1023-62-1326 **Maria E. Calzada*** (calzada@loyno.edu), 6363 St. Charles Avenue, Mathematics and Computer Science Department, Loyola University New Orleans, New Orleans, LA 70118, and **Stephen M, Scariano**, 6363 St. Charles Avenue, Mathematics and Computer Science Department, Loyola University New Orleans, New Orleans, LA 70118. *Comparing Control Charts With Estimated Parameters.*

We develop integral equations evaluating the average run length, the second moment of the run length, and the standard deviation of the run length for the joint $\overline{X} - S^2$ Shewhart chart, the joint EWMA$-S^2$ chart, and the joint CUSUM$-S^2$ chart both with known parameters and when the process mean and standard devation are estimated from m retrospective samples of size n. We discuss and compare the performance of these three charts for several different design parameters, number of retrospective samples m, and sample sizes n. While all three charts suffer from an increase in false alarm rate, we find that the $\overline{X} - S^2$ Shewhart chart generally outperforms the other two. (Received September 25, 2006)