

MW-2 PCE												
General Statistics												
Total Number of Observations					6	Number of Distinct Observations					5	
						Number of Missing Observations					0	
Minimum					61	Mean					83.17	
Maximum					110	Median					75	
SD					21.76	Std. Error of Mean					8.882	
Coefficient of Variation					0.262	Skewness					0.624	
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					0.831	Shapiro Wilk GOF Test						
1% Shapiro Wilk Critical Value					0.713	Data appear Normal at 1% Significance Level						
Lilliefors Test Statistic					0.243	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					101.1	95% Adjusted-CLT UCL (Chen-1995)					100.2	
						95% Modified-t UCL (Johnson-1978)					101.4	
Gamma GOF Test												
A-D Test Statistic					0.529	Anderson-Darling Gamma GOF Test						
5% A-D Critical Value					0.697	Detected data appear Gamma Distributed at 5% Significance Level						
K-S Test Statistic					0.257	Kolmogorov-Smirnov Gamma GOF Test						

5% K-S Critical Value				0.332	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)				18.33	k star (bias corrected MLE)					9.275	
Theta hat (MLE)				4.538	Theta star (bias corrected MLE)					8.967	
nu hat (MLE)				219.9	nu star (bias corrected)					111.3	
MLE Mean (bias corrected)					83.17	MLE Sd (bias corrected)					27.31
					Approximate Chi Square Value (0.05)					87.94	
Adjusted Level of Significance					0.0122	Adjusted Chi Square Value					80.46
Assuming Gamma Distribution											
95% Approximate Gamma UCL					105.3	95% Adjusted Gamma UCL					115
Lognormal GOF Test											
Shapiro Wilk Test Statistic					0.861	Shapiro Wilk Lognormal GOF Test					
10% Shapiro Wilk Critical Value					0.826	Data appear Lognormal at 10% Significance Level					
Lilliefors Test Statistic					0.234	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					4.111	Mean of logged Data					4.393
Maximum of Logged Data					4.7	SD of logged Data					0.255
Assuming Lognormal Distribution											
95% H-UCL					106.8	90% Chebyshev (MVUE) UCL					109
95% Chebyshev (MVUE) UCL					120.8	97.5% Chebyshev (MVUE) UCL					137.1
99% Chebyshev (MVUE) UCL					169.1						
Nonparametric Distribution Free UCL Statistics											

Data appear to follow a Discernible Distribution												
Nonparametric Distribution Free UCLs												
95% CLT UCL					97.78	95% BCA Bootstrap UCL					97	
95% Standard Bootstrap UCL					96.62	95% Bootstrap-t UCL					118.5	
95% Hall's Bootstrap UCL					110.4	95% Percentile Bootstrap UCL					97	
90% Chebyshev(Mean, Sd) UCL					109.8	95% Chebyshev(Mean, Sd) UCL					121.9	
97.5% Chebyshev(Mean, Sd) UCL					138.6	99% Chebyshev(Mean, Sd) UCL					171.5	
Suggested UCL to Use												
95% Student's-t UCL					101.1							
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.												