APRIL 29th 2020

ISCWSA QAQC SC API RP78 MWD DOCUMENT DISCUSSION

A few points for the QA committee from Andy McGregor Error Model SC Chair Person:

1. With reference to para 2.3 below: the error model only specifies tolerances for installed in-hole performance, i.e. when we have an allowance for say a magnetometer bias that includes cal shack type effects like sensor calibration errors and data resolution but also mashed in there are in-hole effects like additional cross-axial interference due to the BHA. Additionally, MWD calibration will typically include sensor misalignment angles. The error model doesn’t break these out, but instead includes them alongside scalefactor errors.

That makes it difficult to directly tie the error model to calibration values. Certainly you can take the in-hole numbers as an upper limit.

We’ve been intending to try to provide a rationale to separate these out for a while, but that work hasn’t advanced. It’s on my possible to do list now we’ve got Rev5 pretty much parcelled up.

1. I haven’t read your document, but current trend seems to be to determine in-hole FAC limits dynamically from the error model. That’s fine but some terms that you need for this are missing from specific tool-codes because they don’t affect position uncertainty.
For example you need a Btotal uncertainty but won’t find that in a MWD tool-code, you have to carry across the value from the MWD+Ax tool-code.

I think we should include these reference uncertainties in the specific tool-codes along with a zero weighting function for position. That would make it simpler to say you calculate bounds from the error model.

1. Similarly we don’t include sensor random error terms, but that also becomes important if you follow the sort of marginal QC calculations outlined by Marc Willerth at the Inverness meeting. I think SuperiorQC do something similar so possible those need to be added to the error model.

The QC committee’s position and comments on the these would help shape the future work of the EMM.