

Reservoir Fluids and Sampling

Expro has been at the forefront of cased hole reservoir fluid sampling since 1986. The Expro Group can claim the following industry firsts:

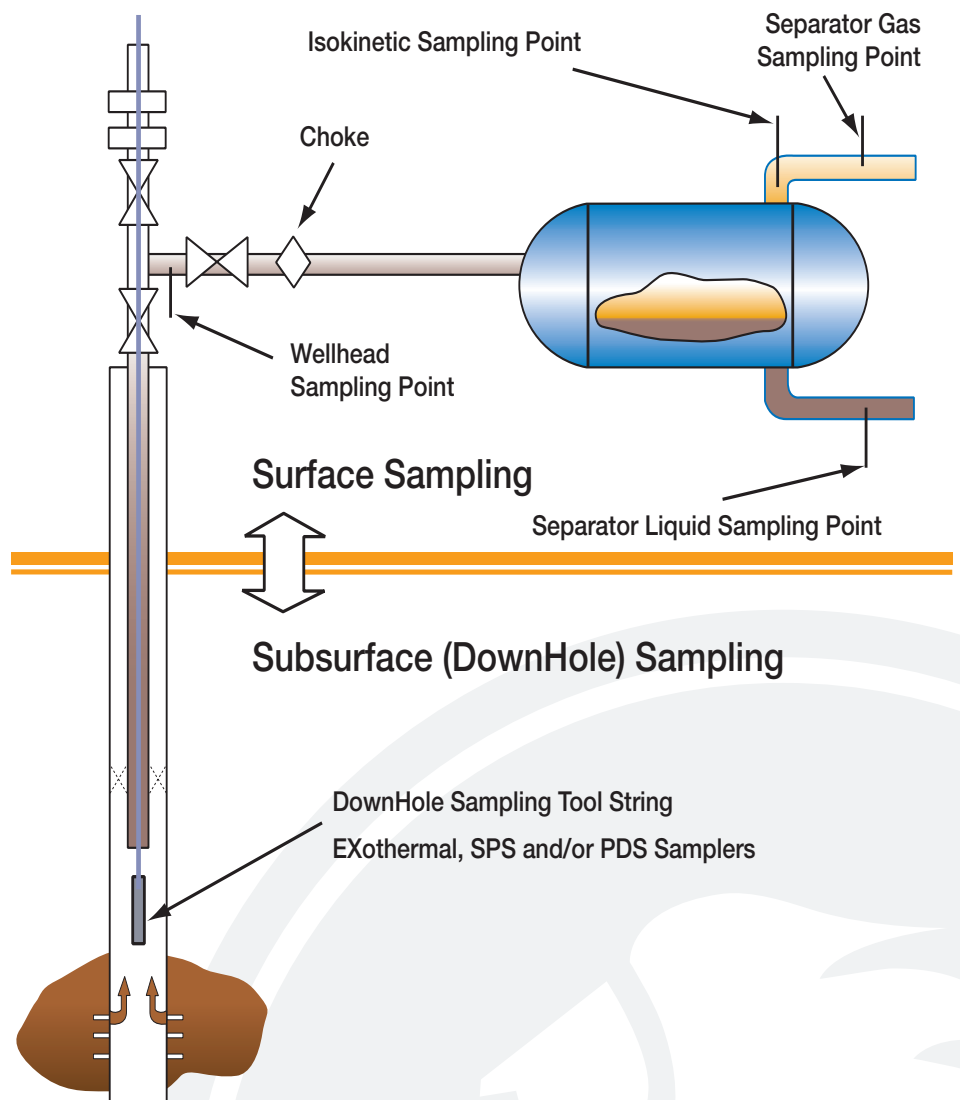
- 1st Mercury free downhole sampling service (PDS) - 1986
- 1st Single Phase Sampling Service (SPS) - 1989
- 1st Temperature Compensated Sampling Service (EXothermal) - 2000

A team of 60 trained sampling engineers provide a global sampling service, including:-

- EXothermal Temperature Compensated Downhole Sampling
- Single-Phase Downhole Sampling
- Piston Displacement Downhole Sampling
- Wellhead Sampling
- Isokinetic Sampling for Gas Condensate Systems
- Surface (separator or wellhead) Sampling
- Production Process Sampling
- Inert (H₂S or Mercury) Sampling

The sampling effort is supported by the Expro GOLD (Global Onsite Laboratory Data) System - a fully equipped mobile PVT facility, and the Expro Fluid Analysis Centre, one of the best equipped PVT and Production Chemistry laboratories in the world.

It is essential that stored samples are held in licensed facilities and remain fully traceable. Expro have one of the largest computerised sample storage and management system available to the industry.



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All Expro Sampling equipment operates without the use of mercury

Technical Specifications:

| Sampling Tool | EXothermal | Exal SPS | Exal PDS |
|---------------|--|--|--|
| Type | Temperature compensated | Single phase - positive displacement | positive displacement |
| Max pressure | 20,000psi (1,379 bar) | 15,000psi (1,034 bar) | 15,000psi (1,034 bar) |
| Max temp | 392°F (200°C) | 350°F (176°C) | 350°F (176°C) |
| Volume | 500cm ³ | 600cm ³ | 600cm ³ |
| Length | 19.16ft (5.83m) | 16.75ft (5.11m) | 12.75ft (3.89m) |
| O.D. | 2" (5.08cm) | 1 ¹¹ / ₁₆ " (4.29cm) | 1 ¹¹ / ₁₆ " (4.29cm) |
| Weight | 125lbs (57kgs) | 76lbs (34.5kgs) | 66lbs (29.9kgs) |
| Construction | N.A.C.E H ₂ S/CO ₂ Service | | |

| Sampling Cylinder | Exal PDS 10k Oil Cylinder | Exal PDS 15k Oil Cylinder | Exal SPS 15k Oil Cylinder | Exal 20L Gas Cylinder | Conventional Oil Cylinder |
|-------------------------|---|---|---|---|---|
| Type | Positive displacement | Positive displacement | Single phase positive | Various displacement | Various |
| Max working pressure | 10,000psi (689 Bar) | 15,000psi (1,034 Bar) | 15,000psi (1,034 Bar) | 2,900psi (200 Bar) | 10,000psi (689 Bar) |
| Max working temperature | 302°F (150°C) | 302°F (150°C) | 302°F (150°C) | 212°F (100°C) | 302°F (150°C) |
| Volume | 700cc | 700cc | 700cc | 20L | 700cc |
| Construction | 17/4 PH Stainless Steel Steel | 17/4 PH Stainless Steel Steel | 17/4 PH Stainless Steel Steel | Aluminum Alloy | 17/4 PH Stainless Steel |
| | H ₂ S/CO ₂ Service | H ₂ S/CO ₂ Service | H ₂ S/CO ₂ Service | H ₂ S/CO ₂ Service | H ₂ S/CO ₂ Service |
| Certification | Lloyds | Lloyds | Lloyds | Lloyds | Bureau Veritas |

*Inert lined and other specialist cylinders available on request.

Certification

United Nations Specifications - All sample vessels fully certified.

Full BS EN ISO 9002 Accreditation - Quality Assured