

**NVLAP CALIBRATION LABORATORIES SUPPLEMENTAL CHECKLIST for
VERIFICATION of COMPLIANCE TO
ILAC-P14:12/2010**

Instructions to the Assessor: This checklist addresses specific accreditation requirements of ILAC-P14, *ILAC Policy for Uncertainty in Calibration*. The web link to P14 is http://www.ilac.org/documents/ILAC_P14_12_2010.pdf.

- All items on this checklist shall be addressed.
- Select “X” for each item that represents a nonconformity.
- Select “C” for each item on which you are commenting for other reasons.
- Select “OK” for each item you observed or verified as compliant at the laboratory.
- Record the item number and the nonconformity explanation and/or comment on the appropriate comment sheet.

Note: The numbering of the checklist items correlates to the numbering scheme in ILAC-P14:12/2010.

6. ILAC Policy on Statement of Uncertainty of Measurement on Calibration Certificates

6.1 ISO/IEC 17025 requires calibration laboratories to report, in the calibration certificate, the uncertainty of measurement and/or a statement of compliance with an identified metrological specification or clauses thereof.

Accredited calibration laboratories shall report the uncertainty of measurement, in compliance with the requirements in 6.2 – 6.5 of this section.

6.2 Reporting of measurement uncertainty

— Accredited calibration laboratories shall do the following:

- a) report the measured quantity value y ; and,
- b) report the associated expanded uncertainty U ; and,
- c) include a statement of the coverage factor, k , and coverage factor probability (such as 95 %) on the calibration report/certificate.

NOTE 1: A format of $y \pm U$ is typical.

NOTE 2: Asymmetrical uncertainties may require other presentations than the format of $y \pm U$.

NOTE 3: Uncertainties determined by Monte Carlo simulations (propagation of distributions) or logarithmic units may also require presentations other than the format of $y \pm U$.

6.3 Significant digits and rounding

— Numerical values of expanded uncertainties shall be, at most, two significant figures. The following applies:

- a) The numerical value of the measurement result shall in the final statement be rounded to the least significant figure in the value of the expanded uncertainty assigned to the measurement result.
- b) For the process of rounding, the usual rules for rounding of numbers shall be used, subject to the guidance on rounding provided in Section 7 of the GUM.

NOTE 1: The process for rounding of numbers shall be in accordance with 7.2.6 in the *Evaluation of measurement data – Guide to the expression of uncertainty in measurement* (JCGM 100:2008 - GUM 1995 with minor corrections), available at http://www.bipm.org/utils/common/documents/jcgm/JCGM_100_2008_E.pdf.

NOTE 2: Further details on rounding can be found in ISO 80000-1:2009, *Quantities and units, Part 1*.

NOTE 3: Additional guidance on rounding can be found in NISTIR 6969 (2003), GLP 9, *Good Laboratory Practice for Rounding Expanded Uncertainties and Calibration Values*, available at <http://www.nist.gov/pml/wmd/labmetrology/upload/glp-9-mar-2003.pdf>.

6.4 Short-term contributions

— Contributions to the uncertainty stated on the calibration certificate shall include relevant short-term contributions during calibration and contributions that can reasonably be contributed to the customer's device.

Where applicable the reported uncertainty shall cover the same contributions to uncertainty that were included in evaluation of the CMC uncertainty component, except that uncertainty components evaluated for the best existing device shall be replaced with those of the customer's device. Therefore, reported uncertainties tend to be larger than the uncertainty covered by the CMC.

6.5 Not smaller than the CMC

— Accredited laboratories shall not report a smaller uncertainty of measurement than the uncertainty of the CMC for which the laboratory is accredited.

