



RFID Advanced Reservoir Isolation Device (ARID)

Weatherford's Radio Frequency Identification (RFID)-operated Advanced Reservoir Isolation Device (ARID) is an interventionless well-management tool that is used to enable staged well startup across a horizontal reservoir. The ARID provides efficient reservoir cleanup, delays recovery from high payload zones, optimizes recovery from minor zones, improves shutoff of unwanted fluids, and extends well life. The tool is run closed, eliminating the need for wash pipe, intervention, wires, or control lines, and reducing completion time and risk.

A series of ARIDs, set at regular intervals, opens on command or as preprogrammed, enabling staged startup from toe to heel. In addition, the tools can be programmed to give the operator the necessary time to test each zone. The ARID provides the ability to run the lower completion with all ARIDs closed and then, at depth, sequentially open each tool with no intervention.

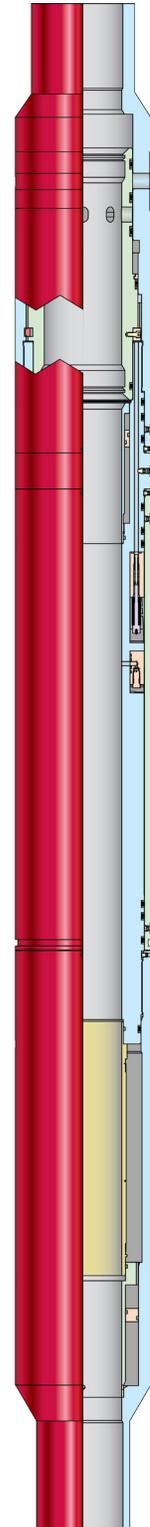
Primarily designed for lower completion applications, the ARID has been designed to deal with debris, mud solids, and cement. The internal operating mechanism is contained out with the flow path. The tool does not rely on any debris-sensitive springs, check valves, or complex piston arrangements during operation. The reliability is not compromised by the need for any precharged or well-sensitive piston chambers.

Applications

- Well startup across a horizontal reservoir
- Frac sleeve
- System toe sleeve
- Multilateral, intermediate, and/or intelligent well completions
- Acid stimulation sleeve

Features, Advantages and Benefits

- Zonal selectivity enables selected zones to be opened independently and in a specified order decided by the operator, enabling staged cleanups, improved wellbore cleanup, well testing of specific zones, and delayed startup of high-payload zones.
- Multiple modes of activation (RFID, pressure cycle, or timer) provide operational flexibility, enabling customized solutions for the operator.



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Features, Advantages and Benefits (continued)

- Remote activation permits interventionless operation, which reduces operating costs, minimizes risk associated with intervention operations, and reduces reliance on multiple service companies, enhancing overall safety.
- The RFID graphical user interface provides a common, simple and user friendly method of programming RFID tools, ensuring consistency and competency among field operators across the entire RFID product range.
- Redundancy is built into the power and actuation systems, increasing system reliability while minimizing nonproductive time and other intervention operations.
- A closed system while running in the hole, the ARID removes the need for wash pipe and provides well control and the ability to ream to depth, enhancing health, safety, and environmental (HSE) concerns and reducing overall operational costs.
- The robust design provides a debris-tolerant, clean hydraulic reservoir and an industry-standard mechanical override, which improves reliability, reducing nonproductive time and providing mechanical functionality after remote operation.

Specifications

| Size (in. /mm) | Maximum OD (in. /mm) | Minimum ID (in. /mm) | Pressure Rating (psi/MPa) | Absolute Pressure Rating (psi/MPa) | Maximum Temperature (°F/°C) | RFID Tag Flowrate (bbls/min, m ³ /min) | Minimum Hydrostatic Function Pressure (psi/MPa) | Battery Life Recommended Maximum Time to Open (Days) | | System Reference |
|-------------------|----------------------------|----------------------------|---------------------------------|---|-----------------------------------|--|---|---|-----|---------------------|
| | | | | | | | | Tags | P/T | |
| 4-1/2 114.3 | 5.625 142.9 | 2.50 63.5 | 7500 51.7 | 15000 103.4 | 302 150 | 3 to 10 0.47 to 1.58 | 2000 13.8 | 30 | 90 | MARS SM |
| 4-1/2 114.3 | 5.625 142.9 | 2.81 71.4 | 7500 51.7 | 15000 103.4 | 302 150 | 3 to 10 0.47 to 1.58 | 2000 13.8 | 30 | 90 | ARMS SM |
| 4-1/2 114.3 | 5.625 142.9 | 3.50 88.9 | 7500 51.7 | 10000 68.9 | 302 150 | 3 to 10 0.47 to 1.58 | 2000 13.8 | 30 | 90 | ADS SM |
| 5-1/2 139.7 | 7.750 196.9 | 3.81 96.8 | 7500 51.7 | 15000 103.4 | 302 150 | 3 to 10 0.47 to 1.58 | 2000 13.8 | 30 | 90 | MARS SM |
| 5-1/2 139.7 | 7.750 196.9 | 4.31 109.5 | 7500 51.7 | 15000 103.4 | 302 150 | 3 to 10 0.47 to 1.58 | 2000 13.8 | 30 | 90 | ARMS SM |
| 5-1/2 139.7 | 7.750 196.9 | 4.56 115.8 | 7500 51.7 | 10000 68.9 | 302 150 | 3 to 10 0.47 to 1.58 | 2000 13.8 | 30 | 90 | ADS SM |
| 5-1/2 139.7 | 8.000 203.2 | 4.56 115.8 | 7500 51.7 | 15000 103.4 | 302 150 | 3 to 10 0.47 to 1.58 | 2000 13.8 | 30 | 90 | ARMS SM |

Note: Operator-specific application requirements are available on request.

Options

- Pressure cycle and timer only
- RFID tags, pressure cycle, and timer
- Mechanical intervention via industry-standard shifting tools