Comparison of Reliability Characteristics of Two Systems with Preventive Maintenance and Different Modes

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Abstract

This paper studies the different behavior of two systems with two-unit cold- standby system under the assumption that system 1 works in three different modes ``Normal, partial failure and total failure''. But system 2 works in two different modes ``Normal and total failure''. The failure time and repair time are assumed exponentially distributed. The two systems goes for preventive maintenance randomly (in time). We develop the explicit expressions for the mean times to systems failure $MTSF_i$ $(i = 1, 2)$ and the steady state availabilities $A_i(\infty)$ for two systems by using linear first order differential equations (L. D. E.), and perform comparisons theoretically and graphically to observe the effect of the preventive maintenance and failure rates on system performance.

Keywords: Steady-Sate Availability, Mean Time to System Failure (MTSF), Preventive Maintenance (P. M.), Linear Differential Equations (L. D. E.).