

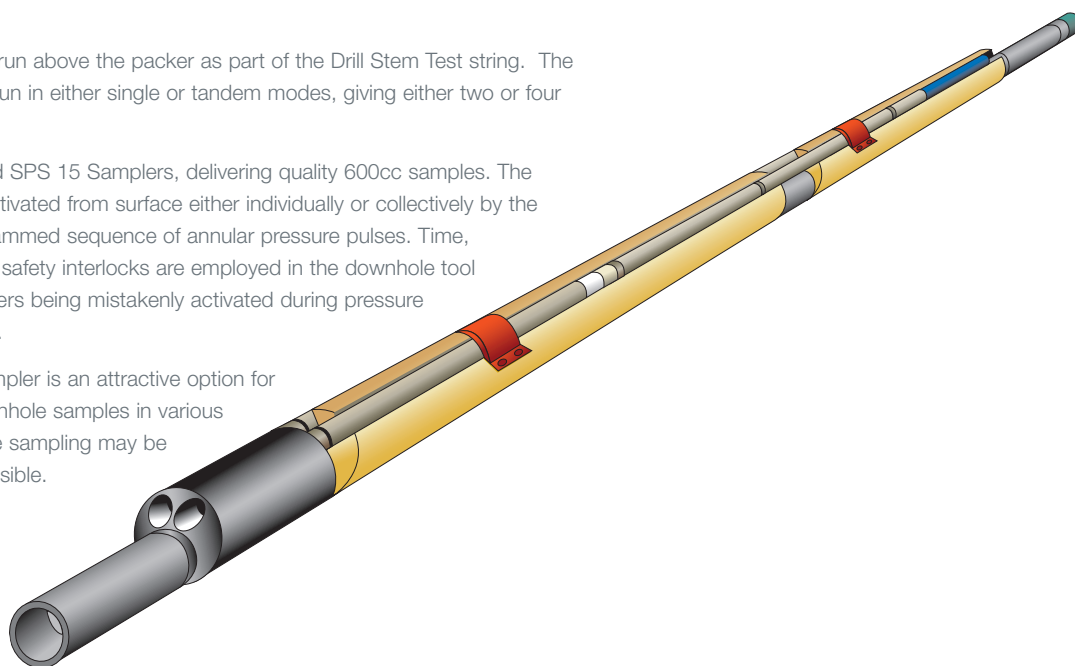
## Tubing Conveyed Sampling (TCS) 5 1/2" OD System

Collection of representative downhole fluid samples is the primary objective of most Drill Stem Tests. The Expro Tubing Conveyed Sampling system provides a high quality alternative to traditional DST type full-flo samplers.

The Expro TCS system is run above the packer as part of the Drill Stem Test string. The 5 1/2" OD system may be run in either single or tandem modes, giving either two or four samples respectively.

The TCS deploys standard SPS 15 Samplers, delivering quality 600cc samples. The downhole samplers are activated from surface either individually or collectively by the application of a pre-programmed sequence of annular pressure pulses. Time, pressure and temperature safety interlocks are employed in the downhole tool logic to prevent the samplers being mistakenly activated during pressure tests while running in-hole.

The Tubing Conveyed Sampler is an attractive option for acquiring PVT quality downhole samples in various applications where wireline sampling may be undesirable or even impossible.



### Applications:

Any Downhole Sampling Application including:  
 Deep water testing where operations are being conducted from a vessel operating in DP mode  
 Heavy oil and waxy or high asphaltene crudes where wireline intervention is high risk  
 Wells with a high hydrate potential where wireline intervention may prove impossible

### Features:

- Annulus pressure pulse activated triggers
- Two samplers per assembly, four if run in tandem
- Each sampler has a dedicated electronic trigger
- Sampling triggers have programmable time, pressure and temperature interlocks and individual pressure signatures
- 900K data set memory recorder on each sampler
- Smooth internal carrier bore
- Uses proven single phase sampler technology (SPS 15)

### Benefits:

- Zero wireline intervention required
- Full system redundancy
- Samplers can be activated selectively
- Samplers will only be activated when required and are not influenced by spurious annulus pressure spikes
- Provides a full record of annulus pressure and temperature history
- Minimised risk of stuck logging tools
- Delivers optimum sample quality for PVT analysis

## Tubing Conveyed Sampling (TCS) 5 1/2" OD System

### Technical Specifications:

	<b>5 1/2" System</b>
Assembly Part Number	DR80031
Casing Range	7" 32 lb/ft or above
Service	H2S (NACE MR0175/ ISO 15156) + CO <sub>2</sub>
Temperature Range	-20°C (-4°F) to +177°C (350°F)
Working Pressure (max)	10,000psi
Internal Test Pressure (max)	11,000psi
External Pressure (max)	10,000psi
Torque Capacity	4,500 ft lbs
Tensile Capacity	220,000lbs @ 0psi.
Overall length (excl. saver subs)	314" (10,490mm)* – single mode*
Overall length (incl. saver subs)	737" (18,720mm)** – tandem mode**
Outside diameter (nominal)	5.5" (139.7mm)
Internal diameter (nominal)	2.25" (57.2mm)
Design Code	API5CT
Connections	3 1/2" 12.7lb/ft NEW VAM box-pin 3 1/2" API IF crossovers available on request
Samplers	2 samplers in single mode, 4 samplers in dual mode

\* Not including pup-joints or crossovers – reference Operation Manual.

\*\* For dual mode, TCS carriers should be run with 90 feet of drill pipe between units, to accommodate any misalignment.

### Electronic trigger / pressure memory recorder

Maximum operating temperature	177°C (350°F)
Maximum operating pressure	15,000 psi
Memory capacity	900K data sets (21 days at 2 second sample rate)
Maximum in-hole duration	35 days (<165°C) 25 days (>165°C)

- Operations Manual: OP-1342
- Technical User Guide: UG-1023
- Maintenance Procedures: WIDAQ-O92

All items available via Expro Portal site in UK IBIS.