



SOLUTIONS SUMMARY

**WELL
PLACEMENT**



**PRODUCTION
OPTIMIZATION**



**WELL
CONSTRUCTION**



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MAKE EFFICIENT, EFFECTIVE DECISIONS

At Premier we help our clients increase their reserves, recover more hydrocarbons, and generate greater financial returns by enabling more efficient and more effective decisions. Each, "Effectiveness Mode" represents the stage of your well's life our team can provide the greatest impact and the maximum return



FORM AN IMPROVED RELATIONSHIP WITH YOUR RESERVOIR ROCK

Premier geochemistry solutions help our clients gain more comprehensive knowledge of their rock and at what scale it changes. Using state-of-the-art technology our processes generate quantitative, accurate data that help establish the relationship between specific rock properties and better production.

Premier geochemistry solutions enable improved well targeting, optimized or reduced frac stage locations, and better constrained volumetric calculations. We reduce superfluous sampling and expensive lab tests, lowering the cost of creating more accurate models AND a better understanding of how layering may impact hydraulic fracturing, other completion activities, and production performance.

KEY RESULTS

- High resolution data from core samples
- Chemostratigraphic zonation and correlation
- Cluster analysis that breaks rock types into relevant groups
- Elemental, mineralogical, and hydrocarbon logs
- Recommendations for further analysis
- Recommendations for well and completion design, including frac stage placement

BEGIN LEARNING HOW TO GET MORE OUT OF YOUR RESERVOIR TODAY WITH PREMIER'S UNIQUE GEOCHEMISTRY SOLUTIONS.

Our geochemistry workflows and unique instrument calibrations allow us to lead the industry in speed and accuracy.

THOUGHT LEADERS

Michael Dix

Principal Geoscientist
Houston, TX

With more than 30 years experience working in the geoscience sector Mike is working to expand the petrological capabilities of Premier as well as the development of integrated BU interpretations and applications.

Nathan Ganser

Director of Geochemical Services
Houston, TX

Recognized for his role in the implementation of innovative geochemical characterization tools as a mechanism for increasing subsurface understanding and formation evaluation Nathan leads R&D of new techniques to further increase efficiency/accuracy of geochemistry-related instrumentation and in the development of applications of XRF/XRD/TOC and other geochemical techniques.

Harry Rowe

Principal Geoscientist
Houston, TX

Harry Rowe invented the calibrations and worked with physicists to optimize the tools used for XRF. He has a PhD, Geological and Environmental Sciences, from Stanford University as well as an MS in Earth and Planetary Sciences from The University of New Mexico.

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ROCK PROPERTIES & RESULTING IN MORE ACCURATE INPUTS FOR ANALYSIS AND SIMULATION

Premier conventional core analysis helps our clients create an improved understanding of the subsurface. Our workflows provide rapid, accurate data that can be used to make immediate drilling decisions while establishing and “ground truthing” base parameters for petrophysical and geological models. We guide the selection of representative samples for advanced testing while recording and archiving cores for future geological studies and field development.

Premier’s conventional core analysis solutions begin with whole core receiving and preparation including wellsite collection, whole core gamma logging, slabbing, photography, and plug selection and cutting for advanced analysis. Our standard workflow includes porosity, permeability, and fluid saturation measurements. We also offer digital core imaging and analysis.

Conventional and special core analyses provide the only opportunity to make direct measurements on newly recovered or legacy reservoir material, resulting in more accurate inputs to petrophysical and geological models. Superior models and simulations lead to improved decision making, better wells, and improved economic performance.

KEY RESULTS

- Core spectral gamma for correlating between core and well logs
- Core natural light and UV images and geological descriptions
- Permeability
- Porosity
- Gas/water/oil saturation
- Statistical analysis and log plots

IMPROVE YOUR UNDERSTANDING OF THE SUBSURFACE WITH PREMIER CONVENTIONAL CORE SERVICES

Premier conventional core analysis solutions combine superior customer service with a global footprint and 250+ years of in-house experience covering a wide range of geological and geographical environments.

THOUGHT LEADERS

Robert Krumm

Principal Geoscientist
OKC

Dr. Krumm has an R&D background on projects characterizing fluid interactions with unconventional reservoir rock. Robert is an expert in micro-CT and digital rock analysis. He has his PhD in Chemical Engineering from the University of Utah.

