

Petroleum Engineering Software

CSIE2012 is an integrated conference concentrating its focus on Computer Science and Information Engineering . In the proceeding, you can learn much more knowledge about Computer Science and Information Engineering of researchers from all around the world. The main role of the proceeding is to be used as an exchange pillar for researchers who are working in the mentioned fields. In order to meet the high quality of Springer, AISC series, the organization committee has made their efforts to do the following things. Firstly, poor quality paper has been refused after reviewing course by anonymous referee experts. Secondly, periodically review meetings have been held around the reviewers about five times for exchanging reviewing suggestions. Finally, the conference organizers had several preliminary sessions before the conference. Through efforts of different people and departments, the conference will be successful and fruitful.

Fluid catalytic cracking (FCC) is the dominant conversion process in petroleum refineries and the major contributor to "value added" in the refining process. Successful operation of the FCC unit is critical to the operation of the FCC unit is critical to the operating success of most refineries. This book provides a complete

and in-depth view of FCC process, design and operating principles, and the current FCC technologies available to the refining industry.

PCMag.com is a leading authority on technology, delivering Labs-based, independent reviews of the latest products and services. Our expert industry analysis and practical solutions help you make better buying decisions and get more from technology.

A popular 1990s formation tester with a single "pumping" probe and one passive "observation port" displaced 180 deg away, designed to measure pressures at two locations for permeability prediction, encounters well known detection problems at low mobilities. This book, using aerodynamics methods, explains why and also reveals the existence of a wide stagnation zone that hides critical formation details. And it does much more. An exact analytical solution is used to validate a new transient, three-dimensional, finite difference model for more general testers, one that guides new hardware designs with independent azimuthally displaced probes having with different rates, flow schedules and nozzle geometries, supports interpretation and formation evaluation, and assists with job planning at the rigsite. The methods also apply to conventional tools, allowing comparisons between older and newer technologies. Importantly, the authors introduce a completely new three-probe design with independently

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operable active elements that eliminate all older tool deficiencies. Numerous subjects are discussed, such as pressure transient analyses with multiple operating probes, supercharge analysis with invasion and mudcake buildup, accurate and rapid calculations that allow more than 1,000 simulations per minute, extremely rapid batch mode calculations using convergence acceleration methods, rapid fluid withdrawal with minimal dissolved gas release, dip angle, heterogeneity and anisotropy evaluation, and many other topics. In addition, tool operation sequences, detailed engineering and design functions, field test procedures and laboratory facilities, are discussed and illustrated in photographs that go "behind the scenes" at one of the world's largest international oil service companies. The book hopes to educate new engineers and veteran engineers alike in hardware and software design at a time when increasing efficiency is crucial and "doing more with less" represents the new norm.

A comprehensive textbook presenting techniques for the analysis and characterization of shale plays Significant reserves of hydrocarbons cannot be extracted using conventional methods. Improvements in techniques such as horizontal drilling and hydraulic fracturing have increased access to unconventional hydrocarbon resources, ushering in the "shale boom" and disrupting the energy sector. Unconventional Hydrocarbon Resources:

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Techniques for Reservoir Engineering Analysis covers the geochemistry, petrophysics, geomechanics, and economics of unconventional shale oil plays. The text uses a step-by-step approach to demonstrate industry-standard workflows for calculating resource volume and optimizing the extraction process. Volume highlights include: Methods for rock and fluid characterization of unconventional shale plays A workflow for analyzing wells with stimulated reservoir volume regions An unconventional approach to understanding of fluid flow through porous media A comprehensive summary of discoveries of massive shale resources worldwide Data from Eagle Ford, Woodford, Wolfcamp, and The Bakken shale plays Examples, homework assignments, projects, and access to supplementary online resources Hands-on teaching materials for use in petroleum engineering software applications The American Geophysical Union promotes discovery in Earth and space science for the benefit of humanity. Its publications disseminate scientific knowledge and provide resources for researchers, students, and professionals.

