



Well Flow Management solutions



A professional and motivated team, focused on improving your well performance through a shared understanding of requirements, while maintaining the highest levels of safety and integrity . . .

We have been providing a complete range of well flow management services to operating companies since 1992. Expro Well Services (est. 2007) evolved from its predecessor EGIS.

Our customers benefit from the role we play in their business and appreciate the added value we offer through direct access to Expro's product lines and expertise.

Our ability to respond to the particular needs of our customers has enabled us to provide solutions to a range of problems.

We are focused on improving well performance for our customers through our experienced team of production technologists, well engineers, well services supervisors and well integrity specialists.

We can provide solutions in any stage of the life of a production field, from completion design through to late life and abandonment.



Expro Well Services has established core services that enable us to fulfil our customers' needs and requirements. Whatever your scope of work, it is the experience and capability of our people that ensure success.

The types of work we have undertaken for customers include specific study work; project management from design through to operations and integrated services.

Our Vision

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Our vision is to be the industry recognised provider of choice when it comes to well flow technologies and specialised services. This will be achieved by delivering the highest quality of service in a safe and professional manner.

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Our Values

Expro Well Services has a motivated team from a wide variety of industry backgrounds and we are passionate about continuous improvement, customer satisfaction and service quality.

We deliver value by maximising recovery from the well via the most economic methods. While doing this we will:

- Provide a safe working environment for personnel, ensuring no harm to our people, the environment or equipment
- Provide innovative engineering solutions to meet and exceed customers' challenges and expectations
- Provide the best people, incorporating our quality management system, to deliver the very best to our customers

Production Technology

Enhancing recovery through understanding your wells . . .

The Production Technology team enables our customers to maximise the productivity of their assets while minimising cost, with no compromise to safety and environmental performance. We provide our customers with a range of expertise from our production technologists.

Our expertise extends throughout the life span of an asset from conceptual design, through construction to operation and eventual abandonment.

Exploration and Appraisal	Development Planning	Design and Construction	Production and Optimisation	Late Life and Abandonment
Tubing Stress Analysis	Well Design	Completion Design	Through Tubing Intervention	Zonal Isolation
Hydrate Propensity	Artificial Lift Selection	Tubing Sizing	Water Shut off selection	Abandonment
Material Balance Modelling	Production Chemistry	Sand Control Design	Gas Lift Optimisation	Study
	Conceptual Design		Scale, Wax and Hydrate Control	Feasibility Study

The production technology team utilises a range of licensed technical software including:

- **MBAL** Reservoir system definition & history matching
- **Prosper** Vertical lift and inflow performance
- **WellCat** Stress analysis and thermal modelling
- **GAP** Network optimisation
- **PVTSim** Fluid characterisation and thermodynamic modelling
- **Saphir** Pressure transient analysis
- **Emeraude** PLT and PNL analysis



Completion design

Our capabilities extend from conceptual to detailed completion design. Encompassing all completion components and assessing the sensitivity of the well design to variations in reservoir data.

Tubing stress analysis can be performed as part of the design process or as a stand-alone service on existing completions or test strings.

Case Study

Objective	To maximise productivity in a subsea well with a 16 year life span
Scope	500 psi drop in reservoir pressure during well life Range of water cuts from 0 - 90% Range of tubing sizes 4 1/2" to 5 1/2" considered Gas lift identified for artificial lift Lift gas rate and entry depth selected
Benefits	Tubing stress analysis showed lighter weight tubing could be used for the upper part of the completion

Production optimisation

Operators are looking to rejuvenate optimisation efforts on existing assets. In some cases the focus has completely changed from new developments to squeezing every last drop out of existing assets.

Utilising nodal analysis and network system techniques we re-appraise our customers wells and assets to convert a wells true production potential to actual sales volume.

Case Study

Objective	To optimise a limited lift gas volume across the current wellstock, then cater for additional wells.
Scope	Mature asset producing with gas lift Limited amount of lift gas available Uncertainty of current lift gas allocation No scope to gather new downhole data Performance of all wells modelled
Benefits	Optimisation of lift gas allocation yielded a 900 stb/d increase in production Recommendations made for future intervention and well testing

Flow assurance studies

Hydrate formation poses significant risks in gas wells. Clients mitigate such risks by undertaking a Hydrate Study to model and predict hydrate depth formation and evaluate inhibitor performance. Results are based on PVT data and modelled temp/press profiles.

Scale/Wax modelling downhole conditions combined with lab studies we can determine the likelihood of solid deposition within the production system and recommend potential techniques for mitigation.