Gary Potter

Geology Expert
OKC

Gary has more than 35 years of experience in core research with Amoco, Core Laboratories, Devon, and Chesapeake.

Andy Benson

VP Core Services
Houston, TX

Andy has over 25+ years of experience in his former capacities as a Lab Manager at Trican Geologic Solutions, Managing Director at Core Laboratories China, and Technical Manager at Stim Lab. He was a member of the development team for the GOHFER hydraulic fracturing simulator.

James Howard

Principal Petrophysicist
Tulsa, OK

Dr. Howard’s extensive experience includes serving as Technical Lead for the ConocoPhillips Subsurface Laboratory. Dr. Howard has a Geoscience PhD from SUNY Binghamton as well as his Bachelor of Science (BS), Geosciences, Washington and Lee University.

Iain MacDonald

Core Services Technical Manager
UK

Ibrahim Ghiniwa

Operations Manager
Egypt

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THE COST-EFFECTIVE WAY TO UNDERSTAND THE PRODUCTION BEHAVIOR OF YOUR RESERVOIR.

Premier reservoir geology solutions help our clients establish mineral distributions and geologic sequences in cores. We provide stratigraphic interpretations and multi-well correlations for basin studies. Our solutions are also used to calibrate volumetric reservoir models and to provide petrographic descriptions for diagenetic studies.

Premier reservoir geology solutions use mineralogical analysis (XRF, XRD), petrographic thin section analysis, nuclear magnetic resonance imaging (NMR), computed tomography (CT), and scanning electron microscopy (SEM). In the hands of our experts, these techniques provide unprecedented sedimentological descriptions and structural and fracture geometry.

Premier reservoir solutions reduce uncertainty and improve the accuracy of petrophysical and geological models, facilitating the identification of productive intervals, and enhancing understanding of the reservoir at and between wells

KEY RESULTS

- Mineralogy from XRD and thin sections
- Pore morphology from NMR and SEM
- Permeability and porosity distributions from sedimentological descriptions
- Fracture description and orientation from μ -CT and geomechanical analysis

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VISUALIZE AND UNDERSTAND YOUR RESERVOIR'S POTENTIAL WITH PREMIER RESERVOIR GEOLOGY SOLUTIONS

Premier's experience and understanding of key geological factors affecting drilling and production paired with our established footprint in North America, the North Sea, Europe, and Africa helps us provide quality solutions on a global scale.

THOUGHT LEADERS

Bilu Cherian

SVP Technology

Denver, CO

With more than 15 years experience, Bilu was the former Director of Corporate Reservoir Solutions Group at Sanjel and Engineering & Technology Manager and Production & Stimulation Engineering Domain Manager for 11 years at Schlumberger. Bilu has over 21 publications and 6 patents.



UNDERSTANDING FLUID PROPERTIES AND PHASE BEHAVIOR THAT DRIVE SUPERIOR WELL PERFORMANCE.

Premier PVT and organic geochemistry solutions provide detailed reservoir fluid properties that help our clients optimize well, reservoir, and production system simulations. They are also used to better understand which parts of the reservoir are being produced.

Premier experts evaluate fluid composition, properties, and behavior through a range of standardized tests, such as constant composition expansion, differential liberation, constant volume depletion, as well as EOR-specific tests such as slim tubes, swell and vaporization experiments. The results are used to calibrate an equation-of-state for predicting reservoir fluid properties under different physical conditions. The origin of produced fluids can be interpreted by comparing produced fluid properties to results obtained from fluids extracted from drill cuttings or core samples.

Premier PVT and organic geochemistry solutions generate valuable data for the calculation and valuation of resources and as inputs to reservoir models. Fluid properties are also used during special core analysis, EOR-related testing, and in well performance simulations.

KEY RESULTS

- Phase behavior of reservoir fluids
- Compositional data
- Oil and gas properties at both reservoir and surface conditions
- Identification of formations contributing to production

USE PREMIER PVT AND PHASE BEHAVIOR DATA TO GENERATE HIGH-QUALITY RESERVOIR SIMULATIONS FOR ALL OF YOUR PRODUCING ASSETS.

Premier PVT and organic geochemistry solutions provide quick turn-around and high-quality data that can be readily utilized in industry standard simulations.

