Colombia has estimated unconventional resources in a range from 2.7 to 7 Bbbl for oil alone (EIA 2013, McDaniel & Associates 2017), plus 32 to 55 TCF for gas (ANH 2011, EIA 2013). The local companies are aware that before developing its potential, there needs to be a clear ascending learning curve. The Colombia oil and gas industry needs to increase its technical knowledge, procurement efficiency, and services infrastructure to be ready to develop this volume in a financially attractive way.

The objective of this workshop is to gather together the technology implementation teams, the government regulation agencies and the industry, and define a successful integrated strategy to further evaluate and develop technically recoverable unconventional resources, in an environmentally friendly and socially responsible manner.
Thursday, 28 March

0700–0800  Platinofoyer
Registration

0800–0815  Platinono
Chairperson’s Welcome and Introduction

0815–0945  Platinono
SESSION 1: State of the Art of Unconventionals’s in Colombia
Session Chairs: Thomas Jones, ExxonMobil
Javier Perez, Ecopetrol

Unconventional resources are a significant segment of potential growth for the hydrocarbon production in Colombia. This session will explore Colombia’s unconventional resource potential, play ideas, key uncertainties, and the road to profitable projects. Emphasis will be placed on results from wells, both recent and decades old, helping experts from Colombia and across the globe to develop leading edge methodologies and technologies for characterization and development of these unconventional plays.

• Characterization of Unconventional Resource Shales
  Roger M. Slatt, The University of Oklahoma

• Multi-Scale Resource Assessment Considerations for Organic-rich Source Rocks
  Yucel Akkutlu, Texas A&M University

• Recognizing Play Element Heterogeneity from Pore to Play Scale
  Tom Jones, ExxonMobil Exploration Company

0945–1015  Coffee Break

1015–1145  Platinono
SESSION 2: Regulatory and Environment
Session Chairs: Edward Tovar, Ecopetrol
Edgar Perez, Ecopetrol

This session aims to provide an analysis of the environmental aspects associated to the extraction of unconventional resources. It will present a comparative analysis of the activity in the international context, including legal aspects, technologies used for effluent management strategy, and reused options; evaluation of environmental risk, and possible mitigation measure. It will also share a review of the national legal aspects.

• Resource Play Development in Colombia
  Michael Morgan, GLJ Petroleum Consultants

• What is the Proper Approach for Risk Management in Unconventional Operations?
  Óscar Bravo, Ecopetrol

• High Profile Well Projects in New Countries/Areas: The Regulator and Environment Perspective
  Tim Leshchyshyn, FracKnowledge

1145–1315  Dorado
Lunch

1315–1445  Platinono
SESSION 3: Geomechanics
Session Chairs: Jose Gildardo Osorio, Pluspetrol
Nestor Saavedra, Ecopetrol

This session focuses on three essential aspects of the geomechanics impact on production from unconventional reservoirs. First, how geological processes are manifested in significant variations in rock mechanical properties and stress regimes. Second, how to address special issues of wellbore stability in unconventional reservoirs, such as chemically reactive rocks, weak bedding planes, natural fractures and faults, and underbalanced drilling. Last, the geomechanical aspects of hydraulic fracturing, such as how to select best intervals for stimulation, factors affecting fracture propagation, how stress regimes influence fracture orientation, and the impact of shadowing effects.

• Geomechanical Challenges on Unconventional Shale Reservoirs in Colombia
  Reinel Corzo, Ecopetrol; Nelly Rubio, Ecopetrol

• Innovative HF Considerations for Sustainable Unconventional Resource Development
  Roman Bilak, Terralog-Canadá; Kerry Kristiansen, Terralog-Canadá

• Drilling and Borehole Stability in Unconventionals—Taking One For Team When Landing Laterals
  Marisela Sanchez-Nagel, OilField Geomechanics

1445–1515  Coffee Break

1515–1645  Platinono
SESSION 4: Drilling and Completion
Session Chairs: Nestor Saavedra, Ecopetrol
Sezai Ucan, Consultant

The dramatic change in the slope of oil and gas production curves from negative to positive in the United States in a very short time is the result of successful development of tight and shale petroleum reservoirs stemming from significant advances in drilling and completion practices. This session will address practical issues associated with these advances.

