

Optimum Hybrid Censored Reliability Acceptance Sampling Plans

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Abstract

The decision regarding accepting or rejecting a lot of products may be considered through variables acceptance sampling plans based on suitable quality characteristics. A variables sampling plan to determine the acceptability of a lot of products based on the lifetime of the products is called reliability acceptance sampling plan (RASP). To implement RASP, we need to carry out a life testing experiment. In general, it is time consuming and expensive. To save time and money, different censoring schemes are applied to conduct life testing experiment. A RASP under different censoring schemes like Type-I, Type-II, progressive censoring etc. are discussed by various authors in literature. It has received less attention on determination of RASP under hybrid censoring. In the present work, we discuss the design of a RASP under hybrid censoring. Weibull lifetime models are considered for illustrations. The proposed method is based on asymptotic results of the estimators of parameters of lifetime distribution. Hence, a Monte Carlo simulation study is conducted in order to show that the sampling plans meet the specified risks for finite sample size. Finally, we discuss the issue of determining optimum sampling plans under cost constraint. Some optimum sampling plans are provided under various setup.

Keywords: Acceptance sampling, Consumer's risks, Producer's risks, MIL-STD-105D, Monte-Carlo simulation, Type-I hybrid censoring, Optimum sampling plans.