Case Study

Objective	Model for potential Gas Hydrate in an exploration well and evaluate impact of hydrate inhibition techniques.
Scope	Reservoir data taken from offset well Range of flowrates used to generate hydrate curves Well temperature and pressure profiles modelled Evaluate use of insulating gel outside the tubing Determine tubing Inhibitor injection depths and rates required to prevent hydrate formation
Benefits	Hydrate risks identified and quantified Techniques to prevent hydrate formation and mitigate risks evaluated

Well Engineering Project Management

Delivering your vision . . .

Our team of experienced well engineers are available to support customer's well operations. Such activities include programme writing, logistics planning, cost management, coordination and risk assessments.

We have robust processes and systems in place to ensure the successful delivery of projects and can work either independently from our premises or embedded as part of the customer's operations team. A selection of the services we provide is presented below.

Well Operations Co-ordinator				
Well Test	Completion	Well Interventions	Workover	Abandonment
Independent Well Examinations, Dispensations & Programme writing				
Well Test Programmes	Completion Programmes	Well Intervention Programmes	Workover Programmes	Abandonment Programmes
Well Integrity				
Review Operator's Well Integrity Management System	Annual Well Integrity Reporting	MAASP Calculations	Re-Assessment of MAASP using Caliper Log Data	Well Integrity Training

Project Management

Expro Well Services has extensive experience project managing as the customer representative to manage and integrate with service companies or as a project co-ordinator for Expro's integrated services.

Our focus is to meet customer objectives on time and within budget while monitoring and controlling project delivery. We enhance the project by identifying operations that can be optimised or aspects of the project that benefit from innovative technological solutions.



Case Study

Our customers' scope of work can often require the integration of several services or technical disciplines.

Whether the project is operational or at the conceptual phase, we are able to fulfil the project objectives on time and within budget while monitoring and controlling project delivery. Expro's range of product lines and operational experience.

Case Study

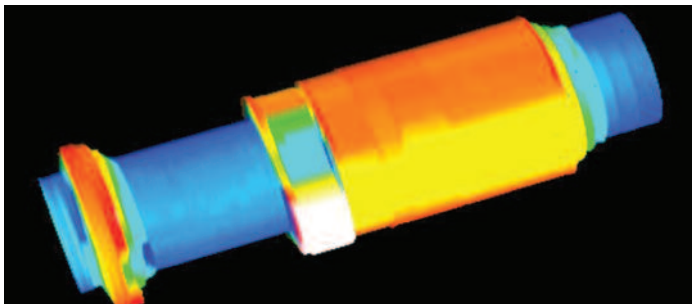
Objective	Design Offshore Well Test to optimize the release of methane gas from a subsea Hydrate Reservoir
Scope	Design Offshore well test to accommodate unconventional hydrate dissociation system. Perform feasibility study of subsea landing string functionality with downhole ESP & induction heater. Design surface well test to optimize downhole dissociation of hydrate and optimize production.
Benefits	Project Management of Expro services and external service companies. Unconventional subsea well test design developed through the conceptual to operational phase

Bringing your data to life . . .

A key component of any successful data acquisition project is the ability to provide the customer with a complete interpretation and analysis package. Expro Well Services can provide complete production enhancement solutions and data analysis services for a wide range of cased hole logging and well testing services. We complement field activities by providing

comprehensive support, not only with the analysis of the data, but also with job planning and tool selection. Extensive involvement in data acquisition and analysis has proven that many customers require a comprehensive data interpretation service to complement / enhance their in-house capabilities. Expro Well Services retains the culture and

flexibility to respond quickly to customer needs, with an emphasis on quality and attention to detail. By drawing on a wide range of disciplines to offer an integrated solution from acquisition programme to final analysis, Expro Well services can ensure that our customers receive the best value for money solution to their logging and data analysis requirements.



Multi-Finger Caliper

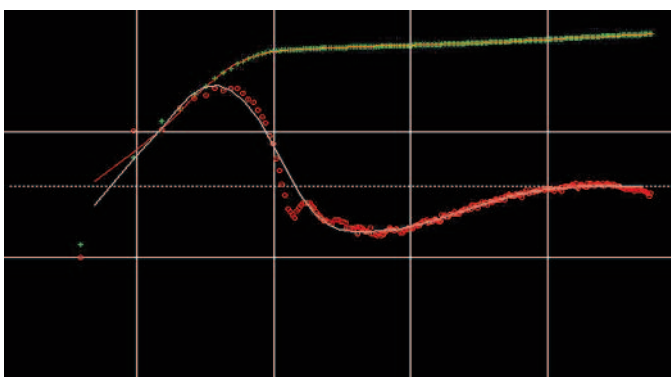
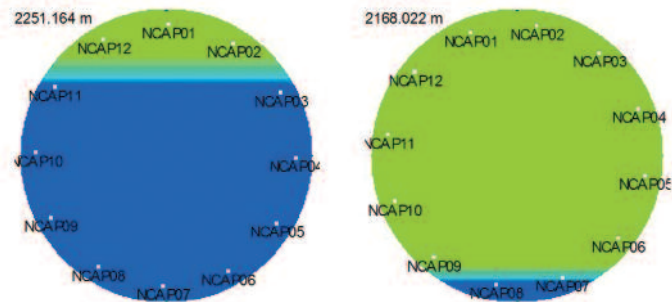
Whether run as part of a scheduled integrity monitoring program or to investigate a well problem, the condition of the downhole tubular can quickly be accurately determined.

