

MW-166 PCE												
General Statistics												
Total Number of Observations					31	Number of Distinct Observations					27	
						Number of Missing Observations					0	
Minimum					0.48	Mean					6.094	
Maximum					70	Median					1.1	
SD					14.02	Std. Error of Mean					2.519	
Coefficient of Variation					2.301	Skewness					3.802	
Normal GOF Test												
Shapiro Wilk Test Statistic					0.449	Shapiro Wilk GOF Test						
1% Shapiro Wilk Critical Value					0.902	Data Not Normal at 1% Significance Level						
Lilliefors Test Statistic					0.344	Lilliefors GOF Test						
1% Lilliefors Critical Value					0.182	Data Not Normal at 1% Significance Level						
Data Not Normal at 1% Significance Level												
Assuming Normal Distribution												
95% Normal UCL						95% UCLs (Adjusted for Skewness)						
95% Student's-t UCL					10.37	95% Adjusted-CLT UCL (Chen-1995)					12.08	
						95% Modified-t UCL (Johnson-1978)					10.66	
Gamma GOF Test												
A-D Test Statistic					3.549	Anderson-Darling Gamma GOF Test						
5% A-D Critical Value					0.808	Data Not Gamma Distributed at 5% Significance Level						
K-S Test Statistic					0.285	Kolmogorov-Smirnov Gamma GOF Test						
5% K-S Critical Value					0.167	Data Not Gamma Distributed at 5% Significance Level						
Data Not Gamma Distributed at 5% Significance Level												
Gamma Statistics												
k hat (MLE)					0.517	k star (bias corrected MLE)					0.488	
Theta hat (MLE)					11.79	Theta star (bias corrected MLE)					12.48	
nu hat (MLE)					32.04	nu star (bias corrected)					30.27	

MLE Mean (bias corrected)			6.094	MLE Sd (bias corrected)			8.721	
				Approximate Chi Square Value (0.05)			18.71	
Adjusted Level of Significance			0.0413	Adjusted Chi Square Value			18.2	
Assuming Gamma Distribution								
95% Approximate Gamma UCL			9.862	95% Adjusted Gamma UCL			10.14	
Lognormal GOF Test								
Shapiro Wilk Test Statistic			0.823	Shapiro Wilk Lognormal GOF Test				
10% Shapiro Wilk Critical Value			0.94	Data Not Lognormal at 10% Significance Level				
Lilliefors Test Statistic			0.229	Lilliefors Lognormal GOF Test				
10% Lilliefors Critical Value			0.143	Data Not Lognormal at 10% Significance Level				
Data Not Lognormal at 10% Significance Level								
Lognormal Statistics								
Minimum of Logged Data			-0.734	Mean of logged Data			0.585	
Maximum of Logged Data			4.248	SD of logged Data			1.365	
Assuming Lognormal Distribution								
95% H-UCL			9.36	90% Chebyshev (MVUE) UCL			8.244	
95% Chebyshev (MVUE) UCL			10.02	97.5% Chebyshev (MVUE) UCL			12.49	
99% Chebyshev (MVUE) UCL			17.34					
Nonparametric Distribution Free UCL Statistics								
Data do not follow a Discernible Distribution								
Nonparametric Distribution Free UCLs								
95% CLT UCL			10.24	95% BCA Bootstrap UCL			12.18	
95% Standard Bootstrap UCL			10.22	95% Bootstrap-t UCL			20	
95% Hall's Bootstrap UCL			27.38	95% Percentile Bootstrap UCL			10.65	
90% Chebyshev(Mean, Sd) UCL			13.65	95% Chebyshev(Mean, Sd) UCL			17.07	
97.5% Chebyshev(Mean, Sd) UCL			21.82	99% Chebyshev(Mean, Sd) UCL			31.16	

Suggested UCL to Use												
95% Student's-t UCL				10.37								
The calculated UCLs are based on assumptions that the data were collected in a random and unbiased manner.												
Please verify the data were collected from random locations.												
If the data were collected using judgmental or other non-random methods,												
then contact a statistician to correctly calculate UCLs.												
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.												
Recommendations are based upon data size, data distribution, and skewness using results from simulation studies.												
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.												