

US EPA ARCHIVE DOCUMENT

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - 07.xls		
Variable:	Trichloroethene		
Raw Statistics			
Number of Observations	9		
Number of Missing Data	0		
Number of Valid Observations	9		
Number of Distinct Observations	7		
Minimum	0.0065		
Maximum	0.035		
Mean	0.014944		
Standard Deviation	0.009238		
Variance	8.53E-05		
Coefficient of Variation	0.618155		
Skewness	1.47962		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.825368		
Shapiro-Wilk 5% Critical Value	0.829		
5% Normality Test Result	NOT NORMAL		Data not normal at 5% significance level
95% Student's-t UCL	0.020671		
Gamma Statistics			
k hat	3.524069		
k star (bias corrected)	2.423453		
Theta hat	0.004241		
Theta star	0.006167		
nu hat	63.43324		
nu star	43.62216		
5% Approximate Chi Square Value	29.47386		
Adjusted Level of Significance	0.02308		
Adjusted Chi Square Value	27.04313		
Anderson-Darling Test Statistic	0.468688		
Anderson-Darling 5% Critical Value	0.725836		
Anderson-Darling 5% Gamma Test Result	AD GAMMA		Data follow gamma distribution at 5% significance level.
Kolmogrov-Smirnov Test Statistic	0.254535		
Kolmogrov-Smirnov 5% Critical Value	0.280863		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA		Data follow gamma distribution at 5% significance level
5% Gamma Test Result	GAMMA		Data follow gamma distribution at 5% significance level
95% Approximate Gamma UCL	0.022118		
95% Adjusted Gamma UCL	0.024106		
Lognormal Statistics			
Minimum of log data	-5.035953		
Maximum of log data	-3.352407		
Mean of log data	-4.351955		
Standard Deviation of log data	0.566245		
Variance of log data	0.320633		
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.915734		
Shapiro-Wilk 5% Critical Value	0.829		
5% Lognormality Test Result	LOGNORMAL		Data are lognormal at 5% significance level
MLE Mean	0.015121		
MLE Standard Deviation	0.009297		
MLE Coefficient of Variation	0.614817		
MLE Skewness	2.076852		
MLE Median	0.012882		
MLE 80% Quantile	0.020786		
MLE 90% Quantile	0.026667		
MLE 95% Quantile	0.032697		
MLE 99% Quantile	0.048081		
MVU Estimate of Median	0.012654		
MVU Estimate of Mean	0.014825		
MVU Estimate of Standard Deviation	0.008566		
MVU Estimate of SE of Mean	0.002847		
95% H-UCL	0.024502		
95% Chebyshev (MVUE) UCL	0.027237		
97.5% Chebyshev (MVUE) UCL	0.032607		
99% Chebyshev (MVUE) UCL	0.043156		
Non-parametric Statistics			
95% CLT UCL	0.020009		
95% Adjusted-CLT UCL	0.021632		
95% Modified-t UCL	0.020924		
95% Jackknife UCL	0.020671		
95% Chebyshev (Mean, Sd) UCL	0.028367		
97.5% Chebyshev (Mean, Sd) UCL	0.034175		
99% Chebyshev (Mean, Sd) UCL	0.045583		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	0.019665		
95% Bootstrap-t UCL	0.025801		
95% Hall's Bootstrap UCL	0.05286		
95% Percentile Bootstrap UCL	0.020056		
95% BCA Bootstrap UCL	0.019222		
Recommendations			
Human Inspection Recommended?	NO		
Appropriate Distribution	GAMMA		
1st Recommended UCL	0.022118		95% Approximate Gamma UCL
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - 07.xls		
Variable:	Benzo(a)anthracene		
<b>Raw Statistics</b>			
Number of Observations	10		
Number of Missing Data	0		
Number of Valid Observations	10		
Number of Distinct Observations	10		
Minimum	0.415		
Maximum	9.6		
Mean	3.8405		
Standard Deviation	3.014814		
Variance	9.089103		
Coefficient of Variation	0.785006		
Skewness	0.7186		
Too Few Distinct Observations?	NO		
<b>Normal Statistics</b>			
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.920246		
Shapiro-Wilk 5% Critical Value	0.842		
5% Normality Test Result	NORMAL		Data are normal at 5% significance level
95% Student's-t UCL	5.588131		
<b>Gamma Statistics</b>			
k hat	1.477786		
k star (bias corrected)	1.101117		
Theta hat	2.598819		
Theta star	3.487821		
nu hat	29.55573		
nu star	22.02234		
5% Approximate Chi Square Value	12.35343		
Adjusted Level of Significance	0.0267		
Adjusted Chi Square Value	11.11402		
Anderson-Darling Test Statistic	0.231606		
Anderson-Darling 5% Critical Value	0.739632		
Anderson-Darling 5% Gamma Test Result	AD GAMMA		Data follow gamma distribution at 5% significance level.
Kolmogrov-Smirnov Test Statistic	0.144873		
Kolmogrov-Smirnov 5% Critical Value	0.271237		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA		Data follow gamma distribution at 5% significance level
5% Gamma Test Result	GAMMA		Data follow gamma distribution at 5% significance level
95% Approximate Gamma UCL	6.846423		
95% Adjusted Gamma UCL	7.609924		
<b>Lognormal Statistics</b>			
Minimum of log data	-0.879477		
Maximum of log data	2.261763		
Mean of log data	0.970575		
Standard Deviation of log data	1.016519		
Variance of log data	1.033311		
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.942608		
Shapiro-Wilk 5% Critical Value	0.842		
5% Lognormality Test Result	LOGNORMAL		Data are lognormal at 5% significance level
MLE Mean	4.424824		
MLE Standard Deviation	5.953579		
MLE Coefficient of Variation	1.345495		
MLE Skewness	6.472311		
MLE Median	2.639461		
MLE 80% Quantile	6.23098		
MLE 90% Quantile	9.745466		
MLE 95% Quantile	14.05178		
MLE 99% Quantile	28.07835		
MVU Estimate of Median	2.50594		
MVU Estimate of Mean	4.127139		
MVU Estimate of Standard Deviation	4.513589		
MVU Estimate of SE of Mean	1.392114		
95% H-UCL	12.80904		
95% Chebyshev (MVUE) UCL	10.19522		
97.5% Chebyshev (MVUE) UCL	12.82089		
99% Chebyshev (MVUE) UCL	17.9785		
<b>Non-parametric Statistics</b>			
95% CLT UCL	5.408651		
95% Adjusted-CLT UCL	5.640138		
95% Modified-t UCL	5.624238		
95% Jackknife UCL	5.588131		
95% Chebyshev (Mean, Sd) UCL	7.996134		
97.5% Chebyshev (Mean, Sd) UCL	9.79428		
99% Chebyshev (Mean, Sd) UCL	13.32639		
<b>Bootstrap Statistics</b>			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	5.315161		
95% Bootstrap-t UCL	6.110952		
95% Hall's Bootstrap UCL	5.646294		
95% Percentile Bootstrap UCL	5.439		
95% BCA Bootstrap UCL	5.043		
<b>Recommendations</b>			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	5.588131		95% Student's-t UCL
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - 07.xls		
Variable:	Benzo(a)pyrene		
Raw Statistics			
Number of Observations	10		
Number of Missing Data	0		
Number of Valid Observations	10		
Number of Distinct Observations	10		
Minimum	0.49		
Maximum	10		
Mean	3.768		
Standard Deviation	3.068911		
Variance	9.418218		
Coefficient of Variation	0.814467		
Skewness	0.862519		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.904948		
Shapiro-Wilk 5% Critical Value	0.842		
5% Normality Test Result	NORMAL		Data are normal at 5% significance level
95% Student's-t UCL	5.54699		
Gamma Statistics			
k hat	1.438398		
k star (bias corrected)	1.073545		
Theta hat	2.619581		
Theta star	3.509866		
nu hat	28.76796		
nu star	21.4709		
5% Approximate Chi Square Value	11.9409		
Adjusted Level of Significance	0.0267		
Adjusted Chi Square Value	10.72511		
Anderson-Darling Test Statistic	0.285313		
Anderson-Darling 5% Critical Value	0.740344		
Anderson-Darling 5% Gamma Test Result	AD GAMMA		Data follow gamma distribution at 5% significance level.
