JetStream® RFID Drilling Circulation Sub

Enables remote, selective, unlimited actuation for efficient borehole cleaning and LCM spotting

Applications

- Increasing annular velocity
- Cleaning the wellbore
- Spotting of lost-circulation material (LCM) pills in any drilling assembly
- Spotting of kill-weight fluid in the vertical section of extended-reach or horizontal wells prior to pulling out of the hole
- Jetting the blowout preventer (BOP) stack
- Using a fill-and-drain sub while running coring, drilling, or displacement strings
- Increasing flow above a turbine, mud motor, or any other flow-restrictive bottomhole assembly (BHA) component

Features and Benefits

- The large inner diameter (ID) enables full through-bore flow.
- Full through-bore flow increases annular velocity and achieves turbulent flow for enhanced debris removal.
- RFID technology enhances operational flexibility with unlimited, selective actuation.
- The RFID-activated circulating valve logs time, drillpipe pressure, hydraulic micropump pressure (inside the sub), temperature, and battery capacity within the internal memory of the sub.
- The sub can be run in combination with numerous downhole tools and systems without compromising BHA performance.
- The i-Rabbit® close-proximity wireless communication device makes downhole data available for download within 1 hour of retrieval at surface. The data is automatically converted and displayed on a vertical strip chart.
- The circulation sub conditions fluid at a high rate in drilling and displacement strings.
- The sub enables clients to perform multiple operations—including LCM spotting, wellbore cleaning, and selective zone cleaning—without tripping in and out of the hole, thereby increasing efficiency.

Tool Description

The JetStream radio-frequency identification (RFID) drilling circulation sub is a remotely actuated circulation device that facilitates drilling and hole-cleanup operations.

The JetStream RFID drilling circulation sub can be deployed with conventional ball-actuated tools to provide selective actuation without restricting the inner diameter.

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JetStream® RFID Drilling Circulation Sub

The drilling circulation sub uses RFID technology to communicate open and close commands. When the operator needs to move the sub from the closed position to either of the two open positions, for example, an RFID tag is pumped downhole from the surface and circulated internally through the sub. A built-in antenna receives the RFID signal, and a battery-powered electric motor operates a hydraulic pump, which moves the sleeve into the appropriate position.

The JetStream RFID sub does not require a ball seat to operate; therefore, it does not have a reduction in ID. This is especially beneficial when running multiple tools, because using ball seats when running multiple tools creates a major restriction at the lowermost ball seat.

Specifications

Tool OD	5.250 in. (133.3 mm)	7.000 in. (177.8 mm)	8.250 in. (209.5 mm)	9.500 in. (241.3 mm)
Tool ID	1.955 in. (49.7 mm)	2.875 in. (73.0 mm)	2.875 in. (73.0 mm)	2.875 in. (73.0 mm)
Tensile yield	878,731 lbf (3,908.8 N)	1,183,702 lbf (5,265.4 N)	2,107,725 lbf (9,375.6 N)	3,019,179 lbf (13,430.0 N)
Tool ID flow area	3.002 $in.^2$ (1,936.8 mm^2)	6.50 $in.^2$ (4,185.4 mm^2)		
Number of flow ports	4	6		
Port flow area	3.9862 $in.^2$ (2,571.7 mm^2)	8.528 $in.^2$ (5,502 mm^2)		
Maximum flowrate	608 gal/min (2.3 m^3/min)	1,350 gal/min (4.77 m^3/min)		
Temperature rating	266°F (130°C)			
Torsional rating	28,046 ft-lb (38,025.3 N·m)	56,164 ft-lb (76,148.2 N·m	111,520 ft-lb (151,200.8 N·m)	188,890 ft-lb (256,100.5 N·m)
Hydrostatic rating	25,000 psi (172.3 MPa)			
Tool joint	4-in. FH	4 1/2-in. IF	6 5/8-in. API Reg	7 5/8-in. API Reg

Flow path of drilling circulation sub

* JetStream is a registered trademark of Weatherford in the US.