ITS-90 Subrange Review Protocol

ITS-90 Subrange review guidelines:

No review needed:
\[ \frac{U_{CMC}}{U_{comb}} \geq 1 \text{ and } U_{CMC} \text{ (FPs) OK} \]

RMO scrutiny and WG8 acceptance:
\[ 1 > \frac{U_{CMC}}{U_{comb}} \geq \frac{2}{3} \text{ and } U_{CMC} \text{ (FPs) OK} \]

RMO scrutiny and WG8 scrutiny:
\[ U_{CMC} / U_{comb} < \frac{2}{3} \text{ and } U_{CMC} \text{ (FPs) OK} \]

"U_{CMC} (FPs) OK": those FPs used for that temperature subrange are smaller than that of the U_{CMC} function for the SPRT.

If U_{CMC} (FPs) are not OK, then no acceptance is allowed.

Cutoff criteria table for review process:

<table>
<thead>
<tr>
<th>ITS-90 subrange</th>
<th>U_{comb} range, mK</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ar to 0.01</td>
<td>0.53</td>
</tr>
<tr>
<td>Hg to Ga</td>
<td>0.29</td>
</tr>
<tr>
<td>0 to Ga</td>
<td>0.082</td>
</tr>
<tr>
<td>0 to In</td>
<td>0.082</td>
</tr>
<tr>
<td>0 to Sn</td>
<td>0.082</td>
</tr>
<tr>
<td>0 to Zn</td>
<td>0.082</td>
</tr>
<tr>
<td>0 to Al</td>
<td>0.082</td>
</tr>
<tr>
<td>0 to Ag</td>
<td>0.082</td>
</tr>
</tbody>
</table>

Other combinations are acceptable. Examples of those combinations are:

- Zn to Al: 0.95 mK to 1.91 mK
- Hg to 0.01 °C: 0.29 mK to 0.082 mK
- Ar to Ga: 0.53 mK to 0.20 mK

The U_{comb} values are estimated from the 25th percentile of the K3 and K4 values and non-uniqueness from several published and unpublished literature sources.

U_{CMC} submission must capture the maximum uncertainty for the given temperature subrange. If two values are given, then it will be interpreted as a linear function between end points, everywhere \geq the calculated uncertainty.
ITS-90 SPRT subrange protocol - Scrutiny criteria required

1. Proper propagation of $U_{FPs}$
2. Non-uniqueness values used for the specified temperature subrange.
4. Calibration process (method) used for SPRT.
5. Stability assessment of SPRT

CMC submission protocol:
- RMO review level
  - Post review on WG8 discussion forum for 6 weeks
  - new topic created for each submission
  - executive summary and any supporting documentation
  - judging of implementation of review protocol

WG8 chair will submit the CMCs to JCRB Exec Sec for fasttrack if no comments after 6 weeks or if all WG8 RMO representatives give approval before the 6 week deadline.

- CCT WG8 review level
  - Post review on WG8 discussion forum for comment
  - new topic created for each submission
  - executive summary and any supporting documentation
  - review at next available meeting with those NMIs present for discussion of their submission and supporting documentation