In this work provide alotof examples in different fields of chemical engineering and how to design accurate solutions by using MATLAB soft ware. Chapter 1 provides 24 examples to undergraduate students how to inter and use Matlab soft ware to solve the problems. Chapter 2 provides 3 examples in fluid flow

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includes different problems and how to solve these problems by programming. Chapter 3 provides 8 examples in heat transfer how to solve these problems by programming. Chapter 4 provides 22 examples in modeling, thermodynamic, material balance and chemical reaction design includes different problems with different applications and how to solve these problems by programming.

Modern petroleum and petrotechnical engineering is increasingly challenging due to the inherently scarce and decreasing number of global petroleum resources. Exploiting these resources efficiently will require researchers, scientists, engineers and other practitioners to develop innovative mathematical solutions to serve as basis for new asset development designs. Deploying these systems in numerical models is essential to the future success and efficiency of the petroleum industry. Multiphysics modeling has been widely applied in the petroleum industry since the 1960s. The rapid development of computer technology has enabled the numerical applications of multiphysics modeling in the petroleum industry: its applications are particularly popular for the numerical simulation of drilling and completion processes. This book covers theory and numerical applications of multiphysical modeling presenting various author-developed subroutines, used to address complex pore pressure input, complex initial geo-stress field input, etc. Some innovative methods in drilling and completion developed by the authors, such as trajectory optimization and a 3-dimensional workflow for calculation of mud weight window etc, are also presented. Detailed explanations are provided for the modeling process of each application example included in the book. In addition, details of the completed numerical models data are presented as supporting material

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which can be downloaded from the website of the publisher. Readers can easily understand key modeling techniques with the theory of multiphysics embedded in examples of applications, and can use the data to reproduce the results presented. While this book would be of interest to any student, academic or professional practitioner of engineering, mathematics and natural science, we believe those professionals and academics working in civil engineering, petroleum engineering and petroleum geomechanics would find the work especially relevant to their endeavors.

This book covers the fundamentals of drilling and reservoir appraisal for petroleum. Split into three sections, the first looks at the basic principles of well engineering in terms of planning, design and construction. It then goes on to describe well safety, costs and operations management. The second section is focussed on drilling and core analysis, and the laboratory measurement of the physico-chemical properties of samples. It is clear that efficient development of hydrocarbon reservoirs is highly dependent on understanding these key properties, and the data can only be gathered through a carefully conducted core-analysis program, as described. Finally, in the third section we look at production logging, an essential part of reservoir appraisal, which describes the nature and the behaviour of fluids in or around the borehole. It describes how to know, at a given time, phase by phase, and zone by zone, how much fluid is coming out of or going into the formation. As part of the Imperial College Lectures in Petroleum Engineering, and based on a lecture series on the same topic, Drilling and Reservoir Appraisal provides the introductory information needed for students of the earth sciences, petroleum engineering, engineering and geoscience.

Real-world reservoirs are layered, heterogeneous and anisotropic, exposed to water and gas

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drives, faults, barriers and fractures. They are produced by systems of vertical, deviated, horizontal and multilateral wells whose locations, sizes, shapes and topologies are dictated "on the fly, at random" by petroleum engineers and drillers at well sites. Wells may be pressure or rate-constrained, with these roles re-assigned during simulation with older laterals shut-in, newer wells drilled and brought on stream, and so on. And all are subject to steady and transient production, each satisfying different physical and mathematical laws, making reservoir simulation an art difficult to master and introducing numerous barriers to entry. All of these important processes can now be simulated in any order using rapid, stable and accurate computational models developed over two decades. And what if it were further possible to sketch complicated geologies and lithologies, plus equally complex systems of general wells, layer-by-layer using Windows Notepad? And with no prior reservoir simulation experience and only passing exposure to reservoir engineering principles? Have the user press "Simulate," and literally, within minutes, produce complicated field-wide results, production forecasts, and detailed three-dimensional color pressure plots from integrated graphics algorithms? Developed over years of research, this possibility has become reality. The author, an M.I.T. trained scientist who has authored fifteen original research books, over a hundred papers and forty patents, winner of a prestigious British Petroleum Chairman's Innovation Award in reservoir engineering and a record five awards from the United States Department of Energy, has delivered just such a product, making real-time planning at the well-site simple and practical. Workflows developed from experience as a practicing reservoir engineer are incorporated into "intelligent menus" that make in-depth understanding of simulation principles and readings of user manuals unnecessary. This volume describes new technology for down-

