

|                                                                                                                      |  |  |  |        |                                                                 |  |  |  |  |  |       |  |
|----------------------------------------------------------------------------------------------------------------------|--|--|--|--------|-----------------------------------------------------------------|--|--|--|--|--|-------|--|
| <b>MW-150 Cis-1,2 DCE</b>                                                                                            |  |  |  |        |                                                                 |  |  |  |  |  |       |  |
|                                                                                                                      |  |  |  |        |                                                                 |  |  |  |  |  |       |  |
| General Statistics                                                                                                   |  |  |  |        |                                                                 |  |  |  |  |  |       |  |
| Total Number of Observations                                                                                         |  |  |  | 6      | Number of Distinct Observations                                 |  |  |  |  |  | 4     |  |
|                                                                                                                      |  |  |  |        | Number of Missing Observations                                  |  |  |  |  |  | 0     |  |
| Minimum                                                                                                              |  |  |  | 37     | Mean                                                            |  |  |  |  |  | 39.5  |  |
| Maximum                                                                                                              |  |  |  | 44     | Median                                                          |  |  |  |  |  | 39.5  |  |
| SD                                                                                                                   |  |  |  | 2.588  | Std. Error of Mean                                              |  |  |  |  |  | 1.057 |  |
| Coefficient of Variation                                                                                             |  |  |  | 0.0655 | Skewness                                                        |  |  |  |  |  | 1.038 |  |
|                                                                                                                      |  |  |  |        |                                                                 |  |  |  |  |  |       |  |
| 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                                                                                          |  |  |  | 0.88   | Shapiro Wilk GOF Test                                           |  |  |  |  |  |       |  |
| 1% Shapiro Wilk Critical Value                                                                                       |  |  |  | 0.713  | Data appear Normal at 1% Significance Level                     |  |  |  |  |  |       |  |
| Lilliefors Test Statistic                                                                                            |  |  |  | 0.257  | 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                                                                                                  |  |  |  | 41.63  | 95% Adjusted-CLT UCL (Chen-1995)                                |  |  |  |  |  | 41.72 |  |
|                                                                                                                      |  |  |  |        | 95% Modified-t UCL (Johnson-1978)                               |  |  |  |  |  | 41.7  |  |
|                                                                                                                      |  |  |  |        |                                                                 |  |  |  |  |  |       |  |
| Gamma GOF Test                                                                                                       |  |  |  |        |                                                                 |  |  |  |  |  |       |  |
| A-D Test Statistic                                                                                                   |  |  |  | 0.405  | Anderson-Darling Gamma GOF Test                                 |  |  |  |  |  |       |  |
| 5% A-D Critical Value                                                                                                |  |  |  | 0.696  | Detected data appear Gamma Distributed at 5% Significance Level |  |  |  |  |  |       |  |
| K-S Test Statistic                                                                                                   |  |  |  | 0.241  | 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)                                                     |  |  |  | 287   | k star (bias corrected MLE)                                     |                                                 |  |  |  | 143.6  |  |
| Theta hat (MLE)                                                 |  |  |  | 0.138 | Theta star (bias corrected MLE)                                 |                                                 |  |  |  | 0.275  |  |
| nu hat (MLE)                                                    |  |  |  | 3444  | nu star (bias corrected)                                        |                                                 |  |  |  | 1724   |  |
| MLE Mean (bias corrected)                                       |  |  |  |       | 39.5                                                            | MLE Sd (bias corrected)                         |  |  |  | 3.296  |  |
|                                                                 |  |  |  |       |                                                                 | Approximate Chi Square Value (0.05)             |  |  |  | 1628   |  |
| Adjusted Level of Significance                                  |  |  |  |       | 0.0122                                                          | Adjusted Chi Square Value                       |  |  |  | 1594   |  |
|                                                                 |  |  |  |       |                                                                 |                                                 |  |  |  |        |  |