Kolmogrov-Smirnov Test Statistic	0.182508		
Kolmogrov-Smirnov 5% Critical Value	0.271444		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA		Data follow gamma distribution at 5% significance level
5% Gamma Test Result	GAMMA		Data follow gamma distribution at 5% significance level
95% Approximate Gamma UCL	6.775235		
95% Adjusted Gamma UCL	7.543264		
Lognormal Statistics			
Minimum of log data	-0.71335		
Maximum of log data	2.302585		
Mean of log data	0.940289		
Standard Deviation of log data	1.013103		
Variance of log data	1.026377		
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.935969		
Shapiro-Wilk 5% Critical Value	0.842		
5% Lognormality Test Result	LOGNORMAL		Data are lognormal at 5% significance level
MLE Mean	4.277966		
MLE Standard Deviation	5.725027		
MLE Coefficient of Variation	1.338259		
MLE Skewness	6.411515		
MLE Median	2.560721		
MLE 80% Quantile	6.027673		
MLE 90% Quantile	9.413325		
MLE 95% Quantile	13.55619		
MLE 99% Quantile	27.02511		
MVU Estimate of Median	2.432035		
MVU Estimate of Mean	3.992465		
MVU Estimate of Standard Deviation	4.349763		
MVU Estimate of SE of Mean	1.341963		
95% H-UCL	12.31046		
95% Chebyshev (MVUE) UCL	9.841947		
97.5% Chebyshev (MVUE) UCL	12.37302		
99% Chebyshev (MVUE) UCL	17.34483		
Non-parametric Statistics			
95% CLT UCL	5.364289		
95% Adjusted-CLT UCL	5.647125		
95% Modified-t UCL	5.591107		
95% Jackknife UCL	5.54699		
95% Chebyshev (Mean, Sd) UCL	7.998203		
97.5% Chebyshev (Mean, Sd) UCL	9.828615		
99% Chebyshev (Mean, Sd) UCL	13.4241		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	5.255347		
95% Bootstrap-t UCL	5.958948		
95% Hall's Bootstrap UCL	5.786261		
95% Percentile Bootstrap UCL	5.258		
95% BCA Bootstrap UCL	5.059		
Recommendations			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	5.54699	95% Student's-t UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - 07.xls		
Variable:	Benzo(b)fluoranthene		
<b>Raw Statistics</b>			
Number of Observations	10		
Number of Missing Data	0		
Number of Valid Observations	10		
Number of Distinct Observations	10		
Minimum	0.555		
Maximum	16		
Mean	6.5955		
Standard Deviation	5.075889		
Variance	25.76465		
Coefficient of Variation	0.769599		
Skewness	0.634385		
Too Few Distinct Observations?	NO		
<b>Normal Statistics</b>			
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.938628		
Shapiro-Wilk 5% Critical Value	0.842		
5% Normality Test Result	NORMAL		Data are normal at 5% significance level
95% Student's-t UCL	9.537897		
<b>Gamma Statistics</b>			
k hat	1.425861		
k star (bias corrected)	1.06477		
Theta hat	4.625625		
Theta star	6.194297		
nu hat	28.51723		
nu star	21.29539		
5% Approximate Chi Square Value	11.80997		
Adjusted Level of Significance	0.0267		
Adjusted Chi Square Value	10.60178		
Anderson-Darling Test Statistic	0.207508		
Anderson-Darling 5% Critical Value	0.74057		
Anderson-Darling 5% Gamma Test Result	AD GAMMA		Data follow gamma distribution at 5% significance level.
Kolmogrov-Smirnov Test Statistic	0.126027		
Kolmogrov-Smirnov 5% Critical Value	0.27151		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA		Data follow gamma distribution at 5% significance level
5% Gamma Test Result	GAMMA		Data follow gamma distribution at 5% significance level
95% Approximate Gamma UCL	11.89281		
95% Adjusted Gamma UCL	13.24814		
<b>Lognormal Statistics</b>			
Minimum of log data	-0.588787		
Maximum of log data	2.772589		
Mean of log data	1.496418		
Standard Deviation of log data	1.06699		
Variance of log data	1.138468		
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.93148		
Shapiro-Wilk 5% Critical Value	0.842		
5% Lognormality Test Result	LOGNORMAL		Data are lognormal at 5% significance level
MLE Mean	7.890444		
MLE Standard Deviation	11.49403		
MLE Coefficient of Variation	1.456702		
MLE Skewness	7.461201		
MLE Median	4.465667		
MLE 80% Quantile	11.00143		
MLE 90% Quantile	17.59299		
MLE 95% Quantile	25.83208		
MLE 99% Quantile	53.42279		
MVU Estimate of Median	4.217308		
MVU Estimate of Mean	7.294246		
MVU Estimate of Standard Deviation	8.427327		
MVU Estimate of SE of Mean	2.587844		
95% H-UCL	24.99533		
95% Chebyshev (MVUE) UCL	18.5744		
97.5% Chebyshev (MVUE) UCL	23.45533		
99% Chebyshev (MVUE) UCL	33.04297		
<b>Non-parametric Statistics</b>			
95% CLT UCL	9.235715		
95% Adjusted-CLT UCL	9.579784		
95% Modified-t UCL	9.591565		
95% Jackknife UCL	9.537897		
95% Chebyshev (Mean, Sd) UCL	13.59213		
97.5% Chebyshev (Mean, Sd) UCL	16.61958		
99% Chebyshev (Mean, Sd) UCL	22.56641		
<b>Bootstrap Statistics</b>			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	9.098238		
95% Bootstrap-t UCL	9.934421		
95% Hall's Bootstrap UCL	9.623129		
95% Percentile Bootstrap UCL	9.1055		
95% BCA Bootstrap UCL	8.5655		
<b>Recommendations</b>			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	9.537897	95% Student's-t UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - 07.xls		
Variable:	Benzo(k)fluoranthene		
Raw Statistics			
Number of Observations	10		
Number of Missing Data	0		
Number of Valid Observations	10		
Number of Distinct Observations	10		
Minimum	0.48		
Maximum	14		
Mean	4.988		
Standard Deviation	4.594066		
Variance	21.10544		
Coefficient of Variation	0.921024		
Skewness	1.239716		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.829195		
Shapiro-Wilk 5% Critical Value	0.842		
5% Normality Test Result	NOT NORMAL		Data not normal at 5% significance level
95% Student's-t UCL	7.651093		
Gamma Statistics			
k hat	1.339874		
k star (bias corrected)	1.004578		
Theta hat	3.722739		
Theta star	4.965268		
nu hat	26.79747		
nu star	20.09156		
5% Approximate Chi Square Value	10.91717		
Adjusted Level of Significance	0.0267		
Adjusted Chi Square Value	9.761811		
Anderson-Darling Test Statistic	0.329275		
Anderson-Darling 5% Critical Value	0.742125		
Anderson-Darling 5% Gamma Test Result	AD GAMMA		Data follow gamma distribution at 5% significance level.
Kolmogrov-Smirnov Test Statistic	0.187578		
Kolmogrov-Smirnov 5% Critical Value	0.271962		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA		Data follow gamma distribution at 5% significance level
5% Gamma Test Result	GAMMA		Data follow gamma distribution at 5% significance level
95% Approximate Gamma UCL	9.179734		
95% Adjusted Gamma UCL	10.2662		
Lognormal Statistics			
Minimum of log data	-0.733969		
Maximum of log data	2.639057		
Mean of log data	1.189568		
Standard Deviation of log data	1.025549		
Variance of log data	1.051751		
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.953		
Shapiro-Wilk 5% Critical Value	0.842		
5% Lognormality Test Result	LOGNORMAL		Data are lognormal at 5% significance level
MLE Mean	5.559137		
MLE Standard Deviation	7.587069		
MLE Coefficient of Variation	1.364793		
MLE Skewness	6.63652		
MLE Median	3.28566		
MLE 80% Quantile	7.815871		
MLE 90% Quantile	12.27295		
MLE 95% Quantile	17.75373		
MLE 99% Quantile	35.69443		
MVU Estimate of Median	3.116548		
MVU Estimate of Mean	5.177152		
MVU Estimate of Standard Deviation	5.71872		
MVU Estimate of SE of Mean	1.762483		
95% H-UCL	16.34918		
95% Chebyshev (MVUE) UCL	12.85964		
97.5% Chebyshev (MVUE) UCL	16.18385		
99% Chebyshev (MVUE) UCL	22.71363		
Non-parametric Statistics			
95% CLT UCL	7.377596		
95% Adjusted-CLT UCL	7.986151		
95% Modified-t UCL	7.746016		
95% Jackknife UCL	7.651093		
95% Chebyshev (Mean, Sd) UCL	11.32048		
97.5% Chebyshev (Mean, Sd) UCL	14.06055		
99% Chebyshev (Mean, Sd) UCL	19.44289		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	7.238885		
95% Bootstrap-t UCL	9.987966		
95% Hall's Bootstrap UCL	20.60845		
95% Percentile Bootstrap UCL	7.33		
95% BCA Bootstrap UCL	8.59		
Recommendations			
Human Inspection Recommended?	NO		
Appropriate Distribution	GAMMA		
1st Recommended UCL	9.179734		95% Approximate Gamma UCL
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - 07.xls		
Variable:	Dibenz(a,h)anthracene		
<b>Raw Statistics</b>			
Number of Observations	10		
Number of Missing Data	0		
Number of Valid Observations	10		
Number of Distinct Observations	10		
Minimum	0.082		
Maximum	2		
Mean	0.5522		
Standard Deviation	0.637541		
Variance	0.406458		
Coefficient of Variation	1.154547		
Skewness	1.772034		
Too Few Distinct Observations?	NO		
<b>Normal Statistics</b>			
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.728007		
Shapiro-Wilk 5% Critical Value	0.842		
5% Normality Test Result	NOT NORMAL		Data not normal at 5% significance level
95% Student's-t UCL	0.92177		
<b>Gamma Statistics</b>			
k hat	1.117128		
k star (bias corrected)	0.848656		
Theta hat	0.494303		
Theta star	0.650676		
nu hat	22.34256		
nu star	16.97313		
5% Approximate Chi Square Value	8.65171		
Adjusted Level of Significance	0.0267		
Adjusted Chi Square Value	7.640721		
Anderson-Darling Test Statistic	0.566352		
Anderson-Darling 5% Critical Value	0.746152		
Anderson-Darling 5% Gamma Test Result	AD GAMMA		Data follow gamma distribution at 5% significance level.
