



Production Technology

Introduction

Production Technology is a core competency of Baker RDS. The integrated Production Technology team have the skills and experience to support our clients and create value through the design and operational performance of wells through:

- > Completion, design and the application of production technologies to enable optimum production performance consistent with field and reservoir depletion plans.
- > Well production management, surveillance planning and operational activities to ensure that opportunities to enhance and safeguard performance are realised.
- > Management and integration of the interactions between upstream engineering and operations disciplines

The RDS Production Technology capability spans the full hydrocarbon life cycle from exploration and appraisal well testing, through to the conceptual and detailed design phases. The team lead decision framing and value of information activities which help clients identify the optimal well and completion methodologies, ensure that the reservoir and wells can be operated efficiently and assure that the risks identified can be managed.



Well Testing
Conceptual Well & Completion Design Selection
Optimised Well & Completion Design Selection
Uncertainties & Risks Captured
Predicted Performance Ranges

Reservoir & Well Management Strategy
Operations & Maintenance Strategy
Well Commissioning & Start-up

Well Monitoring & Surveillance
Well Operating Performance (volumes, costs, safety)
Well Activity Planning & Supervision
Well Management Planning
Well Operating Constraints & Guidelines
Risk Management Plan Review & Update
Opportunities Identification & Implementation
Abandonment & Decommissioning

Our expertise includes:

- > Formation damage
- > Hydraulic fracturing
- > Stimulation treatment
- > Sand Prediction and Management
- > Inflow performance
- > Artificial Lift
- > Completion selection and design
- > Smart Well technology
- > Well and Integrated Asset Modelling
- > Production Chemistry
- > Flow Assurance
- > Production Monitoring
- > Production Optimisation
- > Well Integrity Management
- > Well Surveillance & Intervention

We are uniquely positioned to help you:

- > Develop Well Testing philosophies and plans
- > Design stimulation treatments
- > Develop and optimise Sand Management plans
- > Design and optimise artificial lift systems
- > Identify and select optimal completion methods
- > Evaluate smart well technologies
- > Develop well and integrated asset models
- > Assess and diagnose problematic well performance
- > Identify performance enhancement opportunities
- > Assess risks and develop well management plans
- > Develop and supervise well intervention activities
- > Develop and optimise workflows

Reservoir Inflow Performance

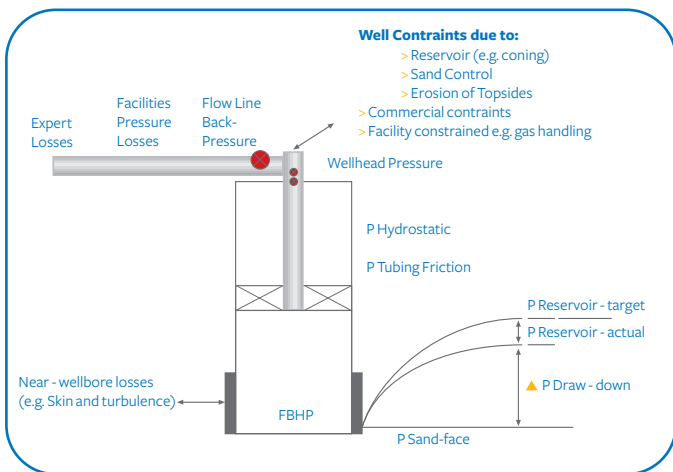
RDS can help clients assess near-wellbore performance potential and develop detailed designs for the well type, lower completion method, perforation strategy, sand control selection, stimulation treatments (matrix and fracture) as well as assessing damage and identifying remediation treatments.

Artificial Lift Selection and Optimisation

We have carried out numerous artificial lift screening and optimisation studies for clients. Lift methods analysed have included ESPs, HSPs, gas lift and jet pumps (using RDS proprietary software). Our expertise ranges from trouble-shooting artificial lift issues in existing wells to making recommendations on equipment specification for life of field conditions in new developments.

Well Performance Monitoring

We provide production technology support to operators with respect to the optimal configuration and use of real-time on-line data, which is used for production monitoring, allocation and optimisation.



System energy losses analysed as part of investigation of well performance opportunities

Integrated Asset Modelling

RDS are recognised as one of the industry leaders in Integrated Asset Modelling (IAM) and have a wealth of experience in delivering functional and novel IAM solutions for clients around the world. Not only do we design and construct the tools, we also assist our clients with keeping them up-to-date and fully optimised. Our solid track record with very large and complex models has been assisted by in-house tools for automating construction of individual models, as well as semi-automated history matching - greatly improving on the deployment time. These solutions are delivered using industry standard software with additional in-house tools as required.

Erosion (Solids Transport) Modelling

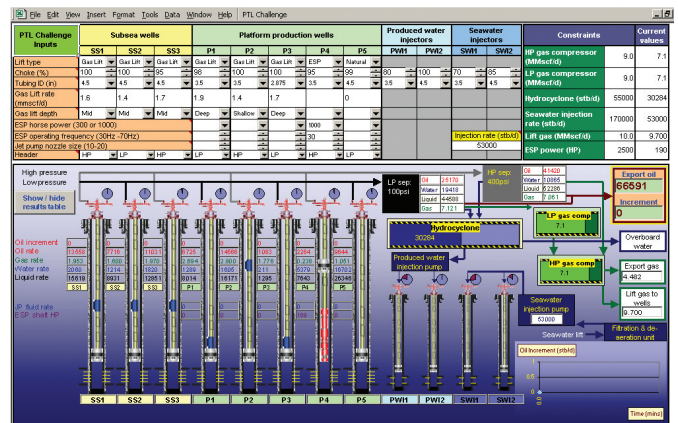
Solids transport modelling is a key part of our capability. Whether it be sand production prediction or erosion studies, RDS have a strong track record of solutions built upon multiphase simulation and in-house models to describe solids transportation and calculate erosion.

Production Optimisation

The Production Technology team have a track record of leading and facilitating multi-functional production performance workshops to help clients identify production system constraints and develop performance improvement opportunities.

Specialist In House Tools and Workflows

Developed in conjunction with the RDS Software Programming group, we have a growing number of specialised tools for artificial lift screening, sand prediction, screen sizing, completion selection, jet-pump design and performance analysis and tubing stress evaluation. We have also developed various production "games" as cross-disciplinary training aids.



Example of an RDS interactive "game" used to illustrate the principles of "whole system" production optimisation

