

Difference between a NATA certified calibration and a traceable calibration.

A NATA certified calibration will include the following as required by ISO 17025-2005 which all NATA laboratories are accredited to.

All uncertainties of the measurements performed are reported within the NATA calibration report that is normally received by you.

These uncertainties of measurement (UOM) are reported within the NATA calibration report for the following two reasons:

- A. These UOM's calculations are used in a calculation only if the instrument is used to calibrate another instrument i.e. if the instrument is used as a transfer standard to calibrate another instrument.
- B. A NATA calibration report will show details of the reference instrument used which shows the calibration's traceability to Australian National Standards as required by ISO 17025-2005.

Traceable of the calibration

When a calibration is performed on an instrument that is used for indication purposes only similar to a pressure gauge, micrometer or thermometer, the reporting of the uncertainty of measurement of the instrument renders itself worthless as its never used in further measurements.

The most important aspect of a traceable calibration is the reporting of the status of the reference standard used to calibrate the instrument. The reference standard used has to have a current calibration status and provide traceability to a National or International Standard through an unbroken chain of calibrations. Refer to ILAC's view of this:

Traceability

The abbreviated term "traceability" is sometimes used to mean metrological traceability as well as other concepts, such as 'sample traceability' or 'document traceability' or 'instrument traceability' or 'material traceability', where the history ("trace") of an item is meant. Therefore, the full term of "metrological traceability" is preferred if there is any risk of confusion.

According to NATA's Policy Circular 11 October 2015: ISO/IEC 17025 requires all equipment used for tests and/or calibrations, including equipment for subsidiary measurements (e.g. for environmental conditions) having significant effect on the accuracy or validity of the result to be calibrated before being put into service. In order for a measurement to be valid, there must be documented evidence to support this unbroken traceability chain of calibrations and associated measurement uncertainties. (Clause 5.6.1 of ISO /IEC 17025)

The ILAC considers the elements for confirming metrological traceability to be an unbroken metrological traceability chain to an international measurement standard or a national measurement standard, a documented measurement uncertainty, a documented measurement procedure, technical competence, metrological traceability to the SI, and calibration intervals

Metrological traceability chain

- traceability chain
- sequence of measurement standards and calibrations that is used to relate a measurement result to a reference

Metrological traceability to

- a measurement unit
- metrological traceability to a unit- metrological traceability where the reference is the definition of a measurement unit through its practical realization”

Also visit this link: <http://www.hkcalibrations.com.au/calibrations-scope/>

An instrument that is used for indication of a pressure, temperature or a dimension is never used to transfer its accuracies/measurement to any other instrument and does renders the NATA calibration meaningless as no transfer of its measurement status /accuracy is ever transferred to another instrument.

Consider this: In most cases, the uncertainty of measure of an instrument is extremely low (refer to our UOM calculations: <http://www.hkcalibrations.com.au/calibrations-scope/>

That these UOMs are going to a minimal effect on an industrial type instrument that which has a large tolerance band (1% for a 100mm dia. pressure gauge). The uncertainty of measurement here is negligent and worthless in the whole scheme of the function of the instrument. So why would you send your instruments to a NATA accredited laboratory as this will be a complete waste of money and time, because what you receive from a NATA lab. within its certificates will never be used or even be looked at. What a waste of energy, time, money and counterproductive towards economising in these tough times.

The only value in a NATA certified calibration report is its calibration traceability to a National or International Standard through an unbroken chain of calibrations to a National or International Standard as required by ILAC. (International Laboratory Accreditation Cooperation) <http://ilac.org/>

The argument here is that any instrument used for measurement and for indication purposes only, does not need to be NATA certified as the uncertainty of measurements reported within the NATA certificate are never used and a sheer waste of time, as they are never used in further transfer of the instrument's accuracy.

Conclusion:

Instruments should only be NATA certified if they are going to be used as references in the transfer of their measurement accuracy to other instruments, but if the instrument is used only for indication purposes, like an indication of pressure in a pipeline, they will only require traceability to Australian National Standards as any UOM calculations contained within a NATA certified calibration report is worthless as these calculations are never used in any further calculations. Therefore, in 95% of most calibration requirements in industry, a traceable calibration for an indication type instrument will satisfy the requirements of ILAC's requirements on the “traceability” element of their technical document.

HK Calibrations will provide you a traceable calibration report that includes all the required traceability as required by ILAC to whom NATA is accredited by.

I welcome any enquiries or concerns regarding the above and can assure you that the above is accurate in content as I have been a NATA signatory for many years and consider traceable calibrations are the way to go for industry if money and time is an object of concern.

Marcus Khan

Ex NATA Laboratory Manager and Signatory

Accreditation # 15563(Pressure) & 18797(Electrical) (Now cancelled)

Further reading material on this subject:

Joint BIPM – OIML – ILAC – ISO Declaration on Metrological Traceability

Joint BIPM, OIML, ILAC and ISO Declaration on Metrological Traceability This document builds on the tripartite statement issued by the BIPM, the OIML, and the ILAC on 23 January 2006 on the relevance of various international agreements on metrology to trade, legislation and standardization.

<http://ilac.org/?s=traceability>