

HRVRT high-resolution vertilog service

Evaluate pipe integrity to head off unneeded remediation work or unplanned outages



The Baker Hughes, a GE company (BHGE), **HRVRT™ high-resolution vertilog service** provides the industry's most precise pipe integrity and corrosion evaluation, accurately characterizing casing and tubing strength. The service eliminates unnecessary remediation work as well as reducing any unplanned production outages.

This service also provides flexible and efficient data acquisition, reducing operating time while improving data accuracy and operational safety. In conventional magnetic flux leakage (MFL) tools, the flux leakage sensors are coils; in the "high-resolution" tool, the coil is replaced by multiple "hall effect" sensors. The HRVRT service uses MFL measurements to identify and quantify internal and external corrosion defects.

The overlapping arrays of the multi-axial sensors—flux-leakage sensors and discriminator sensors—offer full circumferential inspection of the tubing or casing string. This process differentiates between metal-loss (corrosion) and metal-gain (hardware) features, and distinguishes between general corrosion and isolated pitting. The service provides tubular burst-and-collapse strengths based on customer-defined criteria, facilitating consistent and rapid evaluation of the well's integrity.

The HRVRT service provides a quantifiable defect description with an increased accuracy for length, width, and depth determination. This data is accurate for input into burst pressure calculations. The HRVRT logging speed is independent. This allows it to better characterize defects

Applications

- Identify internal versus external corrosion problems
- Locate holes, corrosion, depth of penetration, and other defects
- Determine the effectiveness of cathodic protection and corrosion inhibitors
- Discriminate between actual corrosion and well completion equipment
- Map perforations
- Establish wellbore fluid independence
- Identify fiber optics cable orientation behind pipe

Features and benefits

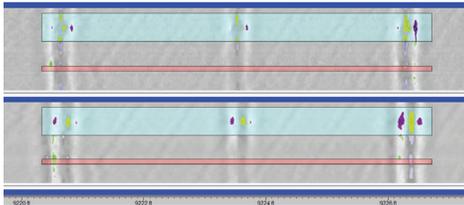
- Multi-axial sensors with next-generation multi-axial data technology
 - Offer improved defect descriptions with greater accuracy
 - Allow increased circumferential and axial resolution
- Dynamic range service from 4½ in. to 9⅝ in. casing
 - Allows operation in a variety of downhole conditions
 - Allows greater flexibility in logging below casing patches and other downhole restrictions
- ControlView service
 - Provides control line orientation
 - Allows pipe perforation without damaging control lines

in the well (especially near the wellhead), eliminate unnecessary remediation work, and reduce unplanned production outages.

The BHGE **ControlView™ control line detection service**, an application of the



This photo shows the external unique features of the blast protector.



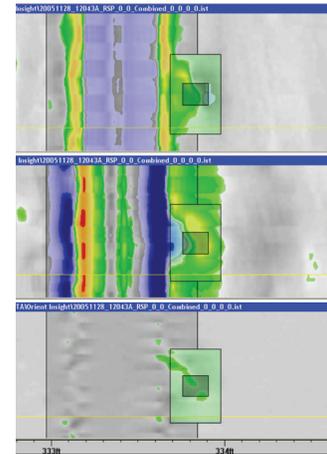
ControlView log data accurately confirms the orientation of the fiber optic cable and the blast protector.

HRVRT service, provides accurate cable detection behind the casing, which is an important capability when the customer needs to perforate or frac the completion. If the fiber optic cable is undetected, the cable

will endure permanent damage, resulting in the replacement of the completion.

To learn more about how the BHGE HRVRT service can be used to evaluate pipe integrity, contact your BHGE representative.

Feature details	
Identifier	FOH-91-1
Class	Optic hardware
Description	FOC offset 180°
Position	9223.48 ft
Orientation	84.42°



The pipe and cross-sectional measurements of the defect and its analysis

Specifications				
Tool series		4994	4995	4997
Casing applications (in.)		4½	5, 5½	7, 7 ⁵ / ₈ , 8 ⁵ / ₈ , 9 ⁵ / ₈
Dynamic range	Maximum	5.3 in. (13.46 cm)	5.3 in. (13.46 cm)	9.425 in. (23.99 cm)
	Minimum	3.63 in. (9.22 cm)	4.0 in. (10.16 cm)	5.5 in. (13.97 cm)
Casing weight	Maximum	15.1 lb/ft (2.08 kg/m)	32 lb/ft (4.4 kg/m)	54 lb/ft (7.46 kg/m)
	Minimum	6.75 lb/ft (0.93 kg/m)	11.5 lb/ft (1.58 kg/m)	13 lb/ft (1.8 kg/m)
Instrument length		15.5 ft (4.72 m)	15.5 ft (4.72 m)	19.75 ft (6.01 m)
Instrument weight		310 lb (140.9 kg)	340 lb (154.54 kg)	726 lb (329.54 kg)
Sensors	Axial	48 Hall effect	48 Hall effect	96 Hall effect
	Radial	48 Hall effect	48 Hall effect	96 Hall effect
	Circumferential	48 Hall effect	48 Hall effect	96 Hall effect
	Discrimination	48 Hall effect	48 Hall effect	96 Hall effect
Logging speed		200 ft/min (61 m/min)	200 ft/min (61 m/min)	160 ft/min (48.8 m/min)
Maximum pressure		15,000 psi/103.4 Mpa		
Maximum temperature		175°C/350°F		

Contact your BHGE representative for complete specifications.

bhge.com

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