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**ABSTRACT**

# RELIABILITY ANALYSIS OF AN INSPECTION POLICY AND ITS APPLICATION TO A COMPUTER SYSTEM

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A computer system has become widely used in many practical fields as remarkable advances are made in both hardware and software. Such a system with high reliability has been required from both sides of makers and users because failure of the system is sometimes costly and/or dangerous. It is important to maintain the system preventively before failure. The inspection tests such as a warm-up test and an instruction test, which check the performance of the system at periodic intervals, are actually used in many situations.

This paper treats the following computer model: The system fails and with probability p, a system failure occurs. Otherwise, the system continues to operate in a hidden failure and after that, a system failure occurs. For the above model, we consider an inspection policy in which the system is checked at periodic intervals $t_0$ and a hidden failure is detected only through checkings. Then, we obtain the availability and the expected cost per unit of time, using the technique of Markov renewal processes.