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to-earth problems using numerous examples performed with our state-of-the-art simulator, one that is available separately at affordable cost and requiring only simple Intel Core i5 computers without specialized graphics boards. The new methods are rigorous, validated and well-documented and are now available for broad petroleum industry application.

A comprehensive and practical guide to methods for solving complex petroleum engineering problems Petroleum engineering is guided by overarching scientific and mathematical principles, but there is sometimes a gap between theoretical knowledge and practical application. Petroleum Engineering: Principles, Calculations, and Workflows presents methods for solving a wide range of real-world petroleum engineering problems. Each chapter deals with a specific issue, and includes formulae that help explain primary principles of the problem before providing an easy to follow, practical application. Volume highlights include: A robust, integrated approach to solving inverse problems In-depth exploration of workflows with model and parameter validation Simple approaches to solving complex mathematical problems Complex calculations that can be easily implemented with simple methods Overview of key approaches required for software and application development Formulae and model guidance for diagnosis, initial modeling of parameters, and simulation and regression Petroleum Engineering: Principles, Calculations, and Workflows is a valuable and practical resource to a wide community of geoscientists, earth scientists, exploration geologists, and engineers. This accessible guide is also well-suited for graduate and postgraduate students, consultants, software developers, and professionals as an authoritative reference for day-to-day petroleum engineering problem solving.

MATLAB Software for Chemical and Petroleum Engineering (part Four)MATLAB Software for

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Chemical and Petroleum Engineering LAP Lambert Academic Publishing

Covering reservoir engineering fundamentals, advanced reservoir related topics, reservoir simulation fundamentals, and problems and case studies from around the world, this guide is designed to aid students and professionals alike in their active and important roles throughout the reservoir life cycle.

Software Engineering for Science provides an in-depth collection of peer-reviewed chapters that describe experiences with applying software engineering practices to the development of scientific software. It provides a better understanding of how software engineering is and should be practiced, and which software engineering practices are effective for scientific software. The book starts with a detailed overview of the Scientific Software Lifecycle, and a general overview of the scientific software development process. It highlights key issues commonly arising during scientific software development, as well as solutions to these problems. The second part of the book provides examples of the use of testing in scientific software development, including key issues and challenges. The chapters then describe solutions and case studies aimed at applying testing to scientific software development efforts. The final part of the book provides examples of applying software engineering techniques to scientific software, including not only computational modeling, but also software for data management and analysis. The authors describe their experiences and lessons learned from developing complex scientific software in different domains. About the Editors

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Jeffrey Carver is an Associate Professor in the Department of Computer Science at the University of Alabama. He is one of the primary organizers of the workshop series on Software Engineering for Science (<http://www.SE4Science.org/workshops>). Neil P. Chue Hong is Director of the Software Sustainability Institute at the University of Edinburgh. His research interests include barriers and incentives in research software ecosystems and the role of software as a research object. George K. Thiruvathukal is Professor of Computer Science at Loyola University Chicago and Visiting Faculty at Argonne National Laboratory. His current research is focused on software metrics in open source mathematical and scientific software.