Kolmogrov-Smirnov Test Statistic	0.229526		
Kolmogrov-Smirnov 5% Critical Value	0.273134		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA		Data follow gamma distribution at 5% significance level
5% Gamma Test Result	GAMMA		Data follow gamma distribution at 5% significance level
95% Approximate Gamma UCL	1.083319		
95% Adjusted Gamma UCL	1.226659		
<b>Lognormal Statistics</b>			
Minimum of log data	-2.501036		
Maximum of log data	0.693147		
Mean of log data	-1.104081		
Standard Deviation of log data	1.037323		
Variance of log data	1.076038		
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.939416		
Shapiro-Wilk 5% Critical Value	0.842		
5% Lognormality Test Result	LOGNORMAL		Data are lognormal at 5% significance level
MLE Mean	0.567757		
MLE Standard Deviation	0.789373		
MLE Coefficient of Variation	1.390337		
MLE Skewness	6.85858		
MLE Median	0.331515		
MLE 80% Quantile	0.796488		
MLE 90% Quantile	1.257189		
MLE 95% Quantile	1.826341		
MLE 99% Quantile	3.701475		
MVU Estimate of Median	0.314067		
MVU Estimate of Mean	0.527664		
MVU Estimate of Standard Deviation	0.590434		
MVU Estimate of SE of Mean	0.181787		
95% H-UCL	1.704878		
95% Chebyshev (MVUE) UCL	1.320053		
97.5% Chebyshev (MVUE) UCL	1.662921		
99% Chebyshev (MVUE) UCL	2.336418		
<b>Non-parametric Statistics</b>			
95% CLT UCL	0.883816		
95% Adjusted-CLT UCL	1.004531		
95% Modified-t UCL	0.9406		
95% Jackknife UCL	0.92177		
95% Chebyshev (Mean, Sd) UCL	1.430989		
97.5% Chebyshev (Mean, Sd) UCL	1.811242		
99% Chebyshev (Mean, Sd) UCL	2.558176		
<b>Bootstrap Statistics</b>			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	0.870166		
95% Bootstrap-t UCL	1.774921		
95% Hall's Bootstrap UCL	2.906168		
95% Percentile Bootstrap UCL	0.8812		
95% BCA Bootstrap UCL	0.847		
<b>Recommendations</b>			
Human Inspection Recommended?	NO		
Appropriate Distribution	GAMMA		
1st Recommended UCL	1.083319		95% Approximate Gamma UCL
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - 07.xls		
Variable:	Indeno(1,2,3-cd)pyrene		
<b>Raw Statistics</b>			
Number of Observations	10		
Number of Missing Data	0		
Number of Valid Observations	10		
Number of Distinct Observations	10		
Minimum	0.22		
Maximum	6.9		
Mean	1.8665		
Standard Deviation	2.177573		
Variance	4.741823		
Coefficient of Variation	1.166661		
Skewness	1.672949		
Too Few Distinct Observations?	NO		
<b>Normal Statistics</b>			
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.777628		
Shapiro-Wilk 5% Critical Value	0.842		
5% Normality Test Result	NOT NORMAL		Data not normal at 5% significance level
95% Student's-t UCL	3.128798		
<b>Gamma Statistics</b>			
k hat	0.968957		
k star (bias corrected)	0.744937		
Theta hat	1.926298		
Theta star	2.505582		
nu hat	19.37914		
nu star	14.89873		
5% Approximate Chi Square Value	7.189977		
Adjusted Level of Significance	0.0267		
Adjusted Chi Square Value	6.282077		
Anderson-Darling Test Statistic	0.406282		
Anderson-Darling 5% Critical Value	0.74935		
Anderson-Darling 5% Gamma Test Result	AD GAMMA		Data follow gamma distribution at 5% significance level.
Kolmogrov-Smirnov Test Statistic	0.211434		
Kolmogrov-Smirnov 5% Critical Value	0.274027		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA		Data follow gamma distribution at 5% significance level
5% Gamma Test Result	GAMMA		Data follow gamma distribution at 5% significance level
95% Approximate Gamma UCL	3.867674		
95% Adjusted Gamma UCL	4.426639		
<b>Lognormal Statistics</b>			
Minimum of log data	-1.514128		
Maximum of log data	1.931521		
Mean of log data	0.026129		
Standard Deviation of log data	1.164176		
Variance of log data	1.355305		
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.952138		
Shapiro-Wilk 5% Critical Value	0.842		
5% Lognormality Test Result	LOGNORMAL		Data are lognormal at 5% significance level
MLE Mean	2.021382		
MLE Standard Deviation	3.429175		
MLE Coefficient of Variation	1.69645		
MLE Skewness	9.971641		
MLE Median	1.026473		
MLE 80% Quantile	2.74521		
MLE 90% Quantile	4.581813		
MLE 95% Quantile	6.967093		
MLE 99% Quantile	15.39437		
MVU Estimate of Median	0.958813		
MVU Estimate of Mean	1.832832		
MVU Estimate of Standard Deviation	2.340187		
MVU Estimate of SE of Mean	0.71169		
95% H-UCL	7.709303		
95% Chebyshev (MVUE) UCL	4.935016		
97.5% Chebyshev (MVUE) UCL	6.277333		
99% Chebyshev (MVUE) UCL	8.914055		
<b>Non-parametric Statistics</b>			
95% CLT UCL	2.999161		
95% Adjusted-CLT UCL	3.388417		
95% Modified-t UCL	3.189514		
95% Jackknife UCL	3.128798		
95% Chebyshev (Mean, Sd) UCL	4.868077		
97.5% Chebyshev (Mean, Sd) UCL	6.166861		
99% Chebyshev (Mean, Sd) UCL	8.718072		
<b>Bootstrap Statistics</b>			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	2.947661		
95% Bootstrap-t UCL	4.182932		
95% Hall's Bootstrap UCL	7.393811		
95% Percentile Bootstrap UCL	3.0255		
95% BCA Bootstrap UCL	2.82		
<b>Recommendations</b>			
Human Inspection Recommended?	NO		
Appropriate Distribution	GAMMA		
1st Recommended UCL	3.867674		95% Approximate Gamma UCL
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - 07.xls		
Variable:	Phenanthrene		
<b>Raw Statistics</b>			
Number of Observations	10		
Number of Missing Data	0		
Number of Valid Observations	10		
Number of Distinct Observations	10		
Minimum	0.4		
Maximum	12		
Mean	3.72		
Standard Deviation	3.488648		
Variance	12.17067		
Coefficient of Variation	0.937809		
Skewness	1.630821		
Too Few Distinct Observations?	NO		
<b>Normal Statistics</b>			
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.840763		
Shapiro-Wilk 5% Critical Value	0.842		
5% Normality Test Result	NOT NORMAL		Data not normal at 5% significance level
95% Student's-t UCL	5.742304		
<b>Gamma Statistics</b>			
k hat	1.347827		
k star (bias corrected)	1.010145		
Theta hat	2.759999		
Theta star	3.682638		
nu hat	26.95653		
nu star	20.20291		
5% Approximate Chi Square Value	10.99936		
Adjusted Level of Significance	0.0267		
Adjusted Chi Square Value	9.839047		
Anderson-Darling Test Statistic	0.163033		
Anderson-Darling 5% Critical Value	0.741981		
Anderson-Darling 5% Gamma Test Result	AD GAMMA		Data follow gamma distribution at 5% significance level.
Kolmogrov-Smirnov Test Statistic	0.123613		
Kolmogrov-Smirnov 5% Critical Value	0.27192		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA		Data follow gamma distribution at 5% significance level
5% Gamma Test Result	GAMMA		Data follow gamma distribution at 5% significance level
95% Approximate Gamma UCL	6.832657		
95% Adjusted Gamma UCL	7.638424		
<b>Lognormal Statistics</b>			
Minimum of log data	-0.916291		
Maximum of log data	2.484907		
Mean of log data	0.898959		
Standard Deviation of log data	1.022061		
Variance of log data	1.044609		
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.984078		
Shapiro-Wilk 5% Critical Value	0.842		
5% Lognormality Test Result	LOGNORMAL		Data are lognormal at 5% significance level
MLE Mean	4.142349		
MLE Standard Deviation	5.622444		
MLE Coefficient of Variation	1.357308		
MLE Skewness	6.572475		
MLE Median	2.457043		
MLE 80% Quantile	5.82757		
MLE 90% Quantile	9.13677		
MLE 95% Quantile	13.20042		
MLE 99% Quantile	26.47689		
MVU Estimate of Median	2.33142		
MVU Estimate of Mean	3.860024		
MVU Estimate of Standard Deviation	4.247439		
MVU Estimate of SE of Mean	1.309424		
95% H-UCL	12.10808		
95% Chebyshev (MVUE) UCL	9.567668		
97.5% Chebyshev (MVUE) UCL	12.03737		
99% Chebyshev (MVUE) UCL	16.88862		
<b>Non-parametric Statistics</b>			
95% CLT UCL	5.534615		
95% Adjusted-CLT UCL	6.142531		
95% Modified-t UCL	5.837126		
95% Jackknife UCL	5.742304		
95% Chebyshev (Mean, Sd) UCL	8.52877		
97.5% Chebyshev (Mean, Sd) UCL	10.60953		
99% Chebyshev (Mean, Sd) UCL	14.69678		
<b>Bootstrap Statistics</b>			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	5.459205		
95% Bootstrap-t UCL	7.126007		
95% Hall's Bootstrap UCL	12.75188		
95% Percentile Bootstrap UCL	5.62		
95% BCA Bootstrap UCL	5.18		
<b>Recommendations</b>			
Human Inspection Recommended?	NO		
Appropriate Distribution	GAMMA		
1st Recommended UCL	6.832657		95% Approximate Gamma UCL
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - 07.xls		
Variable:	Aroclor 1260		
Raw Statistics			
Number of Observations	9		
Number of Missing Data	0		
Number of Valid Observations	9		
Number of Distinct Observations	9		
Minimum	0.021		
Maximum	0.105		
Mean	0.050722		
Standard Deviation	0.025187		
Variance	0.000634		
Coefficient of Variation	0.496566		
Skewness	1.328185		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.861764		
Shapiro-Wilk 5% Critical Value	0.829		
5% Normality Test Result	NORMAL		Data are normal at 5% significance level
95% Student's-t UCL	0.066334		
Gamma Statistics			
k hat	5.093569		
k star (bias corrected)	3.469787		
Theta hat	0.009958		
Theta star	0.014618		
nu hat	91.68424		
nu star	62.45616		
5% Approximate Chi Square Value	45.27449		
Adjusted Level of Significance	0.02308		
Adjusted Chi Square Value	42.20613		
Anderson-Darling Test Statistic	0.453138		
Anderson-Darling 5% Critical Value	0.722741		
Anderson-Darling 5% Gamma Test Result	AD GAMMA		Data follow gamma distribution at 5% significance level.