THOUGHT LEADERS

Russ Bone

Director of Reservoir Fluids
Tulsa, OK

Dr. Bone has over 30 years of experience in all aspects of reservoir fluid PVT; from sampling, specification and quality control of lab programs, development of equation-of-state characterizations, to compositional and black oil simulation. Russ has a PhD in Chemical Engineering from the California Institute of Technology.

William Tauro

PVT Manager
Egypt

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SUPERIOR ANALYSIS TECHNIQUES AND INTEGRATED WORKFLOWS THAT DELIVER HIGH-RESOLUTION ROCK PROPERTIES IN A RELEVANT TIMEFRAME.

Premier SCAL solutions generate critical reservoir parameters for input to petrophysical, geomechanical and reservoir engineering models for well placement, well construction and production optimization.

Advanced sample selection and pre-screening methods are used to ensure your core is fully and appropriately characterized using the minimum number of tests. A wide range of parameters (including capillary pressure, wettability, relative permeability, Young's modulus, Poisson's ratio and electrical properties) can be measured independently. Proprietary workflows developed through several years of research and development by a major operator are used to characterize unconventional reservoirs. Finally, Premier experts analyze and integrate the data to provide a comprehensive reservoir description.

Premier Special Core Analysis reduces the uncertainty in completion and reservoir models, leading to superior decision-making and well performance.

KEY RESULTS

- Petrophysical and Reservoir Engineering parameters for input to reservoir models
- Mechanical properties (Young's Modulus and Poisson's Ratio)
- Electrical properties

EXTRACT MORE VALUABLE DATA FROM YOUR ROCK WITH PREMIER SPECIAL CORE ANALYSIS

Premier experts have more than 250 years of combined experience covering a wide range of geological, geographical, and reservoir types - including conventional and unconventional plays, onshore and offshore, unconsolidated formations, carbonates, tight sands, heavy oil, light oil, condensates, and gas.

THOUGHT LEADERS

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EVALUATE AND SELECT THE RIGHT DRILLING AND COMPLETION FLUIDS FOR YOUR WELL. AND, WHEN THINGS DON'T WORK OUT AS PLANNED, ENHANCE WELL PRODUCTIVITY THROUGH EXPERT INVESTIGATION AND REMEDIATION OF FORMATION DAMAGE.

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Premier formation damage solutions provide independent verification of drilling, completion, and injection fluid performance. Our state-of-the-art technology and expert analysis allow our clients to diagnose permeability impairment mechanisms and evaluate potential remediation strategies.

Premier uses innovative experimental designs - including in-depth geological analysis with NMR and micro-CT imaging - that recreate the reservoir in the laboratory. Drilling and completion fluids can then be applied under the same conditions and sequences as they are in the field to simulate damage mechanisms. Differential micro-CT imaging is used to measure and discriminate different types of damage, for which remediation methods can then be identified and evaluated.

Premier formation damage solutions allow our clients to better understand rock-fluid interaction and compatibility, helping them to anticipate and mitigate drilling hazards and productivity impairment. This process can improve cash flow by reducing wellbore damage due to harmful fluid losses or the use of fluids that are incompatible with formation mineralogy. And because Premier is independent from chemical vendors and service providers, our clients benefit from unbiased identification of the least-damaging and most cost-effective fluids to ensure the optimal economic outcome.

KEY RESULTS

- Quantification of near wellbore permeability impairment
- Identification and assessment of potential remediation methods
- De-risking of fluid system/vendor selections through independent verification and testing

LET PREMIER GLOBAL EXPERTS RECREATE YOUR RESERVOIR IN THE LAB, GUIDE YOUR FLUID SYSTEM SELECTIONS, INVESTIGATE UNDERPERFORMING WELLS, AND RECOMMEND REMEDIAL TREATMENTS - ALL WHILE OPTIMIZING COST AND PERFORMANCE.

Premier's COREX formation damage group enjoys an unrivaled global reputation for excellence in formation damage assessment. Our experience is unrivalled in this space, and our advances have earned awards for technology and innovation.

THOUGHT LEADERS

Ian Patey

Formation Damage Manager
Aberdeen

Mr Patey has more than 30 years experience and has authored or co-authored over 50 articles for various conferences, publications, and organizations, including 11 SPE papers.



