

MW-14 PCE												
General Statistics												
Total Number of Observations				6	Number of Distinct Observations						6	
					Number of Missing Observations						0	
Minimum				1.8	Mean						3.367	
Maximum				5.6	Median						3.35	
SD				1.432	Std. Error of Mean						0.585	
Coefficient of Variation				0.425	Skewness						0.523	
Note: Sample size is small (e.g., <10), if data are collected using incremental sampling methodology (ISM) approach,												
refer also to ITRC Tech Reg Guide on ISM (ITRC 2020 and ITRC 2012) for additional guidance,												
but note that ITRC may recommend the t-UCL or the Chebyshev UCL for small sample sizes (n < 7).												
The Chebyshev UCL often results in gross overestimates of the mean.												
Refer to the ProUCL 5.2 Technical Guide for a discussion of the Chebyshev UCL.												
Normal GOF Test												
Shapiro Wilk Test Statistic				0.944	Shapiro Wilk GOF Test							
1% Shapiro Wilk Critical Value				0.713	Data appear Normal at 1% Significance Level							
Lilliefors Test Statistic				0.163	Lilliefors GOF Test							
1% Lilliefors Critical Value				0.373	Data appear Normal at 1% Significance Level							
Data appear Normal at 1% Significance Level												
Note GOF tests may be unreliable for small sample sizes												
Assuming Normal Distribution												
95% Normal UCL					95% UCLs (Adjusted for Skewness)							
95% Student's-t UCL				4.545	95% Adjusted-CLT UCL (Chen-1995)						4.462	
					95% Modified-t UCL (Johnson-1978)						4.565	
Gamma GOF Test												
A-D Test Statistic				0.247	Anderson-Darling Gamma GOF Test							
5% A-D Critical Value				0.698	Detected data appear Gamma Distributed at 5% Significance Level							
K-S Test Statistic				0.196	Kolmogorov-Smirnov Gamma GOF Test							

5% K-S Critical Value				0.333	Detected data appear Gamma Distributed at 5% Significance Level						
Detected data appear Gamma Distributed at 5% Significance Level											
Note GOF tests may be unreliable for small sample sizes											
Gamma Statistics											
k hat (MLE)				6.557	k star (bias corrected MLE)					3.39	
Theta hat (MLE)				0.513	Theta star (bias corrected MLE)					0.993	
nu hat (MLE)				78.68	nu star (bias corrected)					40.67	
MLE Mean (bias corrected)					3.367	MLE Sd (bias corrected)				1.829	
						Approximate Chi Square Value (0.05)				27.06	
Adjusted Level of Significance					0.0122	Adjusted Chi Square Value				23.13	
Assuming Gamma Distribution											
95% Approximate Gamma UCL					5.061	95% Adjusted Gamma UCL				5.921	
Lognormal GOF Test											
Shapiro Wilk Test Statistic					0.949	Shapiro Wilk Lognormal GOF Test					
10% Shapiro Wilk Critical Value					0.826	Data appear Lognormal at 10% Significance Level					
Lilliefors Test Statistic					0.177	Lilliefors Lognormal GOF Test					
10% Lilliefors Critical Value					0.298	Data appear Lognormal at 10% Significance Level					
Data appear Lognormal at 10% Significance Level											
Note GOF tests may be unreliable for small sample sizes											
Lognormal Statistics											
Minimum of Logged Data					0.588	Mean of logged Data				1.136	
Maximum of Logged Data					1.723	SD of logged Data				0.438	
Assuming Lognormal Distribution											
95% H-UCL					5.593	90% Chebyshev (MVUE) UCL				5.178	
95% Chebyshev (MVUE) UCL					5.997	97.5% Chebyshev (MVUE) UCL				7.134	
99% Chebyshev (MVUE) UCL					9.367						
Nonparametric Distribution Free UCL Statistics											

Data appear to follow a Discernible Distribution												
Nonparametric Distribution Free UCLs												
95% CLT UCL					4.328	95% BCA Bootstrap UCL					4.35	
95% Standard Bootstrap UCL					4.247	95% Bootstrap-t UCL					4.851	
95% Hall's Bootstrap UCL					4.403	95% Percentile Bootstrap UCL					4.25	
90% Chebyshev(Mean, Sd) UCL					5.121	95% Chebyshev(Mean, Sd) UCL					5.915	
97.5% Chebyshev(Mean, Sd) UCL					7.018	99% Chebyshev(Mean, Sd) UCL					9.184	
Suggested UCL to Use												
95% Student's-t UCL					4.545							
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.												