

GOLD System: Global Onsite Laboratory Data

The Expro GOLD System is a new approach to the measurement of reservoir fluid composition and PVT analysis. New instrumentation and software systems have been developed and ruggedised to allow these measurements to be performed at the wellsite, to a standard that was previously only available from the best PVT laboratories.

This system has been developed with remote areas in mind, where sample transportation can add significant cost and time penalties.

When used in conjunction with the EXothermal temperature compensated downhole sampler, complete compositional, PVT and flow assurance studies can be completed within hours of sample collection, with no risk of sample damage due to thermodynamic changes during sample retrieval and transportation.

The system features a unique modular concept, which ensures ease of transport and allows analysis options to be tailored to the project. These options range from identification of mud contamination in open hole samples, to complete compositional, PVT and flow assurance studies

Applications:

- Laboratory quality data in remote locations
- Immediate analysis results at the wellsite
- Analysis of all types of reservoir fluids - oil, gas and water
- Quantification of sample contaminant
- Flow assurance and trace component analysis



Features:

- Can perform full PVT analysis at the wellsite
- Permits rapid decision making
- Allows comprehensive sample validation
- Data quality comparable with best fixed PVT laboratories
- Modular design
- Compact modules

Benefits:

- Results available in hours instead of months
- Saves rig time
- No risk of unwitting reliance on samples which later prove invalid
- No requirement to transport sample to PVT laboratory
- Can be tailored to meet exact analysis requirements
- Air transportable and easily rigged up

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Technical Specifications:

GOLD System Capabilities

SERVICES PROVIDED

GOLD C - Compositional Analysis Module

Bubble point at ambient conditions	Direct measurement
Stock tank GOR (GOR 2)	Direct measurement
Shrinkage to stock tank conditions	Direct measurement
Stock tank oil density	Densitometer
Separator liquid density at separator conditions	Densitometer
Separator Product composition to C ₃₀₊	Chromatography
Gas Gravity	Chromatography
Solution GOR	Direct measurement
Reservoir fluid composition to C ₃₀₊	Chromatography
Correction of composition for mud contamination	Proprietary
EOS Calculated PVT Properties	Calsep PVT Sim™

GOLD P - PVT Analysis Module

Physical recombination	Direct measurement
Bubble Point (oil)	Direct measurement
Dew Point (gas condensate)	Visual (camera)
Constant mass expansion	Direct measurement
Differential liberation	Direct measurement
Constant Volume Depletion (gas condensate)	Direct measurement
Viscosity	Capillary
Separator tests	Direct measurement
EOS extrapolation of measured PVT properties	Calsep PVT Sim™

GOLD F - Flow Assurance Module

Wax Content	MOD UOP 46
Wax appearance temperature	Filter blocking
Pour Point	IP 15
Cloud Point	IP 219
Gel Strength	Flow loop
Asphaltene Content	IP 143
Asphaltene Onset Pressure	Spectroscopic
Quantity of deposited asphaltenes	Spectroscopic

GOLD Water Analysis

Dissolved CO ₂	Titration
Dissolved O ₂	Winkler method
Conductivity	Meter
pH	pH meter
Acidity/ alkalinity	Titration
Anions - Cl, SO ₄ , HCO ₃ , CO ₃ , OH	Titration or spectrophotometer
Cations - K, Ca, Mg, Ba, total Fe	Titration or spectrophotometer
Turbidity	Meter
Specific Gravity	Densitometer

GOLD Water Analysis

H ₂ S, Mercaptans COS	UOP 212 and 163
Mercury	'Sir Galahad' ISO 6978B
Radon	Pylon AB5 scintillation counter