Javelin® Classic
World’s First Small-Diameter NMR Wireline Logging Tool

For environmental and shallow groundwater investigations

With over a decade of proven results in the field, Javelin Classic pioneered the break-through technology that brought magnetic resonance logging to groundwater resources and environmental sectors. Javelin provides unprecedented precision and detail for groundwater investigations, delivering high-value NMR logging in a flexible, compact and economical design.

• Porosity
  • Bound and mobile water content
  • Pore size distribution
  • Hydraulic conductivity

Javelin probes sample at two or four discrete diameters, shown here to scale

Applications
• Geotechnical site investigations
• Groundwater resource management
• Aquifer storage and recovery
• Environmental site characterization
• Mine water engineering
• Brine and leach mining
**Sensitivity Outside the Disturbed Zone**
Drilling disturbs the native formation around the borehole. Only Javelin provides deep view sensitivity, beyond the disturbed zone, in a discrete cylindrical shell. An NMR tool with shallow sensitivity may only measure the disturbed formation, rendering the data useless.

**Multi-Frequency Multi-Shell Logging**
Javelin performs measurements at multiple frequencies simultaneously to obtain sensitivity at up to four discrete diameters of investigation. Shells can be combined in post-processing to improve data quality or can be analyzed independently to assess radial variation.

**Replacement for a Suite of Conventional Logs**
Without the radioactive hazard of a neutron tool, Javelin accurately determines water content. Resistivity and gamma qualitatively indicate aquifer zones, but Javelin yields quantitative estimates of bound/mobile water fractions and reflects pore size distribution. A virtual flowmeter, Javelin predicts permeability at 50cm resolution, even through solid casing.

**Minimally Invasive Logging**
The JP238 probe is designed for compatibility with a direct push Geoprobe® system. Direct push deployment does not require installed casing and is ideal for minimal disturbance in sensitive environments.

**Automatic Adaptive Noise Cancellation**
Javelin hardware and software architecture uses noise reference modules to cancel electromagnetic noise, improving data quality at sites close to buildings and infrastructure, including geotechnical projects.

**SPECIFICATIONS**

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<tbody>
<tr>
<td>Diameter:</td>
<td>1.75in (44mm)</td>
<td>1.75in (44mm)</td>
<td>1.75in (44mm)</td>
<td>2.38in (61mm)</td>
<td>3.5in (89mm)</td>
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<tr>
<td>Length:</td>
<td>77.5in (197cm)</td>
<td>77.5in (197cm)</td>
<td>77.5in (197cm)</td>
<td>85in (216cm)</td>
<td>73in (185cm)</td>
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<tr>
<td>Weight:</td>
<td>18lb (8.16kg)</td>
<td>20lb (9.07kg)</td>
<td>17lb (7.71kg)</td>
<td>29lb (13.15kg)</td>
<td>55lb (24.94kg)</td>
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<td>Sensitive Diameters:</td>
<td>F₁: 7in (18cm)</td>
<td>F₁: 9in (23cm)</td>
<td>F₁: 9in (23cm)</td>
<td>F₂: 8in (20cm)</td>
<td>F₂: 10.5in (27cm)</td>
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<td></td>
<td>F₂: 8in (20cm)</td>
<td>F₂: 10in (25cm)</td>
<td>F₂: 10in (25cm)</td>
<td>F₃: 9in (23cm)</td>
<td>F₃: 12in (30cm)</td>
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<tr>
<td></td>
<td>F₃: 10.5in (27cm)</td>
<td>F₃: 13.5in (34cm)</td>
<td>F₄: 12in (30cm)</td>
<td>F₄: 15in (38cm)</td>
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| Vertical Resolution: | 40in (100cm) | 40in (100cm) | 20in (50cm) | 20in (50cm) | 20in (50cm) |
| Echo Spacing:       | 700µs | 1000µs | 700µs | 700µs | 700µs |
| Max Logging Depth:  | 1600 ft/500m | 1600 ft/500m | 1600 ft/500m | 1600 ft/500m | 1600 ft/500m |
| Logging Speed:      | 15 m/hr | 15 m/hr | 15 m/hr | 30 m/hr | 60 m/hr |

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