Kolmogrov-Smirnov Test Statistic	0.231521		
Kolmogrov-Smirnov 5% Critical Value	0.27983		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA		Data follow gamma distribution at 5% significance level
5% Gamma Test Result	GAMMA		Data follow gamma distribution at 5% significance level
95% Approximate Gamma UCL	0.069971		
95% Adjusted Gamma UCL	0.075058		
Lognormal Statistics			
Minimum of log data	-3.863233		
Maximum of log data	-2.253795		
Mean of log data	-3.082754		
Standard Deviation of log data	0.476586		
Variance of log data	0.227135		
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.937756		
Shapiro-Wilk 5% Critical Value	0.829		
5% Lognormality Test Result	LOGNORMAL		Data are lognormal at 5% significance level
MLE Mean	0.051345		
MLE Standard Deviation	0.025928		
MLE Coefficient of Variation	0.504974		
MLE Skewness	1.64369		
MLE Median	0.045833		
MLE 80% Quantile	0.068561		
MLE 90% Quantile	0.084556		
MLE 95% Quantile	0.100382		
MLE 99% Quantile	0.13887		
MVU Estimate of Median	0.045257		
MVU Estimate of Mean	0.050651		
MVU Estimate of Standard Deviation	0.024493		
MVU Estimate of SE of Mean	0.008152		
95% H-UCL	0.075205		
95% Chebyshev (MVUE) UCL	0.086186		
97.5% Chebyshev (MVUE) UCL	0.101563		
99% Chebyshev (MVUE) UCL	0.131766		
Non-parametric Statistics			
95% CLT UCL	0.064532		
95% Adjusted-CLT UCL	0.068503		
95% Modified-t UCL	0.066954		
95% Jackknife UCL	0.066334		
95% Chebyshev (Mean, Sd) UCL	0.087318		
97.5% Chebyshev (Mean, Sd) UCL	0.103153		
99% Chebyshev (Mean, Sd) UCL	0.134258		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	0.063778		
95% Bootstrap-t UCL	0.080043		
95% Hall's Bootstrap UCL	0.165262		
95% Percentile Bootstrap UCL	0.064333		
95% BCA Bootstrap UCL	0.072167		
Recommendations			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	0.066334	95% Student's-t UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - 07.xls		
Variable:	Antimony		
Raw Statistics			
Number of Observations	10		
Number of Missing Data	0		
Number of Valid Observations	10		
Number of Distinct Observations	9		
Minimum	0.72		
Maximum	3.1		
Mean	1.8655		
Standard Deviation	0.79664		
Variance	0.634636		
Coefficient of Variation	0.427039		
Skewness	0.06261		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.964185		
Shapiro-Wilk 5% Critical Value	0.842		
5% Normality Test Result	NORMAL	Data are normal at 5% significance level	
95% Student's-t UCL	2.327297		
Gamma Statistics			
k hat	5.374324		
k star (bias corrected)	3.828693		
Theta hat	0.347113		
Theta star	0.487242		
nu hat	107.4865		
nu star	76.57387		
5% Approximate Chi Square Value	57.41341		
Adjusted Level of Significance	0.0267		
Adjusted Chi Square Value	54.53864		
Anderson-Darling Test Statistic	0.243907		
Anderson-Darling 5% Critical Value	0.729121		
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.	
Kolmogrov-Smirnov Test Statistic	0.174079		
Kolmogrov-Smirnov 5% Critical Value	0.26737		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level	
95% Approximate Gamma UCL	2.488069		
95% Adjusted Gamma UCL	2.619217		
Lognormal Statistics			
Minimum of log data	-0.328504		
Maximum of log data	1.131402		
Mean of log data	0.527619		
Standard Deviation of log data	0.482976		
Variance of log data	0.233266		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.944267		
Shapiro-Wilk 5% Critical Value	0.842		
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level	
MLE Mean	1.904561		
MLE Standard Deviation	0.976201		
MLE Coefficient of Variation	0.512559		
MLE Skewness	1.672337		
MLE Median	1.694892		
MLE 80% Quantile	2.549083		
MLE 90% Quantile	3.152649		
MLE 95% Quantile	3.751345		
MLE 99% Quantile	5.2123		
MVU Estimate of Median	1.675218		
MVU Estimate of Mean	1.880632		
MVU Estimate of Standard Deviation	0.925167		
MVU Estimate of SE of Mean	0.292072		
95% H-UCL	2.712438		
95% Chebyshev (MVUE) UCL	3.153746		
97.5% Chebyshev (MVUE) UCL	3.704623		
99% Chebyshev (MVUE) UCL	4.786715		
Non-parametric Statistics			
95% CLT UCL	2.279871		
95% Adjusted-CLT UCL	2.285201		
95% Modified-t UCL	2.328129		
95% Jackknife UCL	2.327297		
95% Chebyshev (Mean, Sd) UCL	2.963593		
97.5% Chebyshev (Mean, Sd) UCL	3.438739		
99% Chebyshev (Mean, Sd) UCL	4.37207		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	2.27385		
95% Bootstrap-t UCL	2.33202		
95% Hall's Bootstrap UCL	2.266379		
95% Percentile Bootstrap UCL	2.27		
95% BCA Bootstrap UCL	2.18		
Recommendations			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	2.327297	95% Student's-t UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - 07.xls		
Variable:	Arsenic		
<b>Raw Statistics</b>			
Number of Observations	10		
Number of Missing Data	0		
Number of Valid Observations	10		
Number of Distinct Observations	10		
Minimum	10.3		
Maximum	129		
Mean	57.015		
Standard Deviation	39.53137		
Variance	1562.729		
Coefficient of Variation	0.69335		
Skewness	0.578315		
Too Few Distinct Observations?	NO		
<b>Normal Statistics</b>			
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.92503		
Shapiro-Wilk 5% Critical Value	0.842		
5% Normality Test Result	NORMAL		Data are normal at 5% significance level
95% Student's-t UCL	79.93059		
<b>Gamma Statistics</b>			
k hat	2.043677		
k star (bias corrected)	1.49724		
Theta hat	27.89825		
Theta star	38.08006		
nu hat	40.87354		
nu star	29.94481		
5% Approximate Chi Square Value	18.44742		
Adjusted Level of Significance	0.0267		
Adjusted Chi Square Value	16.89556		
Anderson-Darling Test Statistic	0.280279		
Anderson-Darling 5% Critical Value	0.735431		
Anderson-Darling 5% Gamma Test Result	AD GAMMA		Data follow gamma distribution at 5% significance level.
Kolmogrov-Smirnov Test Statistic	0.185567		
Kolmogrov-Smirnov 5% Critical Value	0.269751		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA		Data follow gamma distribution at 5% significance level
5% Gamma Test Result	GAMMA		Data follow gamma distribution at 5% significance level
95% Approximate Gamma UCL	92.54969		
95% Adjusted Gamma UCL	101.0504		
<b>Lognormal Statistics</b>			
Minimum of log data	2.332144		
Maximum of log data	4.859812		
Mean of log data	3.779138		
Standard Deviation of log data	0.81789		
Variance of log data	0.668945		
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.950254		
Shapiro-Wilk 5% Critical Value	0.842		
5% Lognormality Test Result	LOGNORMAL		Data are lognormal at 5% significance level
MLE Mean	61.16716		
MLE Standard Deviation	59.68661		
MLE Coefficient of Variation	0.975795		
MLE Skewness	3.856513		
MLE Median	43.77829		
MLE 80% Quantile	87.37904		
MLE 90% Quantile	125.2269		
MLE 95% Quantile	168.1015		
MLE 99% Quantile	293.4041		
MVU Estimate of Median	42.33391		
MVU Estimate of Mean	58.69752		
MVU Estimate of Standard Deviation	50.44906		
MVU Estimate of SE of Mean	15.76652		
95% H-UCL	129.2208		
95% Chebyshev (MVUE) UCL	127.4222		
97.5% Chebyshev (MVUE) UCL	157.1594		
99% Chebyshev (MVUE) UCL	215.5724		
<b>Non-parametric Statistics</b>			
95% CLT UCL	77.57718		
95% Adjusted-CLT UCL	80.01997		
95% Modified-t UCL	80.31162		
95% Jackknife UCL	79.93059		
95% Chebyshev (Mean, Sd) UCL	111.5052		
97.5% Chebyshev (Mean, Sd) UCL	135.0832		
99% Chebyshev (Mean, Sd) UCL	181.3975		
<b>Bootstrap Statistics</b>			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	76.41596		
95% Bootstrap-t UCL	83.70659		
95% Hall's Bootstrap UCL	78.22122		
95% Percentile Bootstrap UCL	77.235		
95% BCA Bootstrap UCL	72.95		
<b>Recommendations</b>			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	79.93059		95% Student's-t UCL
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - 07.xls				
Variable:	Barium				
<b>Raw Statistics</b>					
Number of Observations			10		
Number of Missing Data			0		
Number of Valid Observations			10		
Number of Distinct Observations			10		
Minimum			21.35		
Maximum			118		
Mean			63.645		
Standard Deviation			35.95323		
Variance			1292.635		
Coefficient of Variation			0.564903		
Skewness			0.215475		
Too Few Distinct Observations?			NO		
<b>Normal Statistics</b>					
Lilliefors Test Statistic			N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value			N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic			0.911185		
Shapiro-Wilk 5% Critical Value			0.842		
5% Normality Test Result			NORMAL		Data are normal at 5% significance level
95% Student's-t UCL			84.48641		
<b>Gamma Statistics</b>					
k hat			3.070423		
k star (bias corrected)			2.215963		
Theta hat			20.72842		
Theta star			28.72115		
nu hat			61.40846		
nu star			44.31925		
5% Approximate Chi Square Value			30.04804		
Adjusted Level of Significance			0.0267		
Adjusted Chi Square Value			28.01902		
Anderson-Darling Test Statistic			0.408142		
Anderson-Darling 5% Critical Value			0.731984		
Anderson-Darling 5% Gamma Test Result			AD GAMMA		Data follow gamma distribution at 5% significance level.
