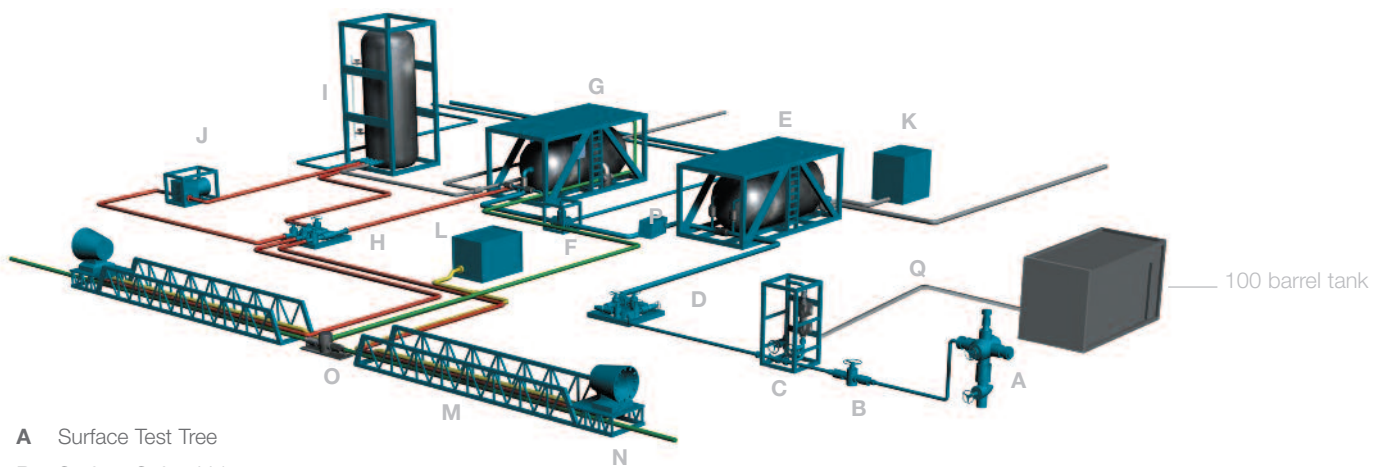


Well Testing



Market-leading performance



- A** Surface Test Tree
- B** Surface Safety Valve
- C** Solids Management Unit (desander)
- D** Choke Manifold
- E** Heat Exchange
- F** Relief Valve
- G** Separator
- H** Diverter (5-way)
- I** Surface Tank (metering tank)
- J** Transfer Pump
- K** Steam Generator
- L** Compressor (air)
- M** Flare Booms
- N** Burner
- O** Diverter Manifold
- P** Multiphase Flowmeter
- Q** Clean out line for desander to 100 barrel tank

No-compromise well testing systems



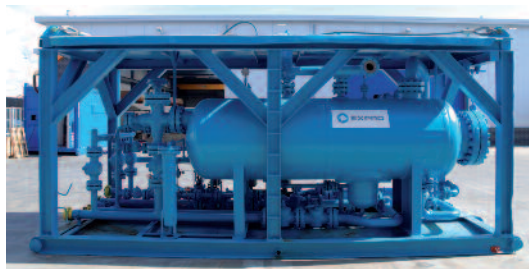
Well test results must be accurate and of the highest quality, as production decisions made from these results can have implications for the life of the well or reservoir. There's too much at stake to compromise safety or accuracy.

Expro has 35 years' experience of providing well testing services to the global oil and gas industry. As one of the largest well test companies in the world, we provide mobile process equipment that accurately measures the performance of our customers' wells. The data that we provide allows our customers to plan the optimal exploitation of their reservoirs.

High-value oil and gas wells, onshore and offshore, require complex as well as simple well testing solutions. Expro works to develop newer, faster, more precise testing methods, as well as to perfect well testing operations and processes, and make them as effective and efficient as possible. Our ability to offer the combination of superior service quality and technological innovation enhances the performance of our customers.

Our operational supply bases are located in each of the hydrocarbon producing areas of the world; Europe, Americas, Africa, the Middle East and Asia Pacific regions. We operate in shallow and deep water, on land, offshore, and in hostile operating environments. Each operations base is staffed by experienced and professional planners, operations and maintenance staff and support engineers. Our bases are resourced and staffed to meet the customers' needs in planning the safe and efficient execution of their well test work.

