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11<sup>th</sup> November 2013

Dear Members of OIML TC7,

As you know NMO has been approached by two European manufacturers of length measures, representing the European Tool Committee (CEO), who have raised concerns about the ability of manufacturers to meet the requirements of OIML R35-1:2007 sections II, 4.4.1 and III, 6.2 with regard to the rated operating condition and the expansion of the material used. A vote was taken on three proposals in 2012 but no majority was reached as the votes for change were split between two options. In light of this NMO would now like to propose one option for change and an option for no change.

The attachment 'R35 Expansion Effects.xlsx' is a simple spreadsheet which illustrates the proportion of the MPE that is taken up by an expansion of 8°C of a steel tape. 8°C is defined as the limit of the rated operating conditions. For longer tapes, approximately 80% of the allowable MPE is consumed by the expansion for Class I measures. For Class II, 40% of the MPE is consumed.

In R35 1985 edition, initial verification was performed under reference conditions of 20°C. The only requirement in which temperature variation was specified was in regard to the stability of the material; it did not form part of the measurement.

Manufacturers have invested heavily in production and checking equipment in recent years to produce to EC Class I tolerances (1985 edition basis).

They believe that there has not been any demand for a tightening of EC tolerances and it is merely the new convention of initial verification under "rated operating conditions" and the introduction of +/- 8°C as a rated operating condition that has brought about this situation. In arguing for change manufacturers have put forward the following points:



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- R35 part I section V specifies that rigid rules, semi-rigid and flexible tape measures made of steel shall be Class I or II.
- Manufacturing these products to Class I tolerances encompassing thermal expansion at  $\pm 8^{\circ}\text{C}$  is practically impossible.
- It also reduces Class II tolerances close to Class I (1985 basis). Many products on the market are made to Class II tolerances (1985 basis, EC type approved until October 2016) and some manufacturers may have difficulty achieving Class II (2007 edition basis).
- Measures are portable and will be used in different climate zones with temperature ranges far exceeding  $\pm 8^{\circ}\text{C}$  so the rated operating conditions do not ensure accurate measurement
- Even in one climate zone measures will be used in different seasons, inside and outside, and will encounter temperature changes exceeding  $\pm 8^{\circ}\text{C}$
- Users requiring the high accuracy length measurement should be aware of the material expansion effects and should compensate for temperature and other factors affecting accuracy when using these measures. Legislation often requires this compensation to take place.

Discussion with the manufacturers has now resulted in an agreed alternative proposal to overcome this problem. The second proposal is to leave R35-1 unchanged, which manufacturers suggest would severely restrict their ability to produce to OIML tolerances.

Will you please consider this problem and complete the attached 'R35-1 Proposed amendment and vote' indicating your preferred solution by **31<sup>st</sup> December 2013** and return to me.

Best regards

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