

Calibration Traceability

October 23, 2017

Excerpt from the ANSI-ASQ National Accreditation Board:

<http://anab.org/news/newsletter/winter-2014/nist-traceability-statements>

NIST Traceability Statements

Many calibration customers request on their accredited calibration certificates a statement that the measurement is traceable to the National Institute of Standards and Technology (NIST). They want assurance that the standards used for the calibration are ultimately traceable to the International System of Units (SI) through NIST. The only problem with that request is that in many cases the calibration laboratory doesn't know if NIST traceability exists.

Are you shocked? Not if you understand traceability in an increasingly more sophisticated world. The first important fact the calibration customer needs to know is that NIST may not be the only source of traceability to the SI! Many countries have a national metrology institute (NMI) such as NIST that provides traceability to the SI for certain parameters. Accredited calibration laboratories are not required to attain traceability through a particular NMI as long as the NMI used is a signatory of the International Committee for Weights and Measures (CIPM) Mutual Recognition Arrangement.

The second important fact the calibration customer needs to know is that the calibration laboratory providing an accredited calibration may not know which NMI provided the first step in the traceability chain – but it doesn't matter! An accredited calibration certificate is proof that the calibration laboratory used standards traceable to the SI for a given parameter. Note we didn't say – and this is important – “standards that are calibrated by the NMI” or “standards that are calibrated by NIST.” Very few standards are actually calibrated by an NMI and even fewer are calibrated by NIST. Most standards are calibrated by one or more intermediate calibration laboratories that are themselves accredited and traceable to an NMI.

Accreditation ensures traceability by requiring that each link in the traceability chain from the SI be accredited or that proof of traceability be otherwise proven. Thus, the traceability flows from the SI through an NMI and then through any intermediate laboratories to the customer's calibration provider, and on to the customer's accredited equipment. The further the traceability chain extends from the NMI, the less likely the possibility that the calibrating laboratory knows which NMI provided the original traceability. But because traceable calibrations were required throughout the chain, traceability to the SI is still assured.

A word about NIST numbers: They're not acceptable as proof of traceability! The accredited certificate of calibration, however, should be all the proof an informed customer needs.

Typical SIGLENT Calibration Certificate:





Here is a PDF copy: [ScopeSampleCalCert](#)



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