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Achintya Roy* (acroy21@gmail.com), Department of Mathematics, Indian Institute of Technology Kharagpur, Kharagpur, 721302, India, and **Nitin Gupta** (nitin.gupta@maths.iitkgp.ac.in), Department of Mathematics, Indian Institute of Technology Kharagpur, Kharagpur, 721302, India. *Importance of renewal of a coherent system using two cold standbys.*

It is of great importance in reliability engineering and system security to achieve a required availability level of a system by adding cold standby components. We investigate reliability importance of renewal of a coherent system using two cold standby components. In particular, we focus on a coherent system which has a probability of failure before the number of its failed components becomes three. There are 2 coherent systems of that type of order 2, 4 of order 3, 16 of order 4 and 131 of order 5. We compute signature based expressions for the reliability function which will help us to investigate the risk of system failure. In order to obtain a cost-effective cold standby parts package, we define mean cost rates for a coherent system without and with (one or two) cold standby components. Examples and graphical representations are provided to support theoretical results in this study. We showed that if usual stochastic ordering of two cold standby components is available, then for maximum improvement of the reliability by renewal a coherent system, we use the cold standby component which is better in usual stochastic order in place of the first failed component. (Received September 25, 2018)