Expro achieves results on time and on budget. So, whether you are considering new opportunities, assessing new technological options or developing new project plans, make Expro your first choice.



Exploration and appraisal well testing

Well testing in an exploration environment is usually the first exposure to the actual production potential from a reservoir.

The basic equipment must be designed to handle an extensive range of operating parameters and a wide variation of expected production.

Well testing on exploration and appraisal wells entails flowing the well through a temporary completion and production system. The primary intent is to measure pressure and flow rates, and to gather representative fluid samples. These measurements are used to determine commercial viability, as well as to plan potential completion and production facilities.

Applications

Planning production facility for a gas condensate field development project

On this gas and gas-condensate field, it was critical to: (1) evaluate production potential by testing at the highest possible rate, and (2) obtain condensate composition for the geological model in order to plan production facilities. A wet-gas meter, chosen over a multi-phase flow meter due to the high volume of gas, provided instantaneous readings to compare with the test separator results. Onsite sample analysis was part of the quality assurance process, and the split-phase or multi-trace system provided onsite calibration for the instrument readings during the test.



Process design for heavy oil

For a heavy oil project located offshore, a process design was created that provided:

- a versatile system with multiple points of chemical injection
- multiple points of heat transfer to reduce viscosity prior to burning
- well test equipment that was modular in design with a small footprint
- measurement of liquid carry-over and gas carry-under
- disposal and clean burn.



Complex deepwater cleanup and well testing project

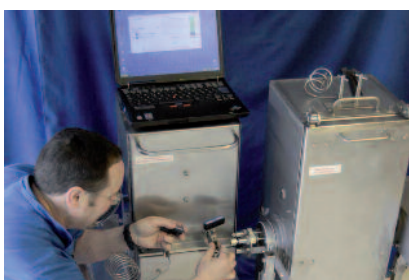
All objectives for this complex offshore project in 4,000 ft of water were successfully met:

- clean up and safe suspension of the wells prior to installation of a vertical tree/tie-back to the production facilities
- gathering of well performance data by flowing through a high-rate well test package and multi-phase flowmeter
- removal of oil in produced water prior to disposal
- disposal of the oil and gas with a clean burn.



Key technologies

Data Acquisition and Analysis



Expro offers specialized fluid sampling, onsite analysis, metering and interpretation services. Expertise is readily available to cover everything from comprehensive wellsite to laboratory management of all hydrocarbon, non-hydrocarbon, trace element and water sampling. Services and products are provided through a global network of sampling operations and reservoir fluid analysis centers.

Also available are self-contained wellsite laboratories to provide instant analysis and determine BS&W, API gravities, gas gravities, salinities and H₂S. Labs can calibrate test instruments as well.

Burners

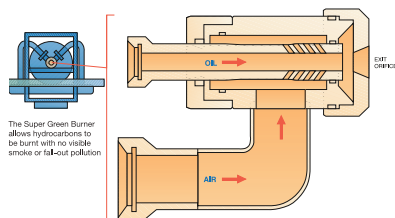
Sea Emerald™ Burner



Sea Emerald™ Burner's carefully positioned multiple burner tips create maximum flame turbulence and air ingestion, making the burn very clean, eliminating smoke:

- highly efficient, environmentally friendly
- third-party rated at over 99.993% efficient
- modular design can be used in multiples to match anticipated flow rates
- stable pilot assembly provides reliable ignition source
- clean start-up, wide turndown ratio, simple operation.

Super Green Burner



Expro's Super Green Burner is designed for maximum clean burn capability with minimal fall-out.

- Minimizes smoke and fallout pollution
- Reduced maintenance during operations
- Maximizes the operating parameters of a well test/clean-up package
- Eliminates the requirement for storage tanks
- Assists in directing radiated heat away from the installation

Development well testing (clean-up and flowback)

The purpose of well testing on development wells is to clean up and commission the well prior to its connection to the permanent production facility. The permanent completion is used with a temporary subsea safety tree and production system. Included in the development well testing segment are DST/TCP operations, associated with completions activity such as a 'shoot and pull' run prior to well cleanup, fluid separation, solids management and disposal operations. Current methods for disposal in a well test or clean-up involve burners, water remediation, storage of produced fluids to a tank.



