WELL TESTING SERVICE

EXALO
GRUPA PGNiG

Range of activity:

- Well Testing and clean out
- Fluid recovery after hydraulic fracturing
- Hydrodynamic testing of reservoir sections containing H_2S (isochronic, multicycle tests, etc.)
- Collection of formation fluid samples under live well conditions
- Separation of formation fluids during drill stem tests (DST)
- Temporary production of oil and gas from wells (limited by device throughput)
- Measurements of production capacity of wells

Basic channels measured during the well test:

- WHP - Well Head Pressure
- WHT - Well Head Temperature
- CSP1 - Casing Pressure 1
- CSP2 - Casing Pressure 2
- MOP – Manifold Output Pressure
- HOT- Heater Output Temperature
- Pdiff - Differential Pressure
- Psep - Separator Static Pressure
- Tsep - Separator Gas Temperature
- R1-R6 – Reserve channels

EQUIPMENT

Device for hydrodynamic testing

- Max. pressure head: 70 MPa
- Theoretical maximum oil flow through separator: 79 m^3/h
- Theoretical maximum oil flow through separator: 1180 nm^3/min
- Maximum practical gas flow:
  - for well cleaning phase: 250 nm^3/min
  - for well test phase: 800 nm^3/min

Emergency Shutdown System

- Emergency Shutdown Valve 2 1/16" Gate Valve
- Working pressure: 10 000 PSI
- H_2S Service with pneumatic actuator
- Pneumatic control panel with exhaust valve
- Four emergency manual shutdown buttons with 10 meters flexible hose each

Sand Trap 13 5/8 x 3 1/16" 15000 PSI

- Sand Trap - Sand Trap 13 5/8"x 3 1/16 - 15 000 - H_2S
- Working Pressure: 1 035 bar ; 15 000 PSI
- Reservoir Fluids: Gas/ Water/ Oil
- Capacity: 386 liters
  - Maximum operating temperature range: up -29°C to +70°C
  - Manifold inlet/outlet:
- Gate valves type Cameron: 3 1/16 -15 000 - H_2S
- Inlet and outlet with FMC union: 3" Fig. 2202; 15 000 PSI

Floor Choke Manifold

- Skid mounted composite style floor choke manifold 3 1/16", H_2S Service
- Working pressure: 690 bar; 10 000 PSI
- Two Upstream gate valves:
  3 1/16" 10 000 PSI WP - H_2S Service
- Two Downstream gate valves:
  3 1/16" 10 0000 PSI WP - H_2S Service
- One adjustable choke Max. Been 2"
- One positive choke with a complete set of tungsten carbide trim beans 6" long: from 6/64" to 128/64"
- Inlet and outlet with Weco Figure
  3" 1502 10 000 PSI W/T connection

Heater

- Skid mounted indirect Heater:
  - 5 000 PSI primary coils
  - 2 190 PSI post heat coils - H2S Service
- Inlet and outlet: three gate valves by-pass manifold
  3" Figure 602, working pressure 5000 PSI
- Dual diesel or gas fired with heating capacity:
  2 MM BTU; 586 kWh
- Heater equipped with adjustable or positive choke up to 1.5"
- Positive choke with a complete set of tungsten carbide trim beans 6" long up 8/64" to 1.5"

Three phases Separator

- Three phases skid mounted horizontal test separator: Vessel 42" x 10 ft. long
- Working pressure: 1 440 PSI / 100 bar - H_2S Service
- Nominal capacities with vessel half full and one minute retention time
  - Gas flow rate: 1,180 normal cum/min, (1.7 MM normal cum/day)
  - Liquid flow rate: 1,900 normal cum/day
- Equipment and accessories as follows:
  - Pneumatic Fisher type level controllers on vessel for oil and oil/water interface. Two level gauges
  - Back pressure control valve Fisher type on gas outlet
  - One 6" Daniel Senior on gas outlet with set of orifice plates
  - Barton three pens recorder (static pressure 0 – 1500 PSI, differential pressure 0 - 200" water, temperature 0 - 200° F)
  - Vessel equipped with one relief valve and one rupture disc
  - By-pass from crude inlet to gas and condensate outlet
- All connections on inlet and outlet are Weco: 3" Figure 602, Working pressure 5,000 PSI

Surge Tank

- Vertical type Surge Tank with vent line to the flare with capacity: 100 bbl/ 16 cum
- Working pressure: 87 PSI / 6 bar; H_2S Service
- Vessel 78"x 16ft. long: equipped with overpressure relief valve and rupture disc
- Oil inlet and outlet with three valve by-pass manifold
- All connections on inlet and outlet are Weco: Figure 3" 206, Working pressure 2 000 PSI

Flare Knock Out Drum 7 m^3

- Vessel 60"x 12ft long
- Working pressure: 50 PSI, H_2S Service
- Connection on inlet Weco:
  2x Figure 3" 206, working pressure 2 000 PSI
- Connection outlet Weco:
  3 x Figure 3" 206, working pressure 2 000 PSI
- Equipped with: flame arrester, level gauge and isolating ball valves

Fluid Stock Tank V=50 m^3

- Atmospheric pressure vessel (without vent line to the flare);
  Size (L x W x H) 2.5m x 2.5m x 8m
- Capacity: 314 bbl (50 m^3)
- Oil inlet and outlet Weco: 3" Figure 206

Vertical Gas Flare

(without noise and light reduction feature)

- High: 24 meters
- Main inlet gas connection Weco: 3 x 3" Weco Fig. 206
- Outlet 8", equipped with propane pilot
- Auxilary inlet Weco: Vent line from Surge Tank 3 x 3" Figure 206
- Maximum gas flow rate: about 800 normal cum/min

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