Methods and Applications in Petroleum and Mineral Exploration and Engineering Geology is an interdisciplinary book bridging the fields of earth sciences and engineering. It covers topics on natural resources exploration as well as the application of geological exploration methods and techniques to engineering problems. Each topic is presented through theoretical approaches that are illustrated by case studies from around the globe. Methods and Applications in Petroleum and Mineral Exploration and Engineering Geology is a key resource for both academics and professionals, offering both practical and applied knowledge in resources exploration and engineering geology. Features new exploration technologies including seismic, satellite images, basin studies, geochemical modeling and analysis Presents cases studies from different countries such as the Hoggar area (Algeria), Urals and Siberia (Russia), North

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of Chile (II and III regions), and North of Italy (Trentino Alto adige) Includes applications of the novel methods discussed

Charged in the 1990s with solving some of petroleum engineering's biggest problems that the industry deemed "unsolvable," the authors of this innovative new volume solved those problems, not just using a well-published math model, but one optimized to run rapidly, the first time, every time. This not only provides numerical output, but production curves and color pressure plots automatically. And each in a single hour of desk time. Using their Multisim software that is featured in this volume, secondary school students at the Aldine Independent School District delivered professional quality simulations in a training program funded by some of the largest energy companies in the world. Think what you, as a professional engineer, could do in your daily work. Valuable with or without the software, this volume is the cutting-edge of reservoir engineering today, prefacing each chapter with a "trade journal summary" followed by hands-on details, allowing readers to replicate and extend results for their own applications. This volume covers Parent-Child, Multilateral Well and Fracture Flow Interactions, reservoir flow analysis, many other issues involving fluid flow, fracturing, and many other common "unsolvable" problems that engineers encounter every day. It is a must-have for every engineer's bookshelf.

Quantitative Methods in Reservoir Engineering, Second Edition, brings together the critical aspects of the industry to create more accurate models and better financial

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forecasts for oil and gas assets. Updated to cover more practical applications related to intelligent infill drilling, optimized well pattern arrangement, water flooding with modern wells, and multiphase flow, this new edition helps reservoir engineers better lay the mathematical foundations for analytical or semi-analytical methods in today's more difficult reservoir engineering applications. Authored by a worldwide expert on computational flow modeling, this reference integrates current mathematical methods to aid in understanding more complex well systems and ultimately guides the engineer to choose the most profitable well path. The book delivers a valuable tool that will keep reservoir engineers up-to-speed in this fast-paced sector of the oil and gas market. Stay competitive with new content on unconventional reservoir simulation Get updated with new material on formation testing and flow simulation for complex well systems and paths Apply methods derived from real-world case studies and calculation examples This book shares the technical knowhow in the field of health, safety and environmental management, as applied to oil and gas industries and explains concepts through a simple and straightforward approach Provides an overview of health, safety and environmental (HSE) management as applied to offshore and petroleum engineering Covers the fundamentals of HSE and demonstrates its practical application Includes industry case studies and examples based on the author's experiences in both academia and oil and gas industries Presents recent research results Includes tutorials and exercises

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The hottest, most important topic to reservoir engineers is reservoir simulation. Reservoir simulations are literally pictures of what a reservoir of oil or gas looks, or should look, like under the surface of the earth. A multitude of tools is available to the engineer to generate these pictures, and, essentially, the more accurate the picture, the easier the engineer can get the product out of the ground, and, thus, the more profitable the well will be. Completely revised and updated throughout, this new edition of a GPP industry standard has completely new sections on coalbed methane, CO₂ sequestration (important for environmental concerns), Co₂ Flood, more sophisticated petrophysical models for geoscientists, examples of subsidence, additional geomechanical calculations, and much more. What makes this book so different and valuable to the engineer is the accompanying software, used by reservoir engineers all over the world every day. The new software, IFLO (replacing WINB4D, in previous editions), is a simulator that the engineer can easily install in a Windows operating environment. IFLO generates simulations of how the well can be tapped and feeds this to the engineer in dynamic 3D perspective. This completely new software is much more functional, with better graphics and more scenarios from which the engineer can generate simulations. This book and software helps the reservoir engineer do his or her job on a daily basis, better, more economically, and more efficiently. Without simulations, the reservoir engineer would not be able to do his or her job at all, and the technology available in this product is far superior to most companies' internal