| Assuming Gamma Distribution                                     |  |  |  |       |                                                                 |                                                 |  |  |  |        |  |
| 95% Approximate Gamma UCL                                       |  |  |  |       | 41.82                                                           | 95% Adjusted Gamma UCL                          |  |  |  | 42.71  |  |
|                                                                 |  |  |  |       |                                                                 |                                                 |  |  |  |        |  |
| Lognormal GOF Test                                              |  |  |  |       |                                                                 |                                                 |  |  |  |        |  |
| Shapiro Wilk Test Statistic                                     |  |  |  |       | 0.889                                                           | Shapiro Wilk Lognormal GOF Test                 |  |  |  |        |  |
| 10% Shapiro Wilk Critical Value                                 |  |  |  |       | 0.826                                                           | Data appear Lognormal at 10% Significance Level |  |  |  |        |  |
| Lilliefors Test Statistic                                       |  |  |  |       | 0.245                                                           | 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                                          |  |  |  |       | 3.611                                                           | Mean of logged Data                             |  |  |  | 3.675  |  |
| Maximum of Logged Data                                          |  |  |  |       | 3.784                                                           | SD of logged Data                               |  |  |  | 0.0643 |  |
|                                                                 |  |  |  |       |                                                                 |                                                 |  |  |  |        |  |
| Assuming Lognormal Distribution                                 |  |  |  |       |                                                                 |                                                 |  |  |  |        |  |
| 95% H-UCL                                                       |  |  |  |       | N/A                                                             | 90% Chebyshev (MVUE) UCL                        |  |  |  | 42.61  |  |
| 95% Chebyshev (MVUE) UCL                                        |  |  |  |       | 44.02                                                           | 97.5% Chebyshev (MVUE) UCL                      |  |  |  | 45.97  |  |
| 99% Chebyshev (MVUE) UCL                                        |  |  |  |       | 49.81                                                           |                                                 |  |  |  |        |  |
|                                                                 |  |  |  |       |                                                                 |                                                 |  |  |  |        |  |
| Nonparametric Distribution Free UCL Statistics                  |  |  |  |       |                                                                 |                                                 |  |  |  |        |  |

|                                                                                                                                           |  |  |  |  |       |                              |  |  |  |  |       |  |
|-------------------------------------------------------------------------------------------------------------------------------------------|--|--|--|--|-------|------------------------------|--|--|--|--|-------|--|
| Data appear to follow a Discernible Distribution                                                                                          |  |  |  |  |       |                              |  |  |  |  |       |  |
|                                                                                                                                           |  |  |  |  |       |                              |  |  |  |  |       |  |
| Nonparametric Distribution Free UCLs                                                                                                      |  |  |  |  |       |                              |  |  |  |  |       |  |
| 95% CLT UCL                                                                                                                               |  |  |  |  | 41.24 | 95% BCA Bootstrap UCL        |  |  |  |  | N/A   |  |
| 95% Standard Bootstrap UCL                                                                                                                |  |  |  |  | N/A   | 95% Bootstrap-t UCL          |  |  |  |  | N/A   |  |
| 95% Hall's Bootstrap UCL                                                                                                                  |  |  |  |  | N/A   | 95% Percentile Bootstrap UCL |  |  |  |  | N/A   |  |
| 90% Chebyshev(Mean, Sd) UCL                                                                                                               |  |  |  |  | 42.67 | 95% Chebyshev(Mean, Sd) UCL  |  |  |  |  | 44.11 |  |
| 97.5% Chebyshev(Mean, Sd) UCL                                                                                                             |  |  |  |  | 46.1  | 99% Chebyshev(Mean, Sd) UCL  |  |  |  |  | 50.01 |  |
|                                                                                                                                           |  |  |  |  |       |                              |  |  |  |  |       |  |
| Suggested UCL to Use                                                                                                                      |  |  |  |  |       |                              |  |  |  |  |       |  |
| 95% Student's-t UCL                                                                                                                       |  |  |  |  | 41.63 |                              |  |  |  |  |       |  |
|                                                                                                                                           |  |  |  |  |       |                              |  |  |  |  |       |  |
| 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. |  |  |  |  |       |                              |  |  |  |  |       |  |