InnerVue™ PipeSuite Diagnostics Service

OVERVIEW
The InnerVue™ PipeSuite Diagnostics Service is a non-intrusive solution for profiling deposits and locating leaks or blockages along the length of pipelines. It can be used to baseline a pipe during pre-commissioning, to monitor the line conditions before, during and after a cleaning operation, and to diagnose leaks or blockages. The service requires pressure wave measurement equipment to be tied in directly to the pipeline system for data collection. The data collected is then analyzed using proprietary software to provide profiling of the pipe’s internal diameters or to locate leaks and blockages.

HOW IT WORKS
Halliburton’s advanced technology, employed in the InnerVue service, creates a pressure wave (or pulse) at one end of the pipeline, which travels at the speed of sound. This pulse returns a reflected wave that corresponds to any features detected in the pipeline, including depositions of wax, hydrate, leaks or even a stuck pig or tool, that adversely impacts flow velocity, as well as the flow medium itself (density, viscosity, etc.). A high accuracy transducer is utilized to measure pressure variations, and signals from the transducer are logged at an ultra-high sampling rate. Once the data is collected and extrapolated into profiles, Halliburton’s team of experts are available to help with diagnostic analysis and reporting to facilitate decision-making and remediation plans — without sacrificing production uptime and throughput.

ADVANTAGES
The InnerVue diagnostic service can be executed with only one site technician, minimal setup and operational impact, to survey asset performance quickly and safely with a repeatable and verified high level of accuracy. The service has an acute level of accuracy when locating pipeline blockages and leaks.

APPLICATIONS
» Locate position of blockages, obstructions or lost objects to within 0.4%
» Assess pipeline deposit thickness, volume and location to within 0.04-in. (1 mm) of thickness
» Locate and quantify leaks

FEATURES
» Operable in Zone II harsh environment
» Operating pressure up to 5800 psi (400 bar)
» Operating temperature range from up to 185°F (85°C)
» Ambient temperature range from 0 to 104°F (40°C)
» 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
» Increase confidence before a clean-out operation
» Reduce the risks of a stuck pig during cleaning
» Track the progress of cleaning operations
» Collect data rapidly, with minimal equipment and personnel
» Minimize or eliminate interruption of production

InnerVue™ PipeSuite diagnostic equipment, including pressure transducers (with different ranges), data-logger, cables and charger.
The debris profiling mode provides a length-wise debris build-up analysis as shown in the figure below. This profile is crucial as an input for flow assurance, optimizing asset performance, lowering maintenance costs, and reducing cost and risk of physical intervention.

![Pipeline deposition profile.](image)

**Equipment Specifications**

<table>
<thead>
<tr>
<th>Length</th>
<th>Width</th>
<th>Height</th>
<th>Weight</th>
<th>Content</th>
</tr>
</thead>
</table>
| 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, instructions manual) |

**Data-logger Specifications**

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

For more information, contact your local Halliburton representative or visit us on the web at www.halliburton.com/InnerVue