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simulation software. It is also much less expensive (\$89.95 versus hundreds or even thousands of dollars) than off-the-shelf packages available from independent software companies servicing the oil and gas industry. It is, however, just as, or more accurate than these overpriced competitors, having been created by a high-profile industry expert and having been used by engineers in the real world with successful and profitable results. This reference is THE industry standard to successfully modelling reservoirs, obtaining maximum supply and profiting from oil and gas reservoirs Includes downloadable software of the new IFLO reservoir simulation software, that can save your company thousands of dollars This edition has been updated to included new sections on environmentally important issues such as CO2 sequestration, coalbed methane, CO2 Flood The third edition also provides more sophisticated petrophysical models, examples of subsidence and additional geomechanical calculations

Standard Handbook of Petroleum and Natural Gas Engineering, Third Edition, provides you with the best, state-of-the-art coverage for every aspect of petroleum and natural gas engineering. With thousands of illustrations and 1,600 information-packed pages, this handbook is a handy and valuable reference. Written by dozens of leading industry experts and academics, the book provides the best, most comprehensive source of petroleum engineering information available. Now in an easy-to-use single volume format, this classic is one of the

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true "must haves" in any petroleum or natural gas engineer's library. A classic for over 65 years, this book is the most comprehensive source for the newest developments, advances, and procedures in the oil and gas industry. New to this edition are materials covering everything from drilling and production to the economics of the oil patch. Updated sections include: underbalanced drilling; integrated reservoir management; and environmental health and safety. The sections on natural gas have been updated with new sections on natural gas liquefaction processing, natural gas distribution, and transport. Additionally there are updated and new sections on offshore equipment and operations, subsea connection systems, production control systems, and subsea control systems. Standard Handbook of Petroleum and Natural Gas Engineering, Third Edition, is a one-stop training tool for any new petroleum engineer or veteran looking for a daily practical reference. Presents new and updated sections in drilling and production Covers all calculations, tables, and equations for every day petroleum engineers Features new sections on today's unconventional resources and reservoirs

Formulas and Calculations for Petroleum Engineering unlocks the capability for any petroleum engineering individual, experienced or not, to solve problems and locate quick answers, eliminating non-productive time spent searching for that

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right calculation. Enhanced with lab data experiments, practice examples, and a complimentary online software toolbox, the book presents the most convenient and practical reference for all oil and gas phases of a given project. Covering the full spectrum, this reference gives single-point reference to all critical modules, including drilling, production, reservoir engineering, well testing, well logging, enhanced oil recovery, well completion, fracturing, fluid flow, and even petroleum economics. Presents single-point access to all petroleum engineering equations, including calculation of modules covering drilling, completion and fracturing Helps readers understand petroleum economics by including formulas on depreciation rate, cashflow analysis, and the optimum number of development wells

Wilson C. Chin has written some of the most important and well-known books in the petroleum industry. These books, whose research was funded by the U.S. Department of Energy and several international petroleum corporations, have set very high standards. Many algorithms are used at leading oil service companies to support key drilling and well logging applications. For the first time, the physical models in these publications, founded on rigorous mathematics and numerical methods, are now available to the broader industry: students, petroleum engineers, drillers and faculty researchers. The presentations are written in easy-to-understand language, with few equations, offering simplified

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explanations of difficult problems and solutions which provide key insights into downhole physical phenomena through detailed tabulations and color graphics displays. Practical applications, such as cuttings transport, pressure control, mudcake integrity, formation effects in unconventional applications, and so on, are addressed in great detail, offering the most practical answers to everyday problems that the engineer encounters. The book does not stop at annular flow. In fact, the important role of mudcake growth and thickness in enabling steady flow in the annulus is considered, as is the role of (low) formation permeability in affecting mud filtration, cake growth, and fluid sealing at the sandface. This is the first publication addressing “the big picture,” a “first” drawn from the author’s related research in multiple disciplines such as drilling rheology, formation testing and reservoir simulation. A must-have for any petroleum engineer, petroleum professional, or student, this book is truly a groundbreaking volume that is sure to set new standards for the industry.

