

Improving Your Image with Borehole Centred Processing

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Abstract

Borehole Image Logs are used for the measurement of structural and stratigraphic bedding, fractures and other geologic textures.

Image tools were traditionally assumed to be well -centred within the borehole so conventional image processing uses a tool -centred approach where the pad images are projected onto a cylinder that is centred on the logging tool, with the pads separated by an equal caliper arm angle. In an attempt to account for different image coverage in washout zones, the width of each pad should be displayed proportional to its caliper.

In inclined and horizontal wells, image tools can run off -centre (on the low side of the hole) so tool-centred processing can lead to incorrect positioning of the pad images. This makes them more difficult to interpret as the trace of planar features does not fit a sinusoid on an unrolled cylinder. Further, if the pad width correction is applied, the high -side image pads are displayed inappropriately narrow. This results in increased dispersion and systematic errors of orientation that can be misinterpreted as structural dip.

Image tools with independent caliper arms acquire sufficient information to calculate the true position of the pads and the rotational angle between them. The pads can be projected onto a borehole-centred cylinder using their computed positions.

Comparisons of results from borehole -centred image presentations with conventional tool-centred presentations show an improvement in dip computation. Dip scatter is reduced and bedding dip more accurately reflects that computed from seismic and from dip angles between formation tops in adjacent well bores.