Kolmogrov-Smirnov Test Statistic			0.179617		
Kolmogrov-Smirnov 5% Critical Value			0.268406		
Kolmogrov-Smirnov 5% Gamma Test Result			KS GAMMA		Data follow gamma distribution at 5% significance level
5% Gamma Test Result			GAMMA		Data follow gamma distribution at 5% significance level
95% Approximate Gamma UCL			93.87296		
95% Adjusted Gamma UCL			100.6709		
<b>Lognormal Statistics</b>					
Minimum of log data			3.061052		
Maximum of log data			4.770685		
Mean of log data			3.981727		
Standard Deviation of log data			0.646626		
Variance of log data			0.418125		
Lilliefors Test Statistic			N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value			N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic			0.904501		
Shapiro-Wilk 5% Critical Value			0.842		
5% Lognormality Test Result			LOGNORMAL		Data are lognormal at 5% significance level
MLE Mean			66.07492		
MLE Standard Deviation			47.60652		
MLE Coefficient of Variation			0.720493		
MLE Skewness			2.535494		
MLE Median			53.60953		
MLE 80% Quantile			92.58485		
MLE 90% Quantile			123.0562		
MLE 95% Quantile			155.3105		
MLE 99% Quantile			241.2366		
MVU Estimate of Median			52.49829		
MVU Estimate of Mean			64.5076		
MVU Estimate of Standard Deviation			43.07274		
MVU Estimate of SE of Mean			13.55242		
95% H-UCL			111.8597		
95% Chebyshev (MVUE) UCL			123.5812		
97.5% Chebyshev (MVUE) UCL			149.1424		
99% Chebyshev (MVUE) UCL			199.3525		
<b>Non-parametric Statistics</b>					
95% CLT UCL			82.34601		
95% Adjusted-CLT UCL			83.17379		
95% Modified-t UCL			84.61553		
95% Jackknife UCL			84.48641		
95% Chebyshev (Mean, Sd) UCL			113.2031		
97.5% Chebyshev (Mean, Sd) UCL			134.6469		
99% Chebyshev (Mean, Sd) UCL			176.7692		
<b>Bootstrap Statistics</b>					
Number of Bootstrap Runs			2000		
95% Standard Bootstrap UCL			81.73928		
95% Bootstrap-t UCL			86.54571		
95% Hall's Bootstrap UCL			80.3345		
95% Percentile Bootstrap UCL			81.36		
95% BCA Bootstrap UCL			78.975		
<b>Recommendations</b>					
Human Inspection Recommended?			NO		
Appropriate Distribution			NORMAL		
1st Recommended UCL			84.48641		95% Student's-t UCL
2nd Recommended UCL					
3rd Recommended UCL					
Recommended UCL > Max Data Value			NO		
Recommendation Warning!			NONE		
Alternative UCL			NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - 07.xls		
Variable:	Cadmium		
<b>Raw Statistics</b>			
Number of Observations	10		
Number of Missing Data	0		
Number of Valid Observations	10		
Number of Distinct Observations	10		
Minimum	0.23		
Maximum	10.3		
Mean	3.2675		
Standard Deviation	3.172422		
Variance	10.06426		
Coefficient of Variation	0.970902		
Skewness	1.282948		
Too Few Distinct Observations?	NO		
<b>Normal Statistics</b>			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.8573		
Shapiro-Wilk 5% Critical Value	0.842		
5% Normality Test Result	NORMAL	Data are normal at 5% significance level	
95% Student's-t UCL	5.106493		
<b>Gamma Statistics</b>			
k hat	1.1022		
k star (bias corrected)	0.838207		
Theta hat	2.964525		
Theta star	3.898203		
nu hat	22.044		
nu star	16.76414		
5% Approximate Chi Square Value	8.502642		
Adjusted Level of Significance	0.0267		
Adjusted Chi Square Value	7.50176		
Anderson-Darling Test Statistic	0.278423		
Anderson-Darling 5% Critical Value	0.746422		
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.	
Kolmogrov-Smirnov Test Statistic	0.202474		
Kolmogrov-Smirnov 5% Critical Value	0.273212		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level	
95% Approximate Gamma UCL	6.442328		
95% Adjusted Gamma UCL	7.301861		
<b>Lognormal Statistics</b>			
Minimum of log data	-1.469676		
Maximum of log data	2.332144		
Mean of log data	0.666111		
Standard Deviation of log data	1.176268		
Variance of log data	1.383606		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.958379		
Shapiro-Wilk 5% Critical Value	0.842		
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level	
MLE Mean	3.888073		
MLE Standard Deviation	6.722274		
MLE Coefficient of Variation	1.728947		
MLE Skewness	10.35511		
MLE Median	1.946652		
MLE 80% Quantile	5.259611		
MLE 90% Quantile	8.825231		
MLE 95% Quantile	13.47817		
MLE 99% Quantile	30.02737		
MVU Estimate of Median	1.815733		
MVU Estimate of Mean	3.516183		
MVU Estimate of Standard Deviation	4.543539		
MVU Estimate of SE of Mean	1.37994		
95% H-UCL	15.19236		
95% Chebyshev (MVUE) UCL	9.531203		
97.5% Chebyshev (MVUE) UCL	12.13391		
99% Chebyshev (MVUE) UCL	17.24641		
<b>Non-parametric Statistics</b>			
95% CLT UCL	4.91763		
95% Adjusted-CLT UCL	5.352521		
95% Modified-t UCL	5.174328		
95% Jackknife UCL	5.106493		
95% Chebyshev (Mean, Sd) UCL	7.640382		
97.5% Chebyshev (Mean, Sd) UCL	9.532532		
99% Chebyshev (Mean, Sd) UCL	13.24929		
<b>Bootstrap Statistics</b>			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	4.82141		
95% Bootstrap-t UCL	6.086575		
95% Hall's Bootstrap UCL	5.625773		
95% Percentile Bootstrap UCL	4.8945		
95% BCA Bootstrap UCL	4.689		
<b>Recommendations</b>			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	5.106493	95% Student's-t UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - 07.xls		
Variable:	Chromium		
Raw Statistics			
Number of Observations	10		
Number of Missing Data	0		
Number of Valid Observations	10		
Number of Distinct Observations	10		
Minimum	31.9		
Maximum	442		
Mean	177.26		
Standard Deviation	122.402		
Variance	14982.26		
Coefficient of Variation	0.690523		
Skewness	1.048459		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.922595		
Shapiro-Wilk 5% Critical Value	0.842		
5% Normality Test Result	NORMAL	Data are normal at 5% significance level	
95% Student's-t UCL	248.2142		
Gamma Statistics			
k hat	2.212312		
k star (bias corrected)	1.615285		
Theta hat	80.12431		
Theta star	109.7391		
nu hat	44.24624		
nu star	32.3057		
5% Approximate Chi Square Value	20.31251		
Adjusted Level of Significance	0.0267		
Adjusted Chi Square Value	18.67558		
Anderson-Darling Test Statistic	0.184649		
Anderson-Darling 5% Critical Value	0.734858		
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.	
Kolmogrov-Smirnov Test Statistic	0.145053		
Kolmogrov-Smirnov 5% Critical Value	0.269521		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level	
95% Approximate Gamma UCL	281.9203		
95% Adjusted Gamma UCL	306.6308		
Lognormal Statistics			
Minimum of log data	3.462606		
Maximum of log data	6.09131		
Mean of log data	4.934903		
Standard Deviation of log data	0.782465		
Variance of log data	0.612252		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.967841		
Shapiro-Wilk 5% Critical Value	0.842		
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level	
MLE Mean	188.8643		
MLE Standard Deviation	173.5683		
MLE Coefficient of Variation	0.919011		
MLE Skewness	3.533212		
MLE Median	139.0596		
MLE 80% Quantile	269.37		
MLE 90% Quantile	380.0758		
MLE 95% Quantile	503.739		
MLE 99% Quantile	858.2687		
MVU Estimate of Median	134.8556		
MVU Estimate of Mean	181.9769		
MVU Estimate of Standard Deviation	149.0547		
MVU Estimate of SE of Mean	46.66318		
95% H-UCL	379.7265		
95% Chebyshev (MVUE) UCL	385.377		
97.5% Chebyshev (MVUE) UCL	473.3884		
99% Chebyshev (MVUE) UCL	646.2697		
Non-parametric Statistics			
95% CLT UCL	240.9272		
95% Adjusted-CLT UCL	254.6398		
95% Modified-t UCL	250.353		
95% Jackknife UCL	248.2142		
95% Chebyshev (Mean, Sd) UCL	345.9796		
97.5% Chebyshev (Mean, Sd) UCL	418.9847		
99% Chebyshev (Mean, Sd) UCL	562.389		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	237.5752		
95% Bootstrap-t UCL	268.6843		
95% Hall's Bootstrap UCL	283.5913		
95% Percentile Bootstrap UCL	239.06		
95% BCA Bootstrap UCL	227.05		
Recommendations			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	248.2142	95% Student's-t UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - 07.xls		
Variable:	Copper		
Raw Statistics			
Number of Observations	10		
Number of Missing Data	0		
Number of Valid Observations	10		
Number of Distinct Observations	10		
Minimum	23.4		
Maximum	380		
Mean	164.74		
Standard Deviation	119.8793		
Variance	14371.04		
Coefficient of Variation	0.727688		
Skewness	0.621117		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.930434		
Shapiro-Wilk 5% Critical Value	0.842		
5% Normality Test Result	NORMAL		Data are normal at 5% significance level
95% Student's-t UCL	234.2318		
Gamma Statistics			
k hat	1.810354		
k star (bias corrected)	1.333914		
Theta hat	90.99878		
Theta star	123.5012		
nu hat	36.20708		
nu star	26.67829		
5% Approximate Chi Square Value	15.90082		
Adjusted Level of Significance	0.0267		
Adjusted Chi Square Value	14.47224		
Anderson-Darling Test Statistic	0.18619		
Anderson-Darling 5% Critical Value	0.736964		
Anderson-Darling 5% Gamma Test Result	AD GAMMA		Data follow gamma distribution at 5% significance level.
