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Raymond N Greenwell* (matrng@hofstra.edu), Department of Mathematics, 103 Hofstra University, Hempstead, NY 11549, and **Stephen J Finch** (finchs@ccvm.sunysb.edu), Department of Applied Math and Statistics, State University of New York at Stony Brook, Stony Brook, NY 11794. *Analysis of the One- and Two-Sample Kolmogorov-Smirnov Test for Quality Control.*

In this study we use simulation to examine the power of the one- and two-sample Kolmogorov-Smirnov test. In one set of experiments, the underlying distribution was assumed to be normal with a specified mean and standard deviation. The one-sample test was found to be more powerful than the two-sample test when the mean or standard deviation differed from the target values. In a second set of experiments, the underlying distribution was a t distribution with various degrees of freedom. The one-sample test still tested for normality, and was found to unnecessarily reject the sample more often than the two-sample test. Due to the problem of discretization in the two-sample test, we devised a continuity correction using randomization that achieves the desired probability of Type I error. We also derived explicit formulas for the closest critical values above and below a specified α that are actually achieved by the two-sample Kolmogorov-Smirnov test in terms of the two sample sizes. We conclude that the two-sample Kolmogorov Smirnov test is a better test than the one-sample test when monitoring a random variable for constant distribution and discuss the use of this test in a quality control context. (Received September 02, 2000)