

## RELIABILITY MEASURES OF A STANDBY SYSTEM WITH PRIORITY TO MAINTENANCE OVER REPAIR SUBJECT TO RANDOM SHOCKS

S. K. CHHILLAR<sup>1</sup> AND S. C. MALIK<sup>2</sup>

<sup>1,2</sup> Department of Statistics,  
M.D. University, Rohtak-124001, Haryana, India  
E-mail: <sup>1</sup> satish99912@rediffmail.com, <sup>2</sup> sc\_malik@rediffmail.com

### Abstract

The purpose of this paper is to evaluate reliability measures of a shock model developed for a system of two identical units-one is operative and other is kept as spare in cold standby. The operative unit suffers a random shock with some probability. A single server is provided to perform maintenance and repair of the unit. The unit undergoes for maintenance if it is affected by impact of shocks. However, repair of the unit is done when it fails due to some other reasons. Priority is given to the maintenance over repair of the unit. The shocked unit may work for the system. The unit works as new after maintenance and repair. Random shocks and failure times of the unit are exponentially distributed while maintenance and repair times are taken as arbitrary with different probability density functions. Several measures of system effectiveness are derived in steady state using semi-Markov process and regenerative point technique. The graphical behavior of mean time to system failure (MTSF), availability and profit has also been observed giving particular values to various parameters and costs.

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Key Words : *Cold Standby System, Random Shocks, Maintenance, Repair, Priority and Reliability Measures.*