Kolmogrov-Smirnov Test Statistic	0.124318		
Kolmogrov-Smirnov 5% Critical Value	0.270307		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA		Data follow gamma distribution at 5% significance level
5% Gamma Test Result	GAMMA		Data follow gamma distribution at 5% significance level
95% Approximate Gamma UCL	276.3996		
95% Adjusted Gamma UCL	303.6835		
Lognormal Statistics			
Minimum of log data	3.152736		
Maximum of log data	5.940171		
Mean of log data	4.80344		
Standard Deviation of log data	0.887404		
Variance of log data	0.787486		
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.959936		
Shapiro-Wilk 5% Critical Value	0.842		
5% Lognormality Test Result	LOGNORMAL		Data are lognormal at 5% significance level
MLE Mean	180.7624		
MLE Standard Deviation	197.839		
MLE Coefficient of Variation	1.09447		
MLE Skewness	4.594438		
MLE Median	121.9292		
MLE 80% Quantile	258.087		
MLE 90% Quantile	381.3642		
MLE 95% Quantile	524.9066		
MLE 99% Quantile	960.5851		
MVU Estimate of Median	117.2049		
MVU Estimate of Mean	171.9414		
MVU Estimate of Standard Deviation	161.6084		
MVU Estimate of SE of Mean	50.30942		
95% H-UCL	423.3578		
95% Chebyshev (MVUE) UCL	391.2351		
97.5% Chebyshev (MVUE) UCL	486.1236		
99% Chebyshev (MVUE) UCL	672.5138		
Non-parametric Statistics			
95% CLT UCL	227.095		
95% Adjusted-CLT UCL	235.0511		
95% Modified-t UCL	235.4727		
95% Jackknife UCL	234.2318		
95% Chebyshev (Mean, Sd) UCL	329.9822		
97.5% Chebyshev (Mean, Sd) UCL	401.4826		
99% Chebyshev (Mean, Sd) UCL	541.9313		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	225.5312		
95% Bootstrap-t UCL	246.1973		
95% Hall's Bootstrap UCL	229.9397		
95% Percentile Bootstrap UCL	226.11		
95% BCA Bootstrap UCL	213.47		
Recommendations			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	234.2318		95% Student's-t UCL
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - 07.xls		
Variable:	Lead		
<b>Raw Statistics</b>			
Number of Observations	10		
Number of Missing Data	0		
Number of Valid Observations	10		
Number of Distinct Observations	10		
Minimum	41.2		
Maximum	480		
Mean	250.59		
Standard Deviation	163.967		
Variance	26885.16		
Coefficient of Variation	0.654324		
Skewness	0.286651		
Too Few Distinct Observations?	NO		
<b>Normal Statistics</b>			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.912073		
Shapiro-Wilk 5% Critical Value	0.842		
5% Normality Test Result	NORMAL	Data are normal at 5% significance level	
95% Student's-t UCL	345.6386		
<b>Gamma Statistics</b>			
k hat	2.106734		
k star (bias corrected)	1.541381		
Theta hat	118.9471		
Theta star	162.575		
nu hat	42.13469		
nu star	30.82761		
5% Approximate Chi Square Value	19.14259		
Adjusted Level of Significance	0.0267		
Adjusted Chi Square Value	17.55855		
Anderson-Darling Test Statistic	0.284895		
Anderson-Darling 5% Critical Value	0.735217		
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.	
Kolmogrov-Smirnov Test Statistic	0.137354		
Kolmogrov-Smirnov 5% Critical Value	0.269665		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level	
95% Approximate Gamma UCL	403.5552		
95% Adjusted Gamma UCL	439.9619		
<b>Lognormal Statistics</b>			
Minimum of log data	3.718438		
Maximum of log data	6.173786		
Mean of log data	5.268094		
Standard Deviation of log data	0.822671		
Variance of log data	0.676787		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.929425		
Shapiro-Wilk 5% Critical Value	0.842		
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level	
MLE Mean	272.1865		
MLE Standard Deviation	267.7334		
MLE Coefficient of Variation	0.98364		
MLE Skewness	3.902636		
MLE Median	194.0457		
MLE 80% Quantile	388.8721		
MLE 90% Quantile	558.4839		
MLE 95% Quantile	750.9862		
MLE 99% Quantile	1315.045		
MVU Estimate of Median	187.5695		
MVU Estimate of Mean	261.048		
MVU Estimate of Standard Deviation	225.7951		
MVU Estimate of SE of Mean	70.54896		
95% H-UCL	578.96		
95% Chebyshev (MVUE) UCL	568.5638		
97.5% Chebyshev (MVUE) UCL	701.6262		
99% Chebyshev (MVUE) UCL	963.0013		
<b>Non-parametric Statistics</b>			
95% CLT UCL	335.8771		
95% Adjusted-CLT UCL	340.8993		
95% Modified-t UCL	346.4219		
95% Jackknife UCL	345.6386		
95% Chebyshev (Mean, Sd) UCL	476.6028		
97.5% Chebyshev (Mean, Sd) UCL	574.3988		
99% Chebyshev (Mean, Sd) UCL	766.5		
<b>Bootstrap Statistics</b>			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	332.5889		
95% Bootstrap-t UCL	358.1241		
95% Hall's Bootstrap UCL	326.2194		
95% Percentile Bootstrap UCL	332.49		
95% BCA Bootstrap UCL	314.6		
<b>Recommendations</b>			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	345.6386	95% Student's-t UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - 07.xls		
Variable:	Manganese		
<b>Raw Statistics</b>			
Number of Observations	10		
Number of Missing Data	0		
Number of Valid Observations	10		
Number of Distinct Observations	9		
Minimum	108.55		
Maximum	595		
Mean	315.055		
Standard Deviation	174.9884		
Variance	30620.95		
Coefficient of Variation	0.555422		
Skewness	0.266853		
Too Few Distinct Observations?	NO		
<b>Normal Statistics</b>			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.900131		
Shapiro-Wilk 5% Critical Value	0.842		
5% Normality Test Result	NORMAL	Data are normal at 5% significance level	
95% Student's-t UCL	416.4925		
<b>Gamma Statistics</b>			
k hat	3.282805		
k star (bias corrected)	2.36463		
Theta hat	95.97127		
Theta star	133.2365		
nu hat	65.65611		
nu star	47.29261		
5% Approximate Chi Square Value	32.50778		
Adjusted Level of Significance	0.0267		
Adjusted Chi Square Value	30.39013		
Anderson-Darling Test Statistic	0.502156		
Anderson-Darling 5% Critical Value	0.731391		
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.	
Kolmogrov-Smirnov Test Statistic	0.231452		
Kolmogrov-Smirnov 5% Critical Value	0.268272		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level	
95% Approximate Gamma UCL	458.3448		
95% Adjusted Gamma UCL	490.2833		
<b>Lognormal Statistics</b>			
Minimum of log data	4.687211		
Maximum of log data	6.388561		
Mean of log data	5.592775		
Standard Deviation of log data	0.617474		
Variance of log data	0.381274		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.904987		
Shapiro-Wilk 5% Critical Value	0.842		
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level	
MLE Mean	324.8656		
MLE Standard Deviation	221.3258		
MLE Coefficient of Variation	0.681284		
MLE Skewness	2.360069		
MLE Median	268.4795		
MLE 80% Quantile	452.3878		
MLE 90% Quantile	593.6133		
MLE 95% Quantile	741.3839		
MLE 99% Quantile	1128.922		
MVU Estimate of Median	263.4011		
MVU Estimate of Mean	317.9079		
MVU Estimate of Standard Deviation	202.1611		
MVU Estimate of SE of Mean	63.65833		
95% H-UCL	531.9049		
95% Chebyshev (MVUE) UCL	595.3882		
97.5% Chebyshev (MVUE) UCL	715.4541		
99% Chebyshev (MVUE) UCL	951.3003		
<b>Non-parametric Statistics</b>			
95% CLT UCL	406.075		
95% Adjusted-CLT UCL	411.0645		
95% Modified-t UCL	417.2708		
95% Jackknife UCL	416.4925		
95% Chebyshev (Mean, Sd) UCL	556.2599		
97.5% Chebyshev (Mean, Sd) UCL	660.6295		
99% Chebyshev (Mean, Sd) UCL	865.6433		
<b>Bootstrap Statistics</b>			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	401.9335		
95% Bootstrap-t UCL	421.4166		
95% Hall's Bootstrap UCL	395.2713		
95% Percentile Bootstrap UCL	398		
95% BCA Bootstrap UCL	390		
<b>Recommendations</b>			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	416.4925	95% Student's-t UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - 07.xls		
Variable:	Mercury		
Raw Statistics			
Number of Observations	10		
Number of Missing Data	0		
Number of Valid Observations	10		
Number of Distinct Observations	10		
Minimum	0.055		
Maximum	5.7		
Mean	1.385499		
Standard Deviation	1.619058		
Variance	2.621348		
Coefficient of Variation	1.168574		
Skewness	2.48358		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.693812		
Shapiro-Wilk 5% Critical Value	0.842		
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level	
95% Student's-t UCL	2.324036		
Gamma Statistics			
k hat	1.052432		
k star (bias corrected)	0.803369		
Theta hat	1.316474		
Theta star	1.724611		
nu hat	21.04864		
nu star	16.06738		
5% Approximate Chi Square Value	8.008471		
Adjusted Level of Significance	0.0267		
Adjusted Chi Square Value	7.041722		
Anderson-Darling Test Statistic	0.374256		
Anderson-Darling 5% Critical Value	0.747322		
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.	
