subsurface geology using ESRI ArcGIS software and well log data. ArcGIS makes it possible to derive almost all of the building blocks for 3D visualization/modelling, including 3D wellbores, geological surfaces, cross-sections, fence diagrams, block diagrams, faults and geological solids, from a single shapefile with well log data, including well locations (x and y coordinates) and picks for geological formation tops (z value). The ArcGIS components include ArcMap, ArcScene and ArcCatalog applications and extensions, including 3D Analyst, Spatial Analyst and a third-party extension called XTools Pro that was developed by Data East, LLC of Russia. Simulated well log data, including formation picks and interpolated surfaces, derived from the Peace River Arch region in northwestern Alberta, are provided to assist with using the manual. Base map data, including rivers, roads, urban areas and a satellite image, are also included as an exercise. Lidar data, lignite boring logs, water well logs, petroleum exploration logs, geotechnical logs, and previously interpreted seismic reflection lines were used to map the stratigraphy and structure beneath Lake County, Tennessee. Structure contour maps were made of the tops of the Paleozoic, Cretaceous, and Eocene. Isopach maps were made of the Cretaceous, Paleogene, and Quaternary sections. A 3-dimensional lithologic model was constructed to illustrate the Quaternary alluvial facies of Lake County in five-foot thick layers. Additionally, a 3-D geological model was built for Lake County, which shows the stratigraphy and structure from the Quaternary to the Paleozoic. Cross sections were also created to illustrate the subsurface geology. The maps and cross sections reveal Quaternary faulting on the Reelfoot, Axial, Tiptonville dome backthrust, Cottonwood Grove, and Ridgely faults. Geologic maps supply a wealth of information about the surface and shallow subsurface of the earth. The types of materials that are present in a location and the three-dimensional structure of the bedrock both can be gleaned from a clearly prepared geologic map. Geologists, civil and environmental engineers, land-use planners, soil scientists, and geographers commonly use geologic maps as a source of information to facilitate problem solving and identify the qualities of a region. Maps reveal the position of many types of natural hazards, indicate the suitability of the land surface for various uses, reveal problems that may be encountered in excavation, provide clues to the natural processes that shape an area, and help locate important natural resources. Suitable for lab courses in structural geology as well as field geology work, Spencer describes representative examples of features found on geologic maps and outlines procedures for interpretation and projection. Geometric techniques are explained using a step-by-step approach. Coverage of mapping methods includes tools that provide necessary data, such as Google Earth, GPS, GIS, LiDAR maps, drones, and aerial photographs. Challenging and engaging exercises throughout the text involve students in the mapping process and stimulate an appreciation of the extent and precision of information presented in geologic maps. Regional geology is an

important component of lab and field mapping projects. As such, the Third Edition includes new maps of the Gulf of Mexico Coastal Plain, Rocky Mountain Front Range, Yellowstone region, Moab, Utah, Shenandoah National Park, and Hawai'i. A new chapter devoted to tectonic maps also broadens students' exposure. Ed Spencer brings over 45 years of teaching experience to the text along with valuable insight and clarity into the interpretation and preparation of geologic maps. This Third Edition of Elements of Petroleum Geology is completely updated and revised to reflect the vast changes in the field since publication of the Second Edition. This book is a usefulprimer for geophysicists, geologists, and petroleum engineers in the oil industry who wish to expand their knowledge beyond their specialized area. It is also an excellent introductory text for a university course in petroleum geoscience. Elements of Petroleum Geology begins with an account of the physical and chemical properties of petroleum, reviewing methods of petroleum exploration and production. These methods include drilling, geophysical exploration techniques, wireline logging, and subsurface geological mapping. After describing the temperatures and pressures of the subsurface environment and the hydrodynamics of connate fluids, Selley examines the generation and migration of petroleum, reservoir rocks and trapping mechanisms, and the habit of petroleum in sedimentary basins. The book contains an account of the composition and formation of tar sands and oil shales, and concludes with a brief review of prospect risk analysis, reserve estimation, and other economic