This knowledge can then be applied to the ongoing management of the well and any appropriate remedial action quickly implemented, ensuring that compromises to production are minimised.

Production Log

Our experience with production logging tools allows the optimum tool configuration to be chosen for any situation, including 3 phase and horizontal wells.

Accurate identification and quantification of water and/or hydrocarbon entries within a well allow the correct actions to be taken to ensure that productivity is maximised.



Pressure Transient

The analysis of pressure and flowrate data recorded during well tests provides valuable information on the permeability of the formation surrounding the well and extent of the area being drained. These facts are vital if an accurate model of the reservoir is to be developed. The presence of any formation damage around the wellbore can also be determined and potential improvements in well performance identified.

Well Services Supervision

Delivering the promise . . .

Expro's team of Well Services supervisors complete more than 5,000 well operations per year and ensure that our customers' operations are carried out in a safe, efficient and cost-effective manner.

The services we provide cover all aspects of well servicing activity, from office-based programme preparation, planning and co-ordination to well site supervision and training. Our worldwide experience extends across different well conditions, from shallow land wells to highly-complex high pressure / high temperature (HPHT) and deep water environments.

Operations

- Subsea
- Workovers
- Completions (including intelligent completions)
- Hydraulic workover operations
- Coiled tubing operations
- Wireline intervention
- DST / production well testing
- Stimulations (Fracturing, Acidizing etc.)
- Water shut-off
- Abandonment



Project Examples

Shell UK

- Supervising all offshore well operations
- Supervising all offshore workovers and completions
- Onshore planning and programming
- Supervising well maintenance / intervention teams

Deepwater BP Angola

- Well test planning
- Detailed well test programming
- Supervision of on-site operations
- Analysis of well test data
- End of job reporting

Well Integrity Management

Taking care of your assets, people and environment . . .

Expro Well Services deliver systems to assist our customers in the management of well integrity. We have extensive 'hands-on' experience of well integrity issues and the requirements of legislation.

Our Well Integrity Specialists respond to immediate well integrity problems but feature more in preventative measures such as review of management systems and the implementation of well integrity management systems.

Integrity Management Systems

We have frequently reviewed existing well integrity management procedures and processes in conjunction with legislation and industry practices.

Where it is identified that management systems

are not suitable, or available, we have extensive experience in the development of customised well management systems for use by multinational and national operators.

We use GAP analysis techniques to identify current procedures and practices, determine the gaps between the current and the ideal and make recommendations. Expro Well Services can assist with this objective by reviewing the key elements of effective management systems such as:

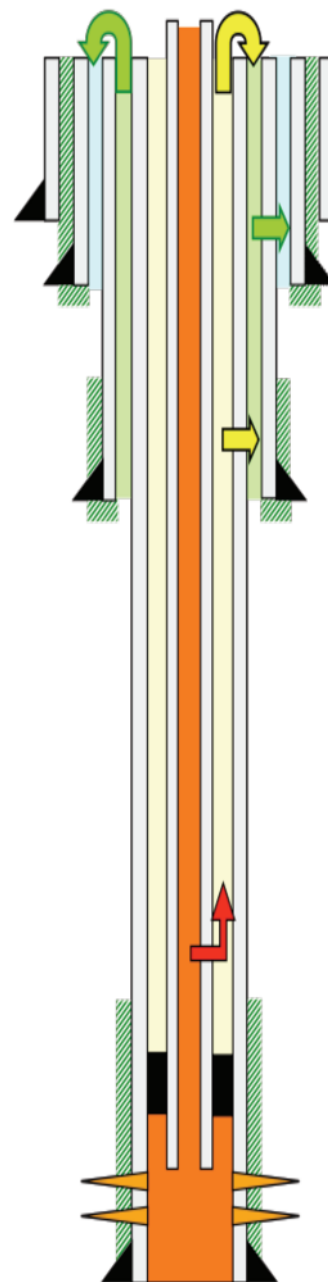
- Operating philosophy
- Roles and responsibilities
- Policies and standards
- Procedures and processes
- Audit and feedback

Well Integrity Training

Our operational well integrity course has been developed to help production personnel understand the importance of good well integrity practices and the potential dangers of what lies beneath the tree flange if these are not adhered to.