Kolmogrov-Smirnov Test Statistic	0.196159		
Kolmogrov-Smirnov 5% Critical Value	0.273474		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level	
95% Approximate Gamma UCL	2.779724		
95% Adjusted Gamma UCL	3.161349		
Lognormal Statistics			
Minimum of log data	-2.900422		
Maximum of log data	1.740466		
Mean of log data	-0.219168		
Standard Deviation of log data	1.229661		
Variance of log data	1.512065		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.92553		
Shapiro-Wilk 5% Critical Value	0.842		
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level	
MLE Mean	1.710635		
MLE Standard Deviation	3.216763		
MLE Coefficient of Variation	1.880449		
MLE Skewness	12.29079		
MLE Median	0.803187		
MLE 80% Quantile	2.270262		
MLE 90% Quantile	3.899881		
MLE 95% Quantile	6.071611		
MLE 99% Quantile	14.02755		
MVU Estimate of Median	0.744309		
MVU Estimate of Mean	1.528335		
MVU Estimate of Standard Deviation	2.079607		
MVU Estimate of SE of Mean	0.627737		
95% H-UCL	7.462094		
95% Chebyshev (MVUE) UCL	4.264578		
97.5% Chebyshev (MVUE) UCL	5.448552		
99% Chebyshev (MVUE) UCL	7.77424		
Non-parametric Statistics			
95% CLT UCL	2.227649		
95% Adjusted-CLT UCL	2.657305		
95% Modified-t UCL	2.391054		
95% Jackknife UCL	2.324036		
95% Chebyshev (Mean, Sd) UCL	3.617216		
97.5% Chebyshev (Mean, Sd) UCL	4.582882		
99% Chebyshev (Mean, Sd) UCL	6.479745		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	2.181698		
95% Bootstrap-t UCL	3.854625		
95% Hall's Bootstrap UCL	5.752777		
95% Percentile Bootstrap UCL	2.296499		
95% BCA Bootstrap UCL	2.180998		
Recommendations			
Human Inspection Recommended?	NO		
Appropriate Distribution	GAMMA		
1st Recommended UCL	2.779724	95% Approximate Gamma UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - 07.xls					
Variable:	Nickel					
<b>Raw Statistics</b>						
Number of Observations			10			
Number of Missing Data			0			
Number of Valid Observations			10			
Number of Distinct Observations			10			
Minimum			8.2			
Maximum			37.5			
Mean			21.935			
Standard Deviation			9.540442			
Variance			91.02003			
Coefficient of Variation			0.434941			
Skewness			0.077313			
Too Few Distinct Observations?			NO			
<b>Normal Statistics</b>						
Lilliefors Test Statistic			N/R			Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value			N/R			Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic			0.958893			
Shapiro-Wilk 5% Critical Value			0.842			
5% Normality Test Result			NORMAL			Data are normal at 5% significance level
95% Student's-t UCL			27.46541			
<b>Gamma Statistics</b>						
k hat			5.186321			
k star (bias corrected)			3.697091			
Theta hat			4.229395			
Theta star			5.933042			
nu hat			103.7264			
nu star			73.94183			
5% Approximate Chi Square Value			55.1354			
Adjusted Level of Significance			0.0267			
Adjusted Chi Square Value			52.32199			
Anderson-Darling Test Statistic			0.314339			
Anderson-Darling 5% Critical Value			0.729286			
Anderson-Darling 5% Gamma Test Result			AD GAMMA			Data follow gamma distribution at 5% significance level.
Kolmogrov-Smirnov Test Statistic			0.169163			
Kolmogrov-Smirnov 5% Critical Value			0.2674			
Kolmogrov-Smirnov 5% Gamma Test Result			KS GAMMA			Data follow gamma distribution at 5% significance level
5% Gamma Test Result			GAMMA			Data follow gamma distribution at 5% significance level
95% Approximate Gamma UCL			29.41693			
95% Adjusted Gamma UCL			30.99871			
<b>Lognormal Statistics</b>						
Minimum of log data			2.104134			
Maximum of log data			3.624341			
Mean of log data			2.988589			
Standard Deviation of log data			0.491761			
Variance of log data			0.241829			
Lilliefors Test Statistic			N/R			Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value			N/R			Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic			0.938565			
Shapiro-Wilk 5% Critical Value			0.842			
5% Lognormality Test Result			LOGNORMAL			Data are lognormal at 5% significance level
MLE Mean			22.40992			
MLE Standard Deviation			11.7214			
MLE Coefficient of Variation			0.523045			
MLE Skewness			1.712228			
MLE Median			19.85765			
MLE 80% Quantile			30.08802			
MLE 90% Quantile			37.35632			
MLE 95% Quantile			44.59117			
MLE 99% Quantile			62.32889			
MVU Estimate of Median			19.61873			
MVU Estimate of Mean			22.11728			
MVU Estimate of Standard Deviation			11.0856			
MVU Estimate of SE of Mean			3.499269			
95% H-UCL			32.18562			
95% Chebyshev (MVUE) UCL			37.37024			
97.5% Chebyshev (MVUE) UCL			43.9702			
99% Chebyshev (MVUE) UCL			56.93456			
<b>Non-parametric Statistics</b>						
95% CLT UCL			26.89745			
95% Adjusted-CLT UCL			26.97626			
95% Modified-t UCL			27.47771			
95% Jackknife UCL			27.46541			
95% Chebyshev (Mean, Sd) UCL			35.08559			
97.5% Chebyshev (Mean, Sd) UCL			40.77586			
99% Chebyshev (Mean, Sd) UCL			51.9533			
<b>Bootstrap Statistics</b>						
Number of Bootstrap Runs			2000			
95% Standard Bootstrap UCL			26.68071			
95% Bootstrap-t UCL			27.4973			
95% Hall's Bootstrap UCL			26.90242			
95% Percentile Bootstrap UCL			26.64			
95% BCA Bootstrap UCL			25.79			
<b>Recommendations</b>						
Human Inspection Recommended?			NO			
Appropriate Distribution			NORMAL			
1st Recommended UCL			27.46541			95% Student's-t UCL
2nd Recommended UCL						
3rd Recommended UCL						
Recommended UCL > Max Data Value			NO			
Recommendation Warning!			NONE			
Alternative UCL			NONE			

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - 07.xls		
Variable:	Thallium		
<b>Raw Statistics</b>			
Number of Observations	10		
Number of Missing Data	0		
Number of Valid Observations	10		
Number of Distinct Observations	9		
Minimum	0.22		
Maximum	3.8		
Mean	1.5695		
Standard Deviation	1.102226		
Variance	1.214903		
Coefficient of Variation	0.702279		
Skewness	0.864365		
Too Few Distinct Observations?	NO		
<b>Normal Statistics</b>			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.937683		
Shapiro-Wilk 5% Critical Value	0.842		
5% Normality Test Result	NORMAL	Data are normal at 5% significance level	
95% Student's-t UCL	2.20844		
<b>Gamma Statistics</b>			
k hat	1.918839		
k star (bias corrected)	1.409854		
Theta hat	0.817942		
Theta star	1.113236		
nu hat	38.37678		
nu star	28.19708		
5% Approximate Chi Square Value	17.07963		
Adjusted Level of Significance	0.0267		
Adjusted Chi Square Value	15.59287		
Anderson-Darling Test Statistic	0.196392		
Anderson-Darling 5% Critical Value	0.736172		
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.	
Kolmogrov-Smirnov Test Statistic	0.171988		
Kolmogrov-Smirnov 5% Critical Value	0.270023		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level	
95% Approximate Gamma UCL	2.591117		
95% Adjusted Gamma UCL	2.838177		
<b>Lognormal Statistics</b>			
Minimum of log data	-1.514128		
Maximum of log data	1.335001		
Mean of log data	0.168101		
Standard Deviation of log data	0.87756		
Variance of log data	0.770111		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.94189		
Shapiro-Wilk 5% Critical Value	0.842		
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level	
MLE Mean	1.738733		
MLE Standard Deviation	1.872678		
MLE Coefficient of Variation	1.077036		
MLE Skewness	4.480476		
MLE Median	1.183056		
MLE 80% Quantile	2.483426		
MLE 90% Quantile	3.653791		
MLE 95% Quantile	5.011257		
MLE 99% Quantile	9.109383		
MVU Estimate of Median	1.138213		
MVU Estimate of Mean	1.656068		
MVU Estimate of Standard Deviation	1.537522		
MVU Estimate of SE of Mean	0.478924		
95% H-UCL	4.011197		
95% Chebyshev (MVUE) UCL	3.743648		
97.5% Chebyshev (MVUE) UCL	4.646946		
99% Chebyshev (MVUE) UCL	6.421299		
<b>Non-parametric Statistics</b>			
95% CLT UCL	2.142821		
95% Adjusted-CLT UCL	2.244621		
95% Modified-t UCL	2.224318		
95% Jackknife UCL	2.20844		
95% Chebyshev (Mean, Sd) UCL	3.088814		
97.5% Chebyshev (Mean, Sd) UCL	3.746222		
99% Chebyshev (Mean, Sd) UCL	5.037574		
<b>Bootstrap Statistics</b>			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	2.121894		
95% Bootstrap-t UCL	2.442514		
95% Hall's Bootstrap UCL	2.642687		
95% Percentile Bootstrap UCL	2.156		
95% BCA Bootstrap UCL	2.4415		
<b>Recommendations</b>			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	2.20844	95% Student's-t UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - 07.xls		
Variable:	Vanadium		
Raw Statistics			
Number of Observations	10		
Number of Missing Data	0		
Number of Valid Observations	10		
Number of Distinct Observations	10		
Minimum	17.2		
Maximum	79.2		
Mean	39.83		
Standard Deviation	20.80444		
Variance	432.8246		
Coefficient of Variation	0.522331		
Skewness	0.683902		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.915081		
Shapiro-Wilk 5% Critical Value	0.842		
5% Normality Test Result	NORMAL	Data are normal at 5% significance level	
95% Student's-t UCL	51.88994		
Gamma Statistics			
k hat	4.11971		
k star (bias corrected)	2.950464		
Theta hat	9.668156		
Theta star	13.49957		
nu hat	82.3942		
nu star	59.00928		
5% Approximate Chi Square Value	42.3441		
Adjusted Level of Significance	0.0267		
Adjusted Chi Square Value	39.90147		
Anderson-Darling Test Statistic	0.359028		
Anderson-Darling 5% Critical Value	0.729397		
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.	
