AVAILABILITY AND COST-BENEFIT ANALYSIS OF A COLD STANDBY SYSTEM WITH PRIORITY, PREVENTIVE MAINTENANCE SUBJECT TO ARBITRARY FAILURE AND REPAIR TIME DISTRIBUTION

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SUMMARY

This study examines the availability and cost-benefit of a cold standby system with preventive maintenance, priority to repair of duplicate unit over preventive maintenance of original unit, and a regular repairman. For this purpose, a reliability model of a cold standby system having two non-identical units has been developed. Initially, original unit is in operation and duplicate unit is kept in cold standby. The unit undergoes for preventive maintenance after a pre-specific time. The time-to-failure and time-to-repair, maximum operation time and preventive maintenance of original and duplicate units are assumed Weibull distributed. Using semi-Markov process and regenerative point technique, recurrence relations for various reliability characteristics have been derived. To depict the importance of the study, numerical and graphical results for mean time to system failure, availability and profit function has been obtained with respect to failure rate and different values of shape parameter.

Keywords and phrases: Cold Standby System; Non-Identical Units; Availability; Cost-Benefit Analysis; Profit Function; Regenerative Point Technique; Semi Markov Process.

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