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Society of Petroleum Engineers

6–7 August 2009 | NH City & Tower | Buenos Aires, Argentina

# Production & Operations: Keys to Effective Mature Waterflood Management



## Who Should Attend?

The workshop is a limited-attendance meeting for up to 100 professionals who work directly or indirectly in processes related to the following areas:

- Production engineering and operations
- Reservoir engineering
- Well engineering (construction, operations and maintenance)
- Facilities engineering (construction and maintenance)
- Project management
- Investment analysis and field strategic planning
- Government organizations
- Production engineering with a holistic approach

## Program Committee

**Cochairperson:**  
**Santiago Salvia**  
IFM Solutions

**Cochairperson:**  
**Juan A. Rosbaco**  
J&R Consulting

**Carlos Berto**  
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Pluspetrol

**Julio A. Shiratori**  
Apache Energia

**Martín Terrado**  
Chevron

This SPE Applied Technology Workshop will focus on waterflood management issues. Topics to be covered include:

- Waterflood surveillance and monitoring, including tools for surveillance and monitoring, diagnostic plots (Log WOR vs.  $N_p$ , Hall plot and similar), performance behavior, production performance maps (water cut, gas oil ratio, pressure maps), and stimulation results.
- Waterflood management, covering feasibility studies, pilots, recommendations for patterns, well conversions, and new wells (may include case studies).
- Successful water injection strategies and reconfiguration practices, covering fracturing, winning practices, horizontal technology, pattern realignment, injection and production well profile controls, and improved water viscosity.
- Automation and completion for water injection improvement, including selective injection, tools for data monitoring and quality control.
- Methods to allocate production and water injection in multiple layer systems.
- Reservoir engineering techniques and methods to estimate the moveable oil in place in immiscible water displacement, improve methods for production forecasting, and estimating cutoff for different variables.
- Importance of the water injection rate and the forces involved (gravity, viscous, and capillary) in the water displacement efficiency. The role of imbibitions in waterflooding. When should it be considered in the calculations?
- Water injection in zones of unfavorable mobility ratios (high oil viscosity), best practices, and lessons learned.

Register now at [www.spe.org/events/09abue](http://www.spe.org/events/09abue)

# WORKSHOP

## Sponsorship Support

Sponsorship support helps offset the cost of producing workshops and allows SPE to keep the attendance price within reach of operations-level individuals, those who benefit most from these technical workshops.

Sponsors benefit both directly and indirectly by having their names associated with a specific workshop.

While SPE prohibits any type of commercialism within the conference hall itself, the society recognizes that sponsoring companies offer valuable information to attendees outside the technical sessions.

## Sponsorship Opportunities

There are opportunities for participation as speakers and/or sponsors for this ATW.

## Sponsorship Categories

Sponsorships are offered on a first come basis. Please contact LAC@spe.org to verify the availability of a particular sponsorship.

## Sponsorship Benefits

In addition to onsite recognition; SPE will recognize sponsors on the SPE website and in all printed material for the workshop. Based on the sponsorship selected, sponsoring companies also receive logo visibility on promotional workshop items.

## For More Information

For more information, please contact LAC@spe.org. Further details on the technical program, registration, and location information can be found at [www.spe.org/events/09abue](http://www.spe.org/events/09abue).

## Schedule

*Note: While every attempt will be made to adhere to the schedule, the status/availability of speakers and moderators is subject to change.*

### Wednesday, 5 August

1500–1700      **Registration**

### Thursday, 6 August

0800–0900      **Registration and Continental Breakfast**

0900–0930      **Opening Comments**

0930–1030      **SESSION I: Part 1**

1030–1100      **Coffee Break**

1100–1200      **SESSION I: Part 2**

1200–1330      **Luncheon**

1330–1500      **SESSION II: Part 1**

1500–1530      **Coffee Break**

1530–1600      **SESSION II: Part 2**

1600–1730      **PANEL DISCUSSION 1**

1730–1745      **Summation of Sessions**

1745–1900      **Poster Sessions**

### Friday, 7 August

0800–0900      **Registration and Continental Breakfast**

0900–0930      **Opening Comments**

0930–1100      **SESSION III**

1100–1130      **Coffee Break**

1130–1230      **SESSION IV**

1230–1400      **Luncheon**

1400–1600      **SESSION V**

1600–1630      **Coffee Break**

1630–1800      **PANEL DISCUSSION 2**

1800–1815      **Summation of Sessions**

1815–1830      **Closing Remarks**

## Preliminary Technical Agenda

### Wednesday, 5 August

1500–1700 Registration

### Thursday, 6 August

0800 Registration

0900 Opening Comments

*Chairperson's Remarks: Juan Rosbaco*

*Keynote Address: Santiago Salvia*

*Scene Setting: William Cobb*

#### Session I: Part 1

Waterflood case studies in Argentina, including lessons learned in mature waterflooding projects and best practices.

0930 Mature Waterflooding in El Tordillo Field

*Speakers: Daniel Biedma/Enrique Muruaga, Tecpetrol*

1000 Holistic Field Performance Optimization of Mature Oil Field – El Trapial, Argentina

*Speaker: Leandro Gasparotto, Chevron*

1030 Coffee Break

#### Session I: Part 2

1100 Medium Heavy Oil Waterflooding Management

*Speaker: Nicolás Marot, Petroandina*

1130 Waterflooding Implementation, experiences in Cerro Dragon Fields

*Speaker: Ricardo D. Mazzola, Pan American Energy*

1200 Luncheon

#### Session II

Reservoir characterization and modeling including volumetric sweep efficiency, estimation and waterflooding performance (cutoff criteria, bubble maps, pressure maps and numerical simulation usage).

