

## Siegmund's ARL Approximation for Normal One-Sided CUSUMs

In the notations (4.15)-(4.17) of Vardeman & Jobe, Siegmund's approximation for a one-sided (0 head start) CUSUM ARL (for normal  $Q$ ) is

$$ARL \approx \begin{cases} (\mathcal{H}^* + 1.166)^2 & \text{if } \mathcal{S}^* = 0 \\ \frac{\exp(-2\mathcal{S}^*(\mathcal{H}^* + 1.166)) + 2\mathcal{S}^*(\mathcal{H}^* + 1.166) - 1}{2(\mathcal{S}^*)^2} & \text{if } \mathcal{S}^* \neq 0 \end{cases} .$$

(Values from this approximation are to be compared to entries in Table A.4 of V&J.)