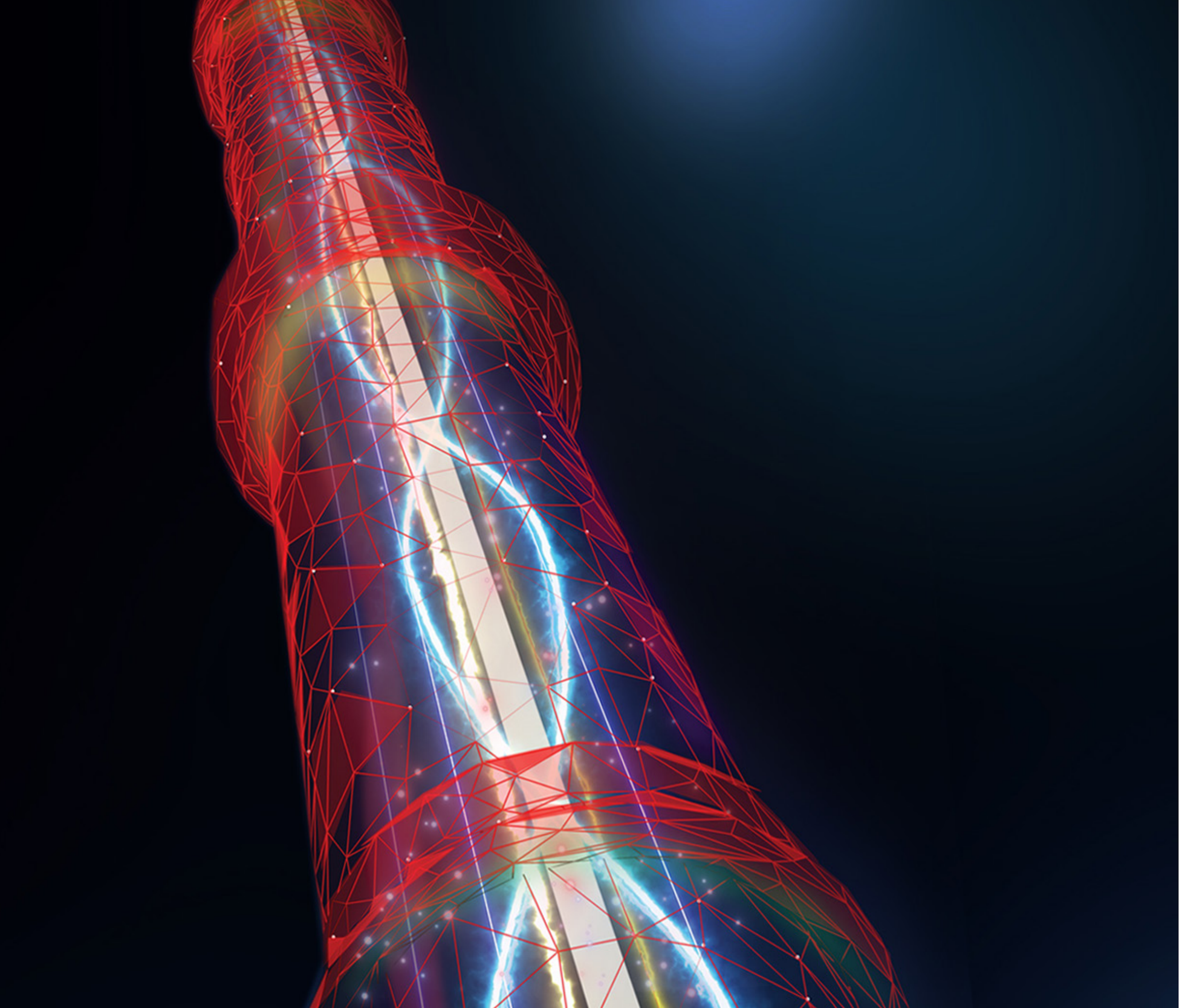
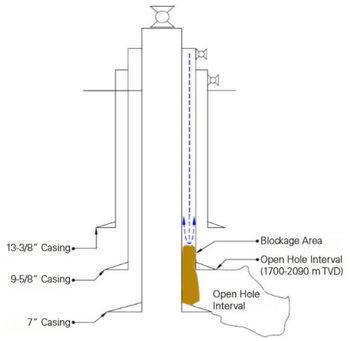


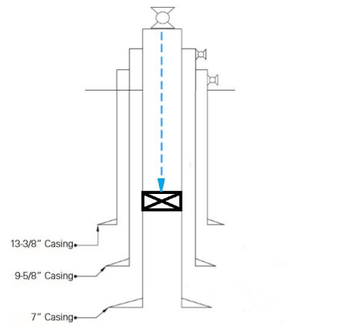
InnerVue™ WellSuite Diagnostics Service

Non-Intrusive wellbore diagnostics provides decisive inisght to optimize well production, well intervention and well integrity.

