Dear PQ Systems Software Owner:

PQ Systems, Inc. is dedicated to providing high-quality products and services to its customers. This letter is to assure you that your software package has been rigorously tested against well-known documented sources to insure accuracy of statistical analysis. They can be used as baseline data and results to compare with *GAGEpack*[®] Release 12.

One source used to test PQ Systems software is the *Automotive Industry Action Group, Measurement Systems Analysis (MSA)* reference manual, Fourth Edition. This manual was developed to standardize reference manuals, reporting formats, and technical nomenclature to be used by Chrysler, Ford, and General Motors. Many of the R&R, Uncertainty, and Linearity studies you will see in *GAGEpack* as sample studies are derived from data in this manual.

If you create a study from scratch using data from this manual, you should receive the same results in *GAGEpack*[®] Release 12 as those stated in the manual. Also, if you take raw data from *Evaluating the Measurement Process (EMP),* Second Edition, by Donald J. Wheeler and Richard W. Lyday and perform the same calculations in *GAGEpack*, you should receive the same results. Minimal differences due to rounding may ensue, since *GAGEpack* carries calculations out to 7 significant figures before rounding, while the references used are less precise. The PQ Systems software results are therefore, more accurate. *SQCpack*[®] Release 6.5 was used to verify the calculations of the stability study located in the *Sample Gages* database. There are some inconsistencies in these manuals. For example *MSA* uses out of control ranges in an R&R study and *EMP* excludes out of control ranges for Appraiser Bias but includes them for Discrimination Ratio and Interclass Correlation calculations. Another example is that d_2^*, a better index for small data sets, is used throughout *GAGEpack*.

In order to facilitate the comparison, we have provided the following Excel file(s):
- MSA4th.xls
- EMP2nd.xls
- SQCpackStability.xls

These spreadsheets contain the raw data, the reference and page number, the statistical results from the source data, and the statistical results from *GAGEpack*. If you have any questions about the data, references, or results, please contact technical support at: support@pqsystems.com.

At PQ Systems, we are committed to continuous improvement and strive to keep raising the bar in the field of quality improvement.

Sincerely,

Beth Savage

Beth A. Savage
President