Fluid Analysis Centre

The **Expro Fluid Analysis Centre (FAC)** is situated in Reading (U.K) has been operating since 1975, and has recently moved to an expanded modern facility. It is one of two technical centres within Expro Fluids, providing a wide range of specialist fluid analysis services. Since its establishment it has provided a rapid, high quality PVT service for operators both large and small in the North Sea, Africa, the Middle East, South America and the Far East.

The organisation has many advantages to offer its clients, not only in routine data measurement, but also through a broad range of technical support and experience in dealing with unusual situations. The laboratory provides a full range of conventional studies on black oils, volatile oils, gas condensates and has considerable experience in more specialised analysis associated with gas injection projects.

Accreditation

In common with most parts of Expro, the Fluid Analysis Centre is registered to ISO 9001 (Management), it achieved accreditation to the ISO 14001 (Environment) and OHAS 18001 (Safety) standard.

For our clients this guarantees several distinct advantages: all measurements are conducted in accordance with well-defined and documented procedures. Such procedures are all subjected to regular audit and review.

- All analyses must be performed using equipment which is rigorously calibrated and, wherever possible, traceable to International Standards where such standards exist.
- Working with an organisation committed to continuous improvement in its environmental impacts; driving a more productive use of raw materials and energy therefore reducing its environmental footprint.
- Partnering with a team dedicated to creating the best possible working conditions by identifying and controlling hazards to reduce workplace accidents.

ISO 9001
ISO 14001
OHSAS 18001
BUREAU VERITAS
Certification

PVT (Pressure, Volume, Temperature) Studies

Understanding the physical properties of fluids is a key element in the successful development of hydrocarbon reservoirs and allows optimisation of the fluid processing and transportation facilities. The PVT analysis helps to describe the thermodynamic behaviour that exists at reservoir conditions and throughout the production and processing systems. The FAC provides a full range of conventional PVT analysis, and is capable of performing work at the extremes of reservoir pressure and temperature that are currently being explored.

Fluid Composition and Characterisation

Accurate compositional analysis of produced fluids underlies a proper understanding of hydrocarbon reservoirs, and provides the starting point for good Equation of State Simulation. Analyses are customised to meet the exacting needs of every project undertaken at the FAC. A commitment to the highest quality data using rigorous calibration, verification and monitoring procedures allows us to provide the best compositional data every time.

PVT Data Reliability

PVT data of the highest quality and reliability is essential for proper facilities design and reservoir management. Small errors in simple volumetric measurements on fluids can easily lead to erroneous prediction of reservoir performance.

The FAC employs experienced staff and utilises state-of-the-art software to analyse all data generated; by looking not only at each individual experiment but also the entire data set produced during the testing, any anomalous results can be highlighted and investigated. Where data does not conform to quality criteria in terms of either accuracy or repeatability the experiment is rejected or re-analysed. To assist clients it is normal practice to assign a specific PVT specialist to deal with the work for each company. This means that each client has one single point of contact who has a detailed knowledge of the status of any on-going studies. As a result of this approach we can ensure we are continuously exceeding our clients' expectations.

Enhanced Oil Recovery (EOR)

Prior to launching into an expensive project to recover additional oil from a reservoir, the process can be simulated in the laboratory to establish project viability. Examining the interactions between the injection gas and reservoir fluids at a range of conditions the data can be used to refine models and optimise the EOR strategy. The FAC has a wide variety of testing suites targeting different methods of enhancing oil recovery, and has gained significant experience in dealing with the challenges of CO_2 and H_2S enriched gases.

Flow Assurance

Preventing costly unexpected interventions is essential to maximise the profitability of reservoirs. Understanding the undesired behaviour of the fluid during extraction, production and processing gives confidence in the large investments necessary. The FAC is focused on fluid stability examining the precipitation of asphaltenes and waxes. We are able to perform work at high pressures and extreme temperature to assess the fluid during the entire production. In addition, we are able to demonstrate the compatibility with other fluids and injection gases.

Sulphur Speciation Analysis

Upstream in the oil industry, accurate determination of sulphur compounds is critical in assessing oil quality. Reliable data gives confidence in being able to model the reservoir which aids in the drilling and production plans. Downstream, it is important to know accurate concentrations of the sulphur species to avoid corrosion, catalytic poisoning and health and safety issues. The handling of sulphur components throughout the production process is an expensive undertaking; significant cost savings can be achieved through better understanding of the sulphur species.

Sulphides

Hydrogen Sulphide (H_2S)
Carbonyl Sulphide (COS)
Dimethyl Sulphide (DMS)
Carbon Disulphide (CS_2)
Ethylmethyl Sulphide
Diethyl Sulphide
t-Butylmethyl Sulphide
Dimethyl Disulphide (DMDS)
t-Butylethyl Sulphide
Dipropyl Sulphide
Diethyl Disulphide

Thiols (mercaptans)

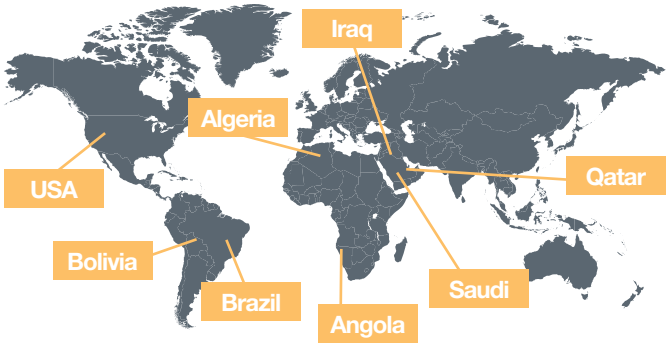
Methanethiol
Ethanethiol
Propane-2-thiol
Propanethiol
1-Methyl-1-Propanethiol
2-Methyl-1-Propanethiol
2-Methyl-2-Propanethiol
Butanethiol
2-Methyl-1-Butanethiol
3-Methyl-1-Butanethiol
Pentanethiol
Hexanethiol
Heptanethiol
Octanethiol

Thiophenes

Thiophene
2-Methylthiophene
3-Methylthiophene
Tetrahydrothiophene
2-Ethylthiophene
2-Propylthiophene
2-Butylthiophene
3-Butylthiophene
1-Benzothiophene

Satellite Laboratories

The FAC is at the hub of a network of regional Expro Fluids Laboratories, delivering the same excellent standard of analysis wherever it is conducted. Through the use of standards, training, calibration and technology transfer we can remove the need to waste time and money on complicated logistics, providing the results when they are needed.



PVT analysis	Compositional analysis	Sulphur speciation
> 25,000 psi	H_2, He, Ar	Gas, oil and water
> 200°C	CO_2, H_2S	GC-SCD with LOD 0.1 ppm
<-10°C	C1-C100+	> 35 identifiable species

Flow assurance	EOR	Traceable calibration
Asphaltene deposition study	Gas injection studies	0 - 20,000 psi
Live wax evaluation		-10 - 200°C
		Gas and liquid standards

Quick turnaround	Viscosity	Consultation and EOS
Multi PVT and GC channels	EM Viscometer, Rolling ball, Capillary	Project co-ordination and planning
Satellite laboratories close to well-site	0.02 - 10,000 cP	Equation of State predictions

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