• Fracturing Unconventional Wells is the Same as Fracturing Conventional Wells, Except for a Few Simple Rules....
  Tim Leshchyshyn, FracKnowledge

• Delivering Value in Challenging Rocks: Integrated Drilling, Completion & Geomechanics Design Practices to Maximize Production and Minimize Downtime
  Uno Mutlu, Rockfield America, Houston

• Unconventional Fields—The Battle for Efficiency—Vaca Muerta (Argentinian) Case Overview
  Luciano Fucello, NCS Multistage

• Alternate - Engineering Solutions to Overcome the Main Challenges in Drilling Unconventional Wells
  Julio Palacio, K&M Technology

1700–1830  Dorado
Keynote Dinner
Gabriel Combariza, Unconventionals Manager, Ecopetrol
Friday, 29 March

0700–0800  Registration

0800–0930  SESSION 5: Reservoir Characterization
            Session Chairs: Joe MacQuaker, ExxonMobil
                        Tristan Euzen, IFP Technologies (Canada) Inc.

            Despite their fine-grained lithology, unconventional reservoirs have proven to be very complex and heterogenous. Multiscale variations of petrophysical and geomechanical properties result from the depositional and burial history of these rocks. This session will focus on our current understanding of these heterogeneities and how they impact the stimulated reservoir volume and well productivity.

            •  Where Unconventional Reservoir Characterization Workflows Have Been and Where They are Going
              Frank Walles, Baker Hughes a GE Company
              Co-authors: Matt Bratovich an McGlynn and Jessica Raine

            •  Centimeter-Scale Petrophysics—The Key to Optimal Development of Unconventional Reservoirs
              Phillipe Gailliot, ExxonMobil

            •  Pore Space and Connectivity—La Luna
              Joel Walls, Ingrain

0930–1000  Coffee Break

1000–1200  SESSION 6: Testing and Forecasting Methods
            Session Chairs: Roberto Aguilera, University of Calgary
                        Preston Viator, ExxonMobil

            The use of test and production data can be useful for forecasting well performance and EURs in unconventional plays. Understanding long term well performance is integral to characterizing the economics of a play. Flow simulation and data analytics are useful tools for projecting decline curves and can ultimately aid in designing drawdown strategies and flowback rates.

            •  Forecasting Production From Unconventional Resources—Some Practical Guidelines
              Christopher Alonzo, NCS Multistage; Luciano Fucello, NCS Multistage

            •  Production Forecasting for Unconventional Resources using RTA and Compositional Reservoir Flow Simulation
              Yucek Akkutlu, Texas A&M

            •  Use of Material Balance Calculations for Forecasting Performance of Shale Gas Reservoirs
              Daniel Orozco Ibarra, Alfonso Fragoso Amaya, Roberto Aguilera, University of Calgary

            •  3D Simulation of the Stimulated Reservoir Volume Evolution During Hydraulic Fracturing
              Erfan Sarvaramini, GLJ Petroleum Consultants

1200–1300  Lunch

1300–1430  SESSION 7: Case Studies
            Session Chairs: Joe MacQuaker, ExxonMobil
                        Tristan Euzen, IFP Technologies (Canada) Inc.

            The experience gained from thousands of multistage fractured horizontal wells in North America and in emerging unconventional plays around the world is a key driver of decisions being made that will ensure future success. This session will aim at sharing learnings from integrated case studies, with potential applications to the development of unconventional resources in Colombia.

            •  Identifying Geological Controls on Storage Capacity in Unconventional Reservoirs—A La Luna Example
              Joe Macquaker, ExxonMobil Exploration Company

            •  Controls on Proppant Embedment—La Luna
              Janelle Homburg, ExxonMobil Upstream Research Company

            •  Seismic-Based De-Risking of Unconventional Plays by Integrating Rock Physics, Inversion, Geopressure, and Geomechanics
              Jeremy Meyer, Ikon Science

1430–1500  Coffee Break

1500–1630  SESSION 8: New Developments and Wrap-Up
            Session Chairs: Roberto Aguilera, University of Calgary
                        Japan Trivedi, University of Alberta – Canada

            Despite successful development of tight and shale petroleum reservoirs particularly in the United States, oil and gas recoveries have been very low. This session examines how industry and academia are trying to increase oil and gas recoveries with techniques that involve surfactants, nanofluids and huff and puff gas injection. The wrap-up will summarize the learnings acquired during the two days of the workshop.

            •  Geochemical Productivity Index, Igpi: An Innovative Way to Identify Potential Zones with Moveable Oil in Shale Reservoirs
              Jaime Piedrahita, Ecopetrol

            •  Surfactant and Smart Water for Improving Recovery from Carbonate Tight Oil Reservoir
              Madhar Azad, University of Alberta; Japan Trivedi, University of Alberta

            •  Improved Oil Recovery from Shale Reservoirs by Huff and Puff Gas Injection
              Alfonso Fragoso Amaya, Daniel Orozco Ibarra, Roberto Aguilera, University of Calgary
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