Applications

Fluids disposal

In areas where strict regulations exist regarding the disposal of liquids by burning, well tests are performed without burning oil. Gas can be flared, and produced fluids stored in a barge or in workboat tanks for transport back to a land-based disposal facility. A full test including data from downhole gauges and surface sensors in real time can be transmitted to the operator's office onshore to monitor the clean-up and test.



Land frac flowback program on high-rate gas well

A typical fracture flowback program for a high-rate gas well onshore used a program comprising a multiple-stage fracture with three-to-five zones per well. Each zone was perforated, fractured and then cleaned up. Special severe service equipment was required to handle high flow rates and pressures, as well as abrasive frac materials recovered during the cleanup. Multiple flare lines were run to a pit, measuring about 35-ft wide by 30-ft deep



Land well testing production unit consisting of portable mounted separator on a trailer, upstream choke manifold, Pressure vessel 285 or 740 Psi MWP, flare stack and portable command center. This equipment is enclosed to allow it to perform in cold environments such as Canada or North Dakota.

Key technologies



DST/TCP

DST still offers the fastest and safest method to evaluate the potential of a newly discovered hydrocarbon-bearing formation. In some of our regions and on a project by project basis, Expro offers a full range of DST tools:

- operated by annulus or tubing pressure, without need for pipe manipulation
- provide the versatility required by modern test programs
- multiple flow and multiple circulation capabilities.

Expro provides both multi-function and single cycle drill stem testing tools for both exploration well testing and for use on well completions in conjunction with TCP in hole sizes down to 4-1/2".

Solids management

This 15K Solids Removal System and Sand Trap pictured here are representative of Expro's broad range of solids management equipment which reduces damage to downstream equipment and increases well production. Active solids management:

- significantly extends separator life
- virtually eliminates costs of build-up and blockage in processing equipment
- has proven vital in post-frac cleanups and UBD operations
- removes cuttings during UBD operations
- minimizes solids from return fluids during cleanout operations
- removes solids from injection waters.



Severe service choke manifolds

Severe-service choke manifolds provide better control and better data, and prevent downstream erosion.

- Incorporates the latest adjustable choke technology
- Meets applicable industry standards
- Two flow paths, one adjustable and one fixed
- Allows fast choke changes without interrupting the flow
- Pressure and temperature rated to meet hostile environments
- Small footprint



Express Test Trailer

The Expro Express Test™ Trailer, designed specifically for use in abrasive post-frac well cleanups and well testing flowbacks. The Express Test Trailer:

- features a sand separator designed to remove formation sand, frac proppant and other solids particles from the well effluent
- allows increased flow rates from wells that are choked back to reduce sand production.



Production well testing (in-line testing)

The purpose of well testing on development wells is to clean up and commission the well prior to its connection to the permanent production facility.

The testing of producing wells involves in-line testing to measure the contribution of oil/water/gas from individual wells. Continuous production measurements are (1) cost-effective; (2) do not interfere with normal production, and (3) can improve reservoir understanding.

Key technologies

Wet gas meter

Wet gas meters are a cost-effective replacement of test separators. Wet gas flow meters provide continuous readings of the gas flow rate and the total liquid flow rate. To achieve good accuracy (+/-5%), the service includes calibration with non-radioactive tracers and wet gas pressure/volume/temperature (PVT) fluid sampling – a process accredited by DNV.

MPFM – Multiphase flowmeter

Expro offers Multiphase Flow Meters (MPFM) as a complementary service to existing portable Well Test Separators, the MPFM offers measurement without the requirement for phase separation. Measurement can be made at Wellhead or Line conditions, allowing process fluids to be returned to the production process, without pressure reduction.

Typical applications, include exploration & appraisal, commissioning & clean up and routine production well testing operations.

In comparison MPFM offers a small and compact foot print for portable Well testing, the MPFM provides instantaneous measurement of rate and fraction with a wide operating range up to 98% GVF. Measurements are non intrusive, the meter is solids tolerant and offers a self-contained measurement solution. Well site commissioning, data processing and diagnostics are available in real-time through a local user interface.

Well site operation of the MPFM is supported with Expro's proven well site PVT sampling and analysis products and services.



Extended well testing

For wells requiring long-term solutions such as extended well testing or early production facilities, Expro has extensive global experience and success tailoring equipment to meet reservoir and production requirements for wells or fields.

