

UCI Ultrasonic Casing Imager

Schlumberger



The UCI* Ultrasonic Casing Imager is an evolution of the USI* UltraSonic Imager. The UCI tool provides all the answers required to locate, identify, and quantify casing damage or corrosion. The design is specifically engineered for high-azimuthal-resolution images and detailed examination of both the inner and outer surfaces of casing ranging from 4½ to 13¾ in. [11.43 to 33.97 cm] resulting in improved echo detection.

Full azimuthal coverage with a 2-MHz focused ultrasonic transducer is used to analyze the reflections. Signal arrivals are analyzed to provide the casing thickness and surface condition images, and even small defects on both internal and external casing surfaces are quantified. An improved centralization system ensures proper centralization even in horizontal wells, and eccentricity effects are reduced through wellsite signal correction.

Applications

- Casing integrity evaluation
- Identification, location, and quantification of casing corrosion
- Estimated damage to casing caused by milling, fishing, or plastic deformation
- Internal and external metal loss
- Internal and external scale buildup
- Location and identification of perforated intervals
- Identification of casing holes
- Identification of casing profile and weight changes
- Identification of centralizers and other casing anomalies

Measurement Specifications

| | UCI Tool |
|--------------------------------|--|
| Output | Amplitude image, casing thickness image, internal radius image, fluid velocity |
| Logging speed | 3,000 ft/hr [914 m/h] High resolution: 400 ft/hr [122 m/h] |
| Range of measurement | Min. casing thickness: In water = 0.15 in. [0.38 cm] In attenuating fluids, including oil-base mud = 0.2 in. [0.51 cm] |
| Vertical resolution | High resolution: 0.2 in. [0.51 cm] High speed (3,000 ft/hr): 1.5 in. [3.81 cm] |
| Accuracy | Internal radius: ± 0.04 in. [± 1 mm] Casing thickness: $\pm 4\%$ |
| Depth of investigation | Thickness of casing |
| Mud type or weight limitations | Oil-base mud: No solids Water-base mud: Solids content < 5% |
| Combinability | Bottom-only tool, combinable with most tools |
| Special applications | H ₂ S service |

Mechanical Specifications

| | UCI Tool |
|-------------------------------|--|
| Temperature rating | 350°F [177°C] |
| Pressure rating | 20,000 psi [138 MPa] |
| Casing size—min. [†] | 4½ in. [11.43 cm] |
| Casing size—max. [†] | 13¾ in. [33.97 cm] |
| Outer diameter | USRS-AB: 3.41 in. [8.66 cm] USRS-A: 3.56 in. [9.04 cm] USRS-B: 4.65 in. [11.81 cm] USRS-C: 6.69 in. [16.99 cm] USRS-D: 8.66 in. [22.00 cm] |
| Length | Without sub: 19.73 ft [6.01 m] |
| Weight | Without sub: 333 lbm [151 kg] |
| Tension | 40,000 lbf [177,930 N] |
| Compression | 4,000 lbf [17,790 N] |

[†] Minimum and maximum casing sizes depend on the sub used.