Fluid Density Radioactive (FDR)

The FDR uses low energy gamma rays to determine the downhole fluid density during a production log. It provides a safe and reliable measurement that is unaffected by well deviation and flow rates.

Description

Gamma rays are emitted from an Americium-241 source at one end of a measuring cell and are detected at the opposite end by a scintillation detector and photomultiplier. Well fluid flows through the cell and attenuates the received count rate in an inverse logarithmic function of the average fluid density. The detector is temperature stabilized and matched to the gamma energy of the source.

The tool can be calibrated in air and fresh water using Sondex supplied multipliers to derive calibration values applicable to oil and saltwater densities.

Features

- Americium 241 gamma ray source.
- Shielded detector highly resistant to radioactive scale interference.
- Multi-phase production profiling.
- Fluid identification.
- Used in all well deviations.
- Density measurements in a range of fluid flow rates.
- Protective radiation shield (type A rated) can be locked on the tool so that the source can be left in place between jobs.
- Fully combinable with all Ultrawire™ Production Logging Tools.
- Surface read out or memory operation.

Specification

Model	FDR019	FDR020
Temperature rating	350°F (177°C)	
Pressure rating	15000psi (103.4MPa)	
Tool diameter	1 3/8in (35mm)	1 11/16in (43mm)
Tool length	22.9in (581mm)	23.0in (585mm)
Tool weight	6lbs (2.7kg)	9.6lbs (4.4kg)
Toolbus	Ultrawire™	
Current consumption	35mA	
Protective shield weight	11.1lbs (5.0kg)	12.0lbs (5.4kg)
Measurement range	0 to 1.25g/cc	
Accuracy	+/-0.03g/cc	
Resolution	0.01g/cc	
Sensor measure point	4.3in (110mm)	
Materials	Corrosion resistant throughout	

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