Accelerated Life Test Plans Robust to Misspecification of Stress-Life Relationship under the Lognormal or Weibull Distributions

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Abstract: This presentation discusses the asymptotic distribution of maximum likelihood estimators of model parameters in accelerated life tests (ALTs) when form of the stress-life relationship is misspecified. Results are presented for the lognormal and Weibull distributions, two most commonly used distributions in ALT. The results are used to obtain optimal test plans based on asymptotic bias and asymptotic mean-squared error. These approaches provide some control over estimation bias and variance when the relationship is misspecified.

Key Words: Asymptotic bias; Asymptotic mean square error; Maximum likelihood estimation