As the magazine of the Texas Exes, The Alcalde has united alumni and friends of The University of Texas at Austin for nearly 100 years. The Alcalde serves as an intellectual crossroads where UT's luminaries - artists, engineers, executives, musicians, attorneys, journalists, lawmakers, and professors among them - meet bimonthly to exchange ideas. Its pages also offer a place for Texas Exes to swap

stories and share memories of Austin and their alma mater. The magazine's unique name is Spanish for "mayor" or "chief magistrate"; the nickname of the governor who signed UT into existence was "The Old Alcalde."

This second edition of the original volume adds significant new innovations for revolutionizing the processes and methods used in petroleum reservoir simulations. With the advent of shale drilling, hydraulic fracturing, and underbalanced drilling has come a virtual renaissance of scientific methodologies in the oil and gas industry. New ways of thinking are being pioneered, and Dr. Islam and his team have, for years now, been at the forefront of these important changes. This book clarifies the underlying mathematics and physics behind reservoir simulation and makes it easy to have a range of simulation results along with their respective probability. This makes the risk analysis based on knowledge rather than guess work. The book offers by far the strongest tool for engineers and managers to back up reservoir simulation predictions with real science. The book adds transparency and ease to the process of reservoir simulation in way never witnessed before. Finally, No other book provides readers complete access to the 3D, 3-phase reservoir simulation software that is available with this text. A must-have for any reservoir engineer or petroleum engineer working upstream, whether in exploration, drilling, or production, this

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text is also a valuable textbook for advanced students and graduate students in petroleum or chemical engineering departments.

Petroleum Production Engineering, Second Edition, updates both the new and veteran engineer on how to employ day-to-day production fundamentals to solve real-world challenges with modern technology. Enhanced to include equations and references with today's more complex systems, such as working with horizontal wells, workovers, and an entire new section of chapters dedicated to flow assurance, this go-to reference remains the most all-inclusive source for answering all upstream and midstream production issues. Completely updated with five sections covering the entire production spectrum, including well productivity, equipment and facilities, well stimulation and workover, artificial lift methods, and flow assurance, this updated edition continues to deliver the most practical applied production techniques, answers, and methods for today's production engineer and manager. In addition, updated Excel spreadsheets that cover the most critical production equations from the book are included for download. Updated to cover today's critical production challenges, such as flow assurance, horizontal and multi-lateral wells, and workovers Guides users from theory to practical application with the help of over 50 online Excel spreadsheets that contain basic production equations, such as gas lift potential, multilateral gas

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well deliverability, and production forecasting Delivers an all-inclusive product with real-world answers for training or quick look up solutions for the entire petroleum production spectrum

This work is provided a lot of examples in different fields of chemical engineering to design accurate solutions by using HYSYS soft ware. Chapter 1 includes basic rules of HYSYS soft ware to inputs data and conditions of the processes. Chapter 2 gives deep explain about distillation column to install it in chemical plant. This book shows in the other chapters' scientific steps to install for different separation process using different examples and also, provides different examples in heat transfer, mass transfer, modeling and chemical reaction for CSTR reactor to solve these problems depends on HYSYS soft ware.

This new edition of the Standard Handbook of Petroleum and Natural Gas Engineering provides you with the best, state-of-the-art coverage for every aspect of petroleum and natural gas engineering. With thousands of illustrations and 1,600 information-packed pages, this text is a handy and valuable reference. Written by over a dozen leading industry experts and academics, the Standard Handbook of Petroleum and Natural Gas Engineering provides the best, most comprehensive source of petroleum engineering information available. Now in an easy-to-use single volume format, this classic is one of the true "must haves" in any petroleum or natural gas engineer's library. * A classic for the oil and gas industry for over 65 years! * A comprehensive source for the newest

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developments, advances, and procedures in the petrochemical industry, covering everything from drilling and production to the economics of the oil patch. * Everything you need - all the facts, data, equipment, performance, and principles of petroleum engineering, information not found anywhere else. * A desktop reference for all kinds of calculations, tables, and equations that engineers need on the rig or in the office. * A time and money saver on procedural and equipment alternatives, application techniques, and new approaches to problems.

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