topics. Updates the Second Edition completely Reviews the concepts and methodology of petroleum exploration and production Written by a preeminent petroleum geologist and sedimentologist with decades of petroleum exploration in remote corners of the world Contains information pertinent to geophysicists, geologists, and petroleum reservoir engineers Updated statistics throughout Additional figures to illustrate key points and new developments New information on drilling activity and production methods including crude oil, directional drilling, thermal techniques, and gas plays Added coverage of 3D seismic interpretation New section on pressure compartments New section on hydrocarbon adsorption and absorption in source rocks Coverage of The Orinoco Heavy Oil Belt of Venezuela Updated chapter on unconventional petroleum Applied Subsurface Geological Mapping, With Structural Methods, 2nd Edition is the practical, up-to-the-minute guide to the use of subsurface interpretation, mapping, and structural techniques in the search for oil and gas resources. Two of the industry's leading consultants present systematic coverage of the field's key principles and newest advances, offering guidance that is valuable for both exploration and development activities, as well as for "detailed" projects in maturely developed areas. Fully updated and expanded, this edition combines extensive information from the published literature with significant material never before published. The authors introduce superior techniques for every major petroleum-related tectonic setting in the world. Coverage includes: A systematic, ten-step philosophy for subsurface interpretation and mapping The latest computer-based contouring concepts and applications Advanced manual and computer-based log correlation Integration of geophysical data into subsurface interpretations and mapping Cross-section construction: structural, stratigraphic, and problem-solving Interpretation and generation of valid fault, structure, and isochore maps New coverage of 3D seismic interpretation, from project setup through documentation Compressional and extensional structures: balancing and interpretation In-depth new coverage of strike-slip faulting and related structures Growth and correlation consistency techniques: expansion indices, Multiple Bischke Plot Analysis, vertical separation versus depth, and more Numerous field examples from around the world Whatever your role in the adventure of finding and developing oil or gas resources–as a geologist, geophysicist, engineer, technologist, manager or investor–the tools presented in this book can make you significantly more effective in your daily technical or decision-oriented activities. Subsurface mapping is a way to visualize and spatially characterize subsurface properties, and well logs are often the dataset used to generate and calibrate these maps. The correlation of basic geophysical logs rapidly enables oneself to begin to illustrate and understand the one-dimensional to 3D distribution of various properties. The second edition of Dr. Jonathan Evenick's book covers many types of basic well logs and subsurface maps. This book will help you quickly understand what many of these well logs are measuring and how

they can be used to produce various subsurface maps. Three additional chapters and exercises have been included on spectral gamma ray logs, fault seal, geothermal energy, and source rock maps (unconventional resources). Features and Benefits Introduction to basic well logs and subsurface maps Applied exercises at that the end of each chapter Additional topics and materials have been included (i.e., spectral gamma ray logs, unconventional resources, geothermal maps, fault seal, paleogeographic maps, and resource uncertainty). Well log and subsurface mapping exercises for use in subsurface mapping, well logging, petroleum, hydrogeology, mining, and geothermal energy courses. *Full answer key available by request. Audience Geologists Geophysicists Petroleum and reservoir engineers Hydrogeologists Environmental consultants Engineer Geologic Mapping is a guide to the principles, concepts, methods, and practices involved in geological mapping, as well as the applications of geology in engineering. The book covers related topics such as the definition of engineering geology; principles involved in geological mapping; methods on how to make engineering geological maps; and rock and soil description and classifications. Also covered in the book are topics such as the different kinds of engineering geological mapping; the zoning concept in engineering geological mapping; terrain evaluation; construction sites; and land and water management. The text is recommended for engineers and geologists who would like to be familiarized with the concepts and practices involved in geological mapping. This new book covers numerous QUICK LOOK