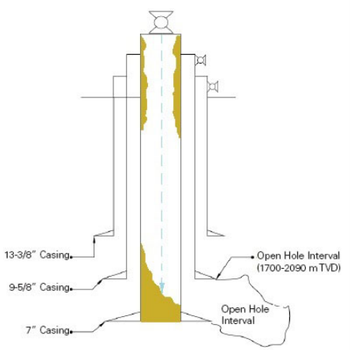
Annulus Blockage Location



Wellbore Blockage Location



Wellbore Deposit Profiling



InnerVue™ WellSuite Diagnostics Service

OVERVIEW

The InnerVue™ WellSuite Diagnostics Service is a non-intrusive solution for wellbore diagnostic with Zero CO2 emission. The service can be used to detect top of cement, top of plug location or evaluate deposition in casing or tubing. In case of a stuck tool in the well, InnerVue can non-intrusively provide a depth of top of tool for efficient fishing operation. Data is collected by connecting directly to the wellhead or pipe system around the wellhead. The data collected is analyzed using proprietary software to profile debris or deposition, to detect changes in internal diameter, or to locate blockages in the wellbore or annuli.

How it works

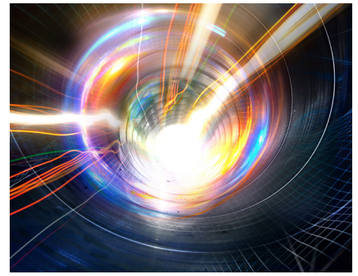
Halliburton's advanced technology employed in the InnerVue service uses a pressure wave (or pulse) generated by surface valve manipulation. The pulse travels inside the casing, tubing or annular space at the speed of sound and returns a reflected wave that corresponds to any features detected in the pipe bore or annulus, including deposition of wax, scale, hydrate, sand, salts, a stuck tool or even changes in the wellbore medium itself (based on density, viscosity, etc.). The pulse also reflects off top of cement or top of plug significantly reducing operating time and risk during P&A campaigns. A high accuracy transducer is utilized to measure the pressure variations, signals from the transducer are recorded at an ultra-high sampling rate. Once the data is collected, analyzed by the software and extrapolated into profiles, Halliburton's team of experts provide diagnostic of the well condition. This includes reporting to facilitate decision-making and remediation plans — without sacrificing production uptime or throughput.

Equipment Specifications: Package Including Transit Case

Length	Width	Height	Weight	Content
21-in. (54 cm)	14-in. (36 cm)	9-in. (22 cm)	33-lbs. (14 kg)	1 data-logger Zone II Set of pressure transducers (multiple range) Standard fittings for pressure transducers 2 data communication cables 1 battery charger Documents package (MSDS, certificates, data sheet, instruc-tions manual)

Data-logger Specifications

Size	Weight	Power Supply	Controls	Connections
8-in. x 9-in. x 5-in. (20 cm x 22.5 cm x 11 cm)	6-lbs. (3 kg)	Rechargeable lithium-ion battery for up to 10 hours of operation	6 piezo switches, including 1 illuminated on/off switch	4 input channels, 1 power supply input and 1 USB port



APPLICATIONS

- Identify blockage location in the wellbore and annuli, such as Top of Cement, plugs, major obstructions including stuck tools and completions collapse or multiple-media change in the wellbore
- Assess thickness, volume and location of deposit buildups (sand, scale, paraffin etc.) in the wellbore

FEATURES

- Operable in Zone II harsh environment
- Operating pressure up to 10,000 psi (690 bar)
- No operating temperature limit
- Sample rate 4,000 Hz
- Lithium-ion battery 65 Wh
- Compliant with IATA 2014 regulations for air freight
- Small equipment case, weight 33-lbs. (14 kg)

BENEFITS

- Non-intrusive, Zero CO2 emission
- Collect data rapidly, with minimal equipment and personnel
- Minimize or eliminate interruption of production
- Increase confidence before Intervention operation
- Reduce the risks of stuck/lost tools
- Track the progress and effectiveness of chemical cleaning program

Sales of Halliburton products and services will be in accord solely with the terms and conditions contained in the contract between Halliburton and the customer that is applicable to the sale.

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