MINIMUM COUNTING TIME CALCULATION

The lower limit of detection (LLD) for which the risks of false negative results and of false positive results are each 5% is defined as follows:

\[
LLD = 4.66 \frac{(SD_b)}{Eff}
\]

Where:

- \( LLD \) = disintegrations in sample in time \( T = VL \times Vol \times T \)
- \( 4.66 \) = the product of the distribution parameters needed to establish the 5% error limits
- \( SD_b \) = standard deviation of the background (distilled water) count
  \[ = N_b^{0.5} = (R_bT)^{0.5} \]
- \( N_b \) = total background counts in time \( T \)
- \( R_b \) = background count rate, in cpm
- \( Eff \) = detection efficiency, in counts/dis
  (a nominal efficiency may be used for screening assays, whereas it should be determined experimentally for verification assays)
- \( VL \) = verification level for elapsed interval since last bioassay, in dpm/ml
- \( Vol \) = volume of urine in sample, in ml
- \( T \) = minimum counting time required, in minutes
  \[ = R_b(4.66/VL \times Vol \times Eff)^2 \]