TECHNIQUES & Pitfalls in reviewing & evaluating geologic interpretations &, in particular, oil & gas prospects. The text concentrates on the application of a number of QUICK LOOK TECHNIQUES (QLTs) that can be used to provide an accurate & rapid evaluation about the quality of a prospect. The authors of the best seller "Applied Subsurface Geological Mapping" have once again teamed up & have been joined by Joe Brewton to write another masterful applied methodology textbook in the area of petroleum geology. Significant investment decisions are often made based on the prospects presented with geologic & geophysical support in the form of interpreted seismic sections, various maps including fault, structure & isochores, & cross sections. Where decisions are critical: Into which prospects do we place our investment dollars, the QUICK LOOK TECHNIQUES presented in this text can be powerful tools. "...essential for explorationists who know that accurate maps are the treasure maps to success." - John Lopez, Sr. Geologic Consultant, Amoco Production Co. "After taking the QLT Seminar, this book is the perfect complement for day-to-day hands-on application." - B.A. Berilgen, VP/Operations, Forest Oil Corp. "...invaluable to any person who must make decisions based on subsurface maps. I highly recommend this book." - Peyton M. Lake, President & CEO, Lake Ronel Oil Co. Order from Subsurface Consultants & Associates, Inc., 1720 Kaliste Saloom Rd. #B-1, Lafayette, LA 70508. The Gold-Standard "Bible" for Subsurface Geological Mapping: Extensively Updated for the Field's Latest Advances Long recognized as the most authoritative, practical, and comprehensive guide to structural mapping methods, Applied Three-Dimensional Subsurface Geological Mapping, Third Edition, has been thoroughly updated to reflect recent technical developments, with an emphasis on shale play basins, unconventional resources, and modern workflows. The authors of this edition have more than a century of collective experience in hydrocarbon exploration and development, and in this long-awaited update, they present new chapters on computer mapping, shale basin exploration, and prospect reserves and risk analysis. They introduce key innovations related to shale reservoirs, hydraulic fracturing, deviated wells, and directional wells, and expanded discussions of computer geologic interpretation and mapping. Throughout, the book links theory and practice to help you integrate all available geologic, engineering, and geophysical data, generate more reasonable subsurface interpretations, and build maps that successfully identify reserves. Master core principles and proven methods for accurate subsurface interpretation and mapping Construct subsurface maps and cross-sections from well logs, seismic sections, and outcrops Work effectively with directionally drilled wells and directional surveys Use powerful log correlation techniques Build fault and structure maps Balance and interpret compressional and extensional structures Characterize strike-slip faults and growth structures Understand isochore and isopach maps This book is indispensable for every geologist, geophysicist, and engineer who prepares subsurface

geological interpretations and maps, as well as for every manager, executive, and investor who uses or evaluates them. Concentrates on the often neglected but useful aspects of hydrogeological mapping. Covers geophysical survey methods and the importance of water chemistry as a tool in tracing the route of subsurface water, and goes on to lay a basic foundation in subjects needed for practice in the field: stratigraphy, structural geology, mineralogy, petrography, and geochemistry. Also covers basic disciplines and techniques indispensable for geological mapping, e.g., cartography and surveying, geophysics, drilling, soil science, hydrology, and botanics. Written from a uniquely practical standpoint. The preliminary assessment for reservoir sites in George County targeted three basins within the county as the initial focus of the research study: Big Creek, Big Cedar Creek, and Escatawpa River basins. As a portion of the reservoir study, this study was a basin-specific geological assessment of the three basins within George County through literature review, well log correlation, and a county wide spring inventory. The goal of this study was to obtain and interpret subsurface data in order to develop detailed geologic maps and stratigraphic cross sections which aided in the site assessment and characterization of the geologic and hydro-geologic suitability of potential reservoir sites. This study concluded that the hypothesis was proved and all three selected drainage basins were potentially geologically suitable to sustain a large reservoir, therefor other factors should be taken into account to determine specific reservoir location such as stream discharge and water quality.