5K UBD separator

The separator's primary function is for through reservoir drilling applications. It can also be utilized for any subsequent well testing or clean up operations.

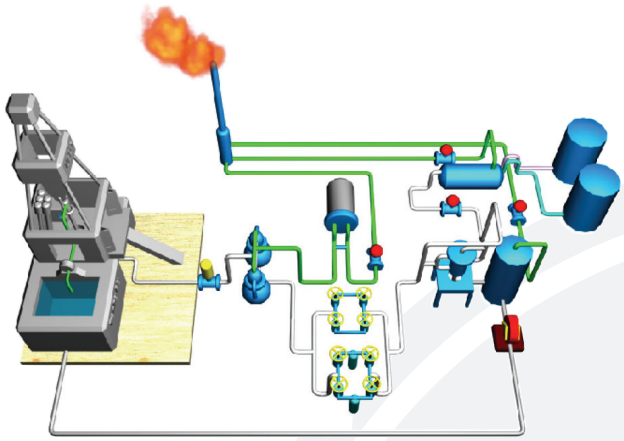
This separation equipment package consists of two 5K vessels and was originally proposed as a high-pressure upstream gas knockout system for UBD operations. Two vessels were designed and constructed to handle large gas and liquid/solids flow rates but the vessels can also be used individually. The function of this system is to decrease the velocity of the solids laden effluent produced from the wellbore by removing the gas phase prior to flowing across the fluid control device (choke). This will reduce erosion dramatically with the produced gas being routed back to to production, if applicable.

Each of these vessels come in two sections to reduce the weight of the individual components. The top section, consisting of the hydrocyclone unit, weighs 6.2 ton and the bottom section (which is in a bowl shape) weighs 14 ton. These sections are mated quickly and easily with the help of a "hydraulic soft landing system".

The vessels are used, in an underbalanced drilling application, as two-phase separators; however, they were designed and are capable of three-phase separation. High and low level alarms are in place to protect the system from a "carry over" or "gas blow-by". Fluid levels are controlled by Foxboro differential pressure cells and a Foxboro model 43AP pneumatic controller. Back-up systems enable these units to be controlled pneumatically or manually with the aid of a magnetic level indicator.

Features & Benefits:

- Modular
- Compact design
- Standard components
- Proven technology
- Safe and environmentally sound
- Ease of set-up
- Small footprint
- Reliability



EXPRO
WELL TESTING & COMMISSIONING

5K UBD separator

Technical Specification:	
Service	Sour Service
Operating pressure	5000 psi MWP
Max gas rate	60 MMscf/d
Max fluid rate	13,500 BPD (each vessel) @ 30 second ret. time
Solids rate	165 BPD (each vessel)
Weight	20.5 ton (each vessel)
Dimensions	3.17m x 2.49m x 5.53m (L x W x H)
Safety	Balanced Bellows type Safety Valve
Vessel internal diameter	48 inches
Volume, operating:	0.496 m^3, retention time 20 seconds @ 13,500 BPD
Volume, maximum:	0.759 m^3, retention time 30 seconds @ 13,500 BPD

Materials & Design Codes:	
Vessel	ASTM 516-70N + CVT
Piping	ASTM A333 GR
Body & Bonnet	AISI 4130
Gate/Seat/Stem	17-4PH Stainless Steel
Valves	API 6A,PSL3,PR2, NACE MR-01-75 Temp: -25 deg°F to 250 deg°F
Vessels	ASME VIII Div 1 / ASME B31.3, NACE MR-01-75 Temp: -50 de°F to 250 deg°F
Frame	BS 7072

Certification:
Certification by Det Norske Veritas