Used to generate and accelerate cash-flow from production before bringing a permanent production facility on line, these projects usually are associated with remote environments or challenging operating conditions.

Extended well testing provides substantial reservoir information which can be used to:

- establish reservoir behaviour
- evaluate reservoir in real time
- assess the commerciality and productivity of a field
- determine the field development plan.



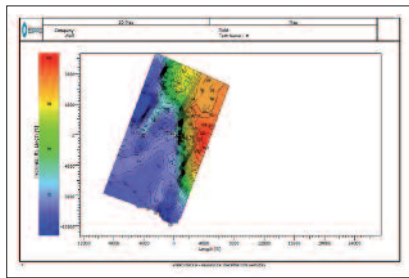
Data analysis center

A key component in Expro's range of well testing services is the ability to provide the customer with a complete interpretation and analysis of the acquired data.

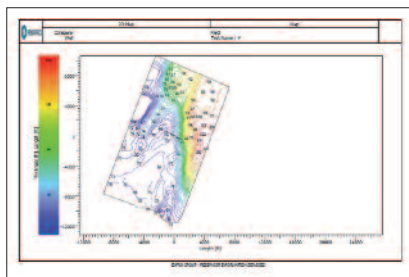
The data analysis centers also complement Expro's field activities by providing comprehensive job planning and selection capabilities. Quality, attention to detail and flexibility are hallmarks of the Expro Data Analysis Centers.

Expro's state-of-the-art Reservoir Information Centers offer the following services:

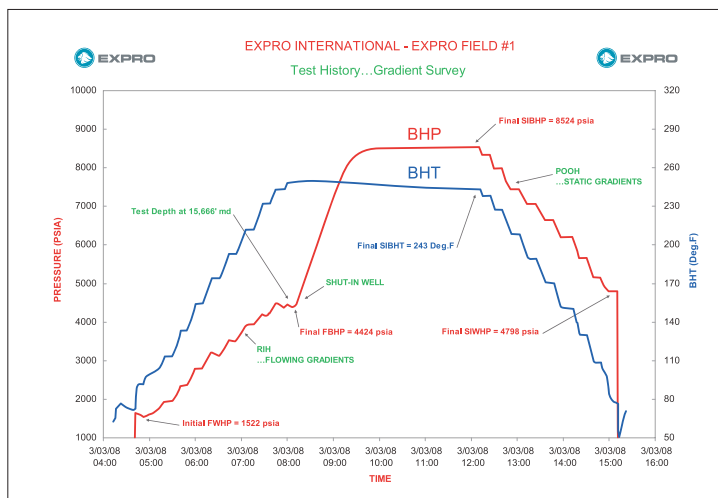
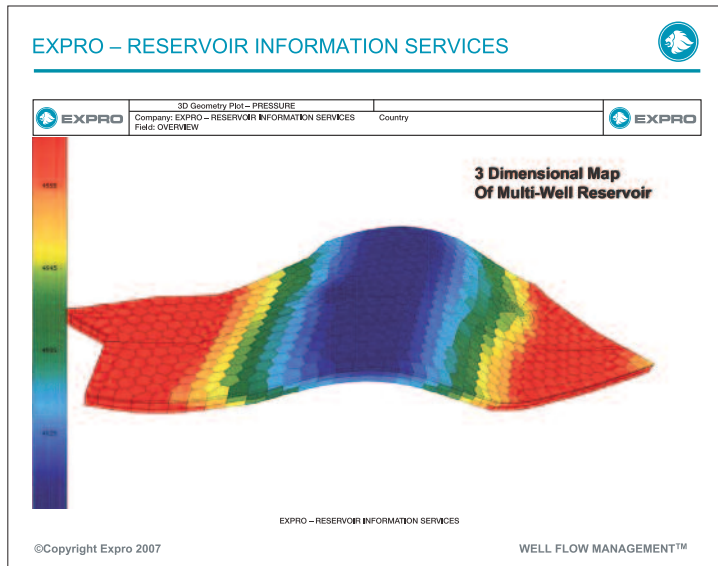
- well test simulation
- well test design
- pressure transient analysis
- multi-layer reservoir analysis
- completion efficiency evaluation
- 2-phase reservoir modeling
- 3-dimensional reservoir modeling
- history matching
- reservoir performance forecasting
- well/field performance optimization



2-D thickness map



2-D field-sizing map



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.





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