1330 Determination of Waterflood Volumetric Sweep Efficiency Using Oil Production Data

*Speaker: William Cobb, William Cobb and Associates Inc.*

1400 Advance Waterflooding: Conceptual and Operational Changes Associated to Water Cut Sharp Increases

*Speaker: Marcelo Crotti, INLAB*

1430 Challenging Paradigms: Discovery and Integrated new development in a Mature Oil Field

*Speaker: Juan Pablo Romanato, Chevron*

1500 Coffee Break

1530 Influence of Gas Segregation at the Beginning of Waterflooding

*Speaker: Gastón Fondevila, Capsa Capex*

1600 Panel Discussion 1

Reserves calculations in waterflooding projects, decline curve analysis and its limitations, material balance and its limitations, numerical simulations techniques, logs WOR vs Np, cutoff criteria.

*Panelist: Daniel Gimenez, Pluspetrol*

1730 Summation of Sessions

*Chairperson's Remarks: Juan Rosbaco*

1745 Poster Sessions / Welcome Reception

Brightwater a new conformance technology. A brief overview of some historic cases - *Charles Norman, TIORCO*

Advantages and disadvantages of the Hall plots - *William Cobb, William Cobb and Associates Inc.*

Infills wells their importance in mature fields - *Gaston Fondevila, Capsa Capex*

Fluid analyser and sampling logging tool use in a mature oil field. El Trapial field, Argentina - *Ruben Gonzalez, Chevron*

Title TBD - *Ricardo D. Mazzola, Pan American Energy*

### Friday, 7 August

0800 Registration

0900 Opening Comments

#### Session III

Improved oil recovery techniques with the application of surfactants in waterflooding projects, medium heavy oil successful project with unfavorable mobility ratio, incremental recovery factor expected from EOR techniques.

0930 Application of Surfactants in Mature Waterflood Opportunities and Risk

*Speaker: Charles Norman–TIORCO*

1000 Alkali Surfactant Polymer Pilot Test

*Speakers: Raul Puliti/Federico Hochenfellner, Pluspetrol*

1030 Enhanced Oil Recovery and Surfactant Polymer Flooding Pilot Test

*Speakers: Mario Pascual/Esteban Fernandez, YPF*

1100 Coffee Break

#### Session IV

Surveillance and monitoring, best practices including Hall plot, step rate, injection balance, WOR vs Np, and how measurements can help to optimize a waterflooding project.

1130 Water Injection in West Catriel Reservoir

*Speakers: David Gibson/Dave Cole, Central International Corporation*

1200 Integrated Reservoir Management Model for a Mature Field

*Speaker: José Miguel Negrón, YPF*

1230 Luncheon

#### Session V

Managing waterfloods experiences from mature projects considering operational and technical challenges associated to cost increases during the life of the field.

1400 Topic TBD

*Speaker: Petrobras Argentina*

1430 Title TBD

*Speaker: Petrobras Brazil*

1500 Water Comformance Pilot-Review of an Active Mature Field

*Speakers: C. Yarke/J. Gil, YPF*

## Preliminary Technical Agenda (cont.)

1530 Influence of Injection Rate in Oil Recovery

Speaker: *Capsa Capex*

1600 Coffee Break

1630 Panel Discussion 2

Waterflood projects maximizing value and minimizing operational cost: best practices and lessons learned from mature fields, what works and what should be avoided in waterflooding projects.

Panelist: *Larry Skow, Chevron*

1800 Summation of Sessions

Cochairperson *Santiago Salvia, IFM Solutions*

1815 Closing Remarks

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## Official Travel Agency

SPE has named IT&C as their official tourism agency for housing, ground transportation and touristic activities.

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[www.spe.org/workshops](http://www.spe.org/workshops)

## Upcoming Workshops and Conferences/Forums in Latin American and Caribbean region

16–17 September 2009 **Well Control**  
Macaé, Brazil

25–30 October 2009 **Forum-Operational Innovation for Field  
Rejuvenation-Lift to Water**  
Dorado del Mar, Puerto Rico

12–14 April 2010 **HSE: Health, Safety & Environment**  
Rio de Janeiro, Brazil

## Workshop guidelines

### FORMAT

Workshops maximize the exchange of ideas among attendees and presenters through brief technical presentations followed by extended Q&A periods. Focused topics attract an informed audience eager to discuss issues critical to advancing both technology and best practices. The majority of the presentations are in the form of case studies, highlighting engineering achievements and lessons learned. In order to stimulate frank discussion, no proceedings are published and the press is not invited to attend.

### DOCUMENTATION

Proceedings from the workshop will not be published; therefore, formal papers and handouts are not requested of speakers or panel members. A URL containing released copies of the workshop presentations will be available to attendees following the workshop.

### COMMERCIALISM

In remaining consistent with workshop objectives and SPE guidelines, excessive commercialism in presentations will not be permitted. Company logos should be limited to indicate the affiliation of the presenter(s).

### PLEASE USE FORM ON BACK FOR REGISTRATION

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