HELPING COMPLETION ENGINEERS DESIGN, EXECUTE, AND ANALYZE ALL TYPES OF STIMULATION TREATMENT.

Premier stimulation software and advisory services arm clients with the tools and knowledge to ask and answer key questions about stimulation treatments.

Our StimPlan™ hydraulic fracturing software – developed by NSI - allows users to analyze their own data, and design treatments without relying on service companies. Our experts can help analyze how past treatments have performed and advise on design optimization for future treatments.

StimPlan™ utilizes a unique combination of physics, geomechanics, and gridded reservoir simulation tools to help engineers create and analyze their hydraulic fracturing models.

Using StimPlan™ in combination with Premier's stimulation advisory services and training helps our clients increase well productivity and reduce stimulation costs. Our philosophy is to help clients understand why they are doing what they are doing, what data are needed, and how these data are used to come up with the most effective results. This helps them improve workflows and avoid costly mistakes.

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KEY RESULTS

- Premier stimulation software and advisory services provide accurate, data driven stimulation designs and practical knowledge that can be immediately applied to optimize stimulation designs and well performance.

BEGIN OPTIMIZING EVERY STIMULATION DESIGN WITH STIMPLAN™ AND PREMIER'S STIMULATION ADVISORY SERVICES.

StimPlan™ is based on accurate physics and is data driven, making it an effective tool for the day-to-day generation and analysis of hydraulic fracturing designs. Our stimulation design experience and expert training is second to none. We provide impartial engineering consultants who conduct technical reviews and make recommendations that are independent of service providers.

Our completions engineering experts conduct regular training sessions that help our clients enhance their understanding of stimulated completions and take full advantage of the StimPlan™ toolkit. This includes integration of log and core data to build the most accurate geomechanical model, fracturing pressure analysis to determine fracture and reservoir properties, and planar 3D (multiple fracture) simulation for fracture studies and history matching.

THOUGHT LEADERS

Frank Zamora

SVP Fluid Services
Houston, TX

With more than 30 years of experience, including most recently Senior VP of Engineering and Technology for FTSI, Frank holds more than 50 patents to date, authored 4 technical papers and is a recognized leader in hydraulic fracturing.

Michael Smith

President - NSI
Tulsa, OK

Mike has more than 40 years rock mechanics experience in well completions and hydraulic fracturing. He co-developed the framework for fracturing pressure analysis, revolutionizing fracturing technology.



STATE-OF-THE-ART ENHANCED OIL RECOVERY (EOR) EVALUATION AND SELECTION WORKFLOWS TO MINIMIZE RISK AND UNCERTAINTY BEFORE INVESTING IN A FIELD PILOT.

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Premier EOR solutions help our clients make an educated selection of the most economic EOR process before pulling the trigger on an expensive field pilot.

Premier EOR experts conduct laboratory simulations of a variety of EOR approaches – including chemical, surfactant, and miscible gas injection - using core flood testing at representative reservoir conditions. The results of these experiments are analyzed to determine the preferred EOR approach, injectant composition, and other operating parameters that will maximize return on the client's EOR investment.

Alternative EOR solutions can be evaluated in the laboratory at a fraction of the cost of testing them in the field. Additionally, the independent selection of cost-effective injectants and chemicals combined with our calibrated reservoir models enables identification of the most economic EOR method with maximum expected incremental recovery

KEY RESULTS

- Performance assessment of alternative EOR scenarios and methods
- Recommended selection of injectant composition and additives

MAXIMIZE THE RETURN ON YOUR INVESTMENT IN ENHANCED OIL RECOVERY BY LEARNING WHAT WORKS IN THE LABORATORY, NOT IN THE FIELD.

Premier EOR experts apply techniques and workflows developed through several years of research and development by a major operating company, resulting in high-quality test results that can be delivered in a commercial time frame even under very low permeability conditions.

THOUGHT LEADERS

Russ Bone

Director of Reservoir Fluids
Tulsa, OK

Dr. Bone has over 30 years of experience supporting gas injection projects all over the world, especially Alaska North Slope. His expertise covers PVT lab experiments, equation-of-state characterization, and reservoir simulation. Russ has a PhD in Chemical Engineering from the California Institute of Technology.





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