Integrated Well Flow Solutions
Domestic and International Petroleum Engineering Consultancy

Portfolio to Clients
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IWFS STATEMENT

VISION

Privately owned firm focused on providing *specialized* petroleum engineering and project management consulting services to Oil & Gas operators, service companies, financial and investment firms in the U.S. and overseas.

MISSION

In IWFS we strive to deliver exceptional *customer value* by providing high quality support and consulting services to client Oil & Gas companies in the USA and abroad.
IWFS SERVICES PORTFOLIO

IWFS services portfolio includes:

- Acquisition and Investment in Oil and Gas Assets
- Pressure and Rate Transient Analysis
- Enhanced Oil Recovery
- Field/Reservoir/Completion Surveillance & Monitoring
- Nodal Analysis and Integrated Asset Modelling
- Well Flow Modelling and Artificial Lift
- Well Recompletion Management
- Field Operations
- Reserves Estimation

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IWFS professionals have had project experience in:

- Colombia
- Venezuela
- Saudi Arabia
- Kuwait
- USA
- UK
- Peru
- Mexico
- Trinidad & Tobago
IWFS consultants have had project experience with:

- Ecopetrol, Vetra E&P, UT-IJP - (Colombia)
- PDVSA - (Venezuela)
- PEMEX - (Mexico)
- Saudi Aramco - (Saudi Arabia)
- Kuwait Oil Company - (Kuwait)
- Hess Corporation, BHP Billiton, Swift Energy, Joshi Technologies - (USA)
- Eclipse Petroleum Technology - (United Kingdom)
- Gold Peru - (Peru)
- Fekete Associates - (Canada)
Acquisition & Investment in Oil & Gas Assets

IWFS SERVICES

➢ Provides the management assistance needed by operators, service companies and investment firms to approach, focus on, evaluate and acquire/invest in oil and gas opportunities.

➢ Investments/Acquisitions include new and mature opportunities in the USA, and Latin America.

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Techniques and boundaries of Data Analysis

Data analysis encompasses the techniques required to understand the well and its reservoir system.
PTA & Interpretation is instrumental in the evaluation of well/reservoir system potential to enhance its characterization and enable the design of improved exploration and depletion strategies.

The analysis of the pressure response and its fitness to an analytical model enable the calculation of key well, wellbore and reservoir parameters and a better interpretation of the reservoir and its boundaries.

Thru years of pressure transient analysis, IWFS has developed the expertise to provide the optimal processing, analysis and interpretation of your PT tests.

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Rate Transient Analysis and Interpretation

IWFS SERVICES

• RTA & Interpretation enables engineers and geoscientists to analyze rate and flowing pressure history data from a well using analytical models compatible with PTA.

• RTA methods characterize the well/reservoir draining volume system by investigating with a radius of investigation (ROI) much larger than PTA tests can reach.

• RTA or modern decline analysis is a blend of analytical (PT) and empirical (ARPS) methods and a complement to PTA.

• RTA does not require shut-in the well.

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IWFS SERVICES

• IWFS provides the engineering expertise to optimize ultimate recovery factors adding important volumes of incremental oil from mature fields that require specific methods of injection.

• Gas, Thermal and Chemical injection methods can be applied to old reservoirs to recover immobile oil trapped in the rock by capillary and viscous forces, not recoverable thru conventional primary and secondary recovery methods.

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Surveillance & monitoring are keys to understanding reservoir performance and identifying opportunities that will improve ultimate recovery.

To be effective, Surveillance must be exercised at both the static & dynamic levels during the reservoir life cycle.

Proper planning & modeling are instrumental to successful Surveillance, enhanced ultimate recovery and optimal ROI ($).
IWFS can develop nodal analysis models including wells, flow lines, risers, manifold pipelines, pumps, compressors, separators and gathering facilities.

The surface networks can be optionally linked to reservoirs and process models for fully integration of the production system.

Integrated nodal analysis models enable operators to see the big picture to identify production bottlenecks, increase productivity and minimize technical and economic risk.
As reservoirs mature and reservoir potential energy declines, continuous natural flow can not be sustained.

At this point, properly selected, designed and managed artificial lift systems become a powerful tool to enhance asset productivity and recovery.

IWFS can use updated methodology to assist companies with optimal well life cycle productivity.
Recompletions represent an attractive opportunity for operators to increase production, ultimate recovery and return of the investment.

Successful recompletions provide a great opportunity to add significant value to mature assets.

IWFS can help clients to select the best recompletion candidates, estimate potentials, prioritize opportunities and design suitable operations to optimize asset value and ROI.
IWFS SERVICES

Reserves estimation, forecasting and economics

➢ IWFS can assist clients to estimate oil and gas reserves using analytical methods based on production data for estimation of asset value following SEC and/or SPE/WPC/AAPG standards.

➢ Can also assist your organization in developing the projections to forecast production as well as the economical analysis needed to screen and decide on different production scenarios.

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<th>Field</th>
<th>Initial Estimate</th>
<th>Revised Estimate</th>
<th>Company-declared Numbers</th>
<th>Assigned Recovery Factor</th>
<th>Recover Oil</th>
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<td>P50</td>
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<td>P10</td>
<td>P90</td>
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Mario A. Salazar has several years of upstream experience in the Oil & Gas industry. Mario’s experience involves expertise in petroleum exploration & production including: conventional & unconventional sweet-spot exploration, asset evaluation, acquisition & divestiture, field development planning, reservoir management, drilling and completion planning, field/reservoir production surveillance planning, nodal analysis and IPM, multi-phase well flow modeling and artificial lift design, reserves estimation and project economical analysis, fluid properties/PVT and pressure transient analysis. Prior to founding IWFS, Mario provided consulting services and led multidisciplinary project teams and task forces with consulting and operators including: Eclipse Petroleum Technology, BHP Billiton, Hess Corporation, Kuwait Oil Company, PEMEX; worked with Swift Energy Operating, Saudi Arabian Oil Company (Saudi Aramco), ECOPETROL (Colombian Petroleum Company), Colombia Cities Services (OXY) and the Universidad Industrial de Santander (UIS) of Colombia. Mario holds a Petroleum Engineering degree from Universidad Industrial de Santander and a Master’s Degree in Computer Science/Operations Research from Texas A&M University.

Dr. Charles F. Alcocer has more than 27 years of international experience in the oil industry in the areas of CO2 EOR processes, N2 injection HP processes, CCS processes and technologies, management, reservoir engineering, production and environmental engineering. He has more than 11 years of academic experience teaching graduate and undergraduate petroleum courses and conducting research in the areas of production, reservoir and environmental engineering, EOR, asphaltene and paraffin prevention/control. Active as a consultant and an instructor worldwide for the oil and gas industry, he is specialized in Oil and Gas Reservoir and Production Engineering Studies applied to waste water treatment and oil contaminated soil.
Feel free to contact IWFS at any time

Thank you for your attention to this Presentation!!

Mario Antonio Salazar
IWFS – USA
Director
4120 Mather, Kyle TX 78640
Phone: +1-512-363 0822
email: info@inwellflowsol.com

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