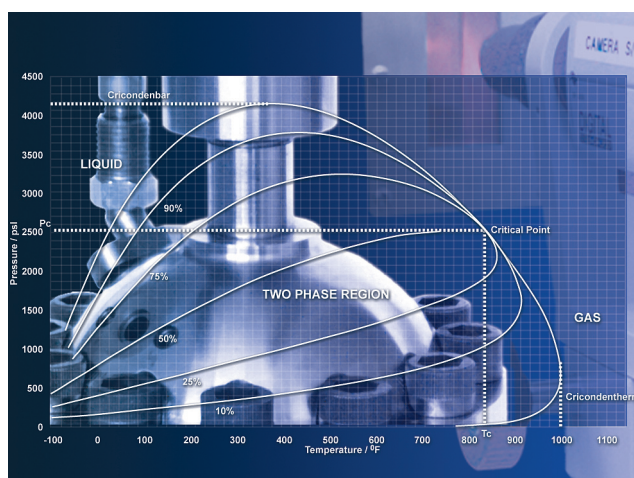


## PVT (Pressure, Volume, Temperature) Studies

Accurate fluid characterisation is a key element in the successful development of hydrocarbon reservoirs and the optimised design of the fluid processing and transportation facilities. PVT analysis is essential for all reservoirs to describe the relationships that exist between pressure, volume, temperature and phase composition. This analysis provides a description of the thermodynamic behaviour that exists at reservoir conditions and throughout the production and processing systems.

Good quality measured data is required to construct and tune a meaningful equation of state to mathematically model the fluid behaviour at any conditions likely to be encountered during the life of the field.

This type of analysis can be carried out at the Expro Fluid Analysis Centre, one of the largest and best equipped facilities available to the oil industry. Alternatively, these analyses can be carried out at the wellsite using the Expro GOLD (Global Onsite Laboratory Data) System, in cases where sample transportation is difficult, or if data is urgently required.



### Applications:

Physical and compositional analysis of all types of reservoir and process fluids, including:-

- Black oil
- Volatile / near critical fluids
- Gas condensate
- Wet / dry gas
- Pipeline fluids

### Features:

- ISO 9001 - 2000 registered
- In-House metrology laboratory
- Multiple/duplicate instruments available
- Variety of measurement techniques available
- Large equipment inventory
- Wide ranging experience
- Measurement range -20°C to +200°C
- atmospheric pressure to 20,000 psi

### Benefits:

- Traceable QA process
- All measurements traceable to national standards
- Turn-around time reduced
- Greater assurance in results through cross checking
- Flexible work programs
- Correct characterisation of unusual fluids
- All currently exploitable fluids can be investigated

## PVT (Pressure, Volume, Temperature) Studies

### PVT Studies:

#### Services Provided

#### Validation Checks and Compositional Analysis

Cross comparison of samples as received  
 Sample conditioning and restoration  
 Compositional analysis of pressurised fluids to C36+ or C100+

#### Recombination

Mathematical recombination of separator products  
 Physical recombination of separator products to provide reservoir fluid for PVT analysis or core flooding

#### Reservoir Condition Analysis

Constant mass expansion (PV relationship)

- Measurement of saturation pressure
- Measurement of liquid shrinkage (Oil)
- Measurement of retrograde liquid (Gas condensate)

Reservoir depletion studies

- Differential liberation (Black oils)
- Constant volume depletion (Volatile oil/ gas condensate)

Reservoir fluid viscosity from reservoir to atmospheric pressure  
 EOR / Gas revaporisation studies

#### Facilities Optimisation

Single stage separator tests  
 Multi stage separator tests  
 Pipeline fluid phase behaviour and contamination studies  
 Fiscal allocation studies  
 Flow assurance and production chemistry