The course can be modified to suite your requirements and consists of the following core elements:

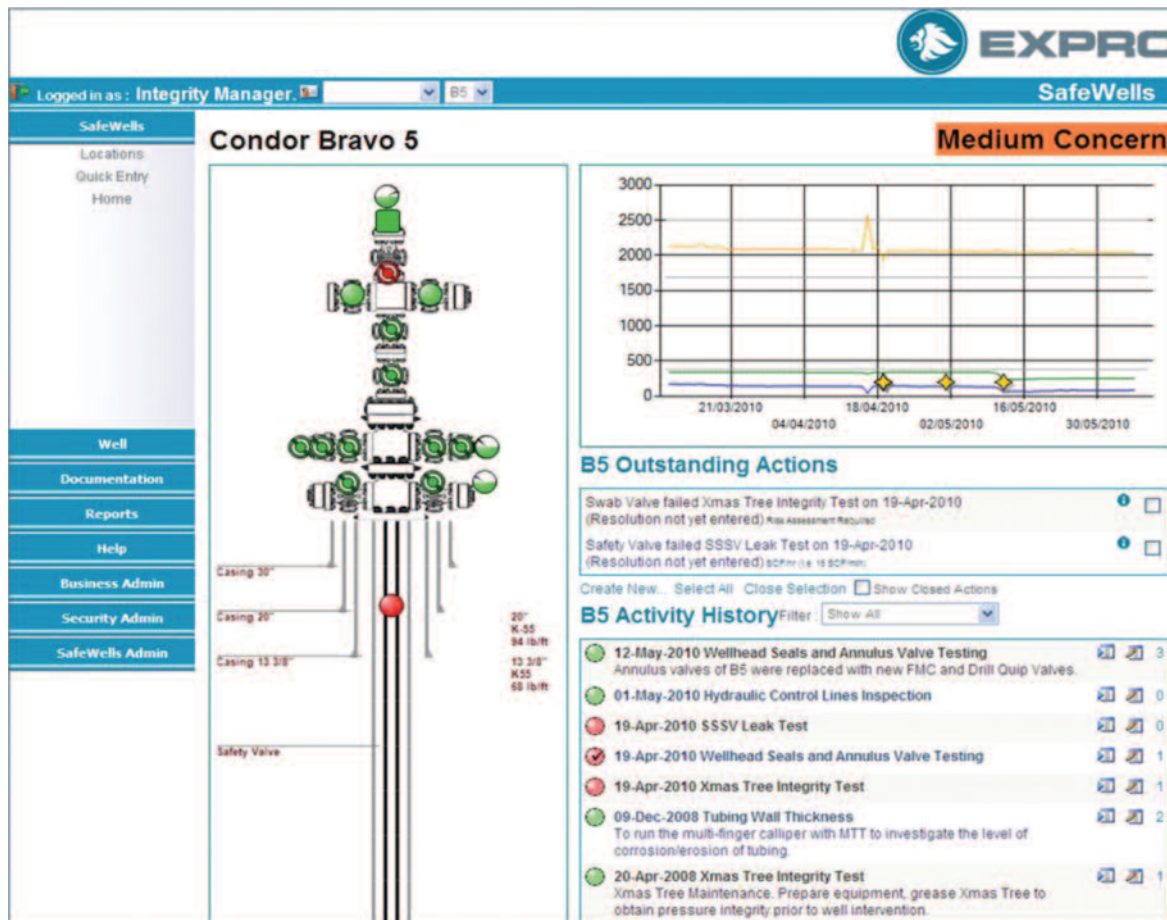
- Legislation and Best Practices
- Well Construction
- Threats to Well Integrity
- Tree and Wellhead components
- Annulus Management
- Completion Management



SafeWells

Expro's SafeWells software has been specifically developed to deliver an effective well integrity management solution. It is a bespoke software system that monitors and reports on the well's integrity performance and has been successfully deployed by major operators globally.

SafeWells provides a real time view of current well integrity status, problems and prompting remedial actions as issues arise. SafeWells provides a clear picture of the well status and scheduled remedial work. Operators can therefore plan their well intervention programmes in the surety that they are compliant with their policies.



They are also able to demonstrate their effectiveness at monitoring and tracking their wells' status. The web-based management system is simple to use and it does not require any additional software to be installed on individual computers



ISV/Software Solutions

Expro's business is well flow technologies and specialised services, and our mission is to:

- **measure**
- **improve**
- **control and**
- **process**

flow from high-value oil and gas wells.

Our expertise is marketed through five segments:

Well Testing & Commissioning, Production Systems, Wireline Intervention, Connectors & Measurements and Deepwater Intervention.





EXPRO

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