Kolmogrov-Smirnov Test Statistic	0.220408		
Kolmogrov-Smirnov 5% Critical Value	0.267773		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level	
95% Approximate Gamma UCL	55.50571		
95% Adjusted Gamma UCL	58.90358		
Lognormal Statistics			
Minimum of log data	2.844909		
Maximum of log data	4.371976		
Mean of log data	3.558371		
Standard Deviation of log data	0.53562		
Variance of log data	0.286889		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.928808		
Shapiro-Wilk 5% Critical Value	0.842		
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level	
MLE Mean	40.52078		
MLE Standard Deviation	23.35754		
MLE Coefficient of Variation	0.576434		
MLE Skewness	1.920836		
MLE Median	35.10595		
MLE 80% Quantile	55.20036		
MLE 90% Quantile	69.8704		
MLE 95% Quantile	84.72962		
MLE 99% Quantile	122.0246		
MVU Estimate of Median	34.60532		
MVU Estimate of Mean	39.88476		
MVU Estimate of Standard Deviation	21.84804		
MVU Estimate of SE of Mean	6.891779		
95% H-UCL	60.7786		
95% Chebyshev (MVUE) UCL	69.92533		
97.5% Chebyshev (MVUE) UCL	82.92391		
99% Chebyshev (MVUE) UCL	108.4571		
Non-parametric Statistics			
95% CLT UCL	50.65139		
95% Adjusted-CLT UCL	52.1717		
95% Modified-t UCL	52.12708		
95% Jackknife UCL	51.88994		
95% Chebyshev (Mean, Sd) UCL	68.50694		
97.5% Chebyshev (Mean, Sd) UCL	80.91547		
99% Chebyshev (Mean, Sd) UCL	105.2896		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	50.19956		
95% Bootstrap-t UCL	55.15267		
95% Hall's Bootstrap UCL	51.81986		
95% Percentile Bootstrap UCL	50.82		
95% BCA Bootstrap UCL	48.02		
Recommendations			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	51.88994	95% Student's-t UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - 07.xls		
Variable:	Zinc		
Raw Statistics			
Number of Observations	10		
Number of Missing Data	0		
Number of Valid Observations	10		
Number of Distinct Observations	10		
Minimum	106		
Maximum	2490		
Mean	929.95		
Standard Deviation	707.4648		
Variance	500506.5		
Coefficient of Variation	0.760756		
Skewness	1.145408		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.898711		
Shapiro-Wilk 5% Critical Value	0.842		
5% Normality Test Result	NORMAL	Data are normal at 5% significance level	
95% Student's-t UCL	1340.054		
Gamma Statistics			
k hat	1.752409		
k star (bias corrected)	1.293353		
Theta hat	530.6694		
Theta star	719.0224		
nu hat	35.04819		
nu star	25.86707		
5% Approximate Chi Square Value	15.27522		
Adjusted Level of Significance	0.0267		
Adjusted Chi Square Value	13.87838		
Anderson-Darling Test Statistic	0.249734		
Anderson-Darling 5% Critical Value	0.737387		
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.	
Kolmogrov-Smirnov Test Statistic	0.170619		
Kolmogrov-Smirnov 5% Critical Value	0.270459		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level	
95% Approximate Gamma UCL	1574.778		
95% Adjusted Gamma UCL	1733.277		
Lognormal Statistics			
Minimum of log data	4.663439		
Maximum of log data	7.820038		
Mean of log data	6.523451		
Standard Deviation of log data	0.915521		
Variance of log data	0.838179		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.947004		
Shapiro-Wilk 5% Critical Value	0.842		
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level	
MLE Mean	1035.397		
MLE Standard Deviation	1186.04		
MLE Coefficient of Variation	1.145492		
MLE Skewness	4.939538		
MLE Median	680.9242		
MLE 80% Quantile	1475.964		
MLE 90% Quantile	2208.118		
MLE 95% Quantile	3070.155		
MLE 99% Quantile	5727.035		
MVU Estimate of Median	652.872		
MVU Estimate of Mean	981.0376		
MVU Estimate of Standard Deviation	954.4427		
MVU Estimate of SE of Mean	296.5903		
95% H-UCL	2533.85		
95% Chebyshev (MVUE) UCL	2273.845		
97.5% Chebyshev (MVUE) UCL	2833.244		
99% Chebyshev (MVUE) UCL	3932.074		
Non-parametric Statistics			
95% CLT UCL	1297.937		
95% Adjusted-CLT UCL	1384.522		
95% Modified-t UCL	1353.56		
95% Jackknife UCL	1340.054		
95% Chebyshev (Mean, Sd) UCL	1905.123		
97.5% Chebyshev (Mean, Sd) UCL	2327.081		
99% Chebyshev (Mean, Sd) UCL	3155.936		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	1273.842		
95% Bootstrap-t UCL	1481.505		
95% Hall's Bootstrap UCL	1533.868		
95% Percentile Bootstrap UCL	1281.35		
95% BCA Bootstrap UCL	1235.2		
Recommendations			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	1340.054	95% Student's-t UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - lp-c.xls		
Variable:	Antimony		
<b>Raw Statistics</b>			
Number of Observations	12		
Number of Missing Data	0		
Number of Valid Observations	12		
Number of Distinct Observations	6		
Minimum	0.85		
Maximum	5.1		
Mean	1.304167		
Standard Deviation	1.201979		
Variance	1.444754		
Coefficient of Variation	0.921645		
Skewness	3.398465		
Too Few Distinct Observations?	NO		
<b>Normal Statistics</b>			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.405157		
Shapiro-Wilk 5% Critical Value	0.859		
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level	
95% Student's-t UCL	1.927305		
<b>Gamma Statistics</b>			
k hat	3.013209		
k star (bias corrected)	2.315462		
Theta hat	0.432817		
Theta star	0.563242		
nu hat	72.31702		
nu star	55.5711		
5% Approximate Chi Square Value	39.43647		
Adjusted Level of Significance	0.02896		
Adjusted Chi Square Value	37.37012		
Anderson-Darling Test Statistic	2.871126		
Anderson-Darling 5% Critical Value	0.738968		
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level	
Kolmogrov-Smirnov Test Statistic	0.377257		
Kolmogrov-Smirnov 5% Critical Value	0.247397		
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level	
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level	
95% Approximate Gamma UCL	1.83774		
95% Adjusted Gamma UCL	1.939356		
<b>Lognormal Statistics</b>			
Minimum of log data	-0.162519		
Maximum of log data	1.629241		
Mean of log data	0.090546		
Standard Deviation of log data	0.499006		
Variance of log data	0.249007		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.51228		
Shapiro-Wilk 5% Critical Value	0.859		
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level	
MLE Mean	1.239924		
MLE Standard Deviation	0.659322		
MLE Coefficient of Variation	0.531744		
MLE Skewness	1.745583		
MLE Median	1.094772		
MLE 80% Quantile	1.66897		
MLE 90% Quantile	2.078756		
MLE 95% Quantile	2.487832		
MLE 99% Quantile	3.494657		
MVU Estimate of Median	1.083463		
MVU Estimate of Mean	1.225921		
MVU Estimate of Standard Deviation	0.627574		
MVU Estimate of SE of Mean	0.180764		
95% H-UCL	1.710854		
95% Chebyshev (MVUE) UCL	2.013854		
97.5% Chebyshev (MVUE) UCL	2.354793		
99% Chebyshev (MVUE) UCL	3.024503		
<b>Non-parametric Statistics</b>			
95% CLT UCL	1.8749		
95% Adjusted-CLT UCL	2.23863		
95% Modified-t UCL	1.98404		
95% Jackknife UCL	1.927305		
95% Chebyshev (Mean, Sd) UCL	2.816624		
97.5% Chebyshev (Mean, Sd) UCL	3.471065		
99% Chebyshev (Mean, Sd) UCL	4.756589		
<b>Bootstrap Statistics</b>			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	1.846796		
95% Bootstrap-t UCL	8.239648		
95% Hall's Bootstrap UCL	5.036858		
95% Percentile Bootstrap UCL	1.975		
95% BCA Bootstrap UCL	2.345833		
<b>Recommendations</b>			
Human Inspection Recommended?	YES	Users must select one of the recommended UCLS	
Appropriate Distribution	NON-PARAMETRIC		
1st Recommended UCL	1.927305	95% Student's-t UCL	
2nd Recommended UCL	1.98404	95% Modified-t UCL	
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - lp-c.xls		
Variable:	Arsenic		
Raw Statistics			
Number of Observations	12		
Number of Missing Data	0		
Number of Valid Observations	12		
Number of Distinct Observations	12		
Minimum	5.4		
Maximum	485		
Mean	71.44167		
Standard Deviation	132.4723		
Variance	17548.9		
Coefficient of Variation	1.854272		
Skewness	3.261938		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.492569		
Shapiro-Wilk 5% Critical Value	0.859		
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level	
95% Student's-t UCL	140.1189		
Gamma Statistics			
k hat	0.732078		
k star (bias corrected)	0.604614		
Theta hat	97.58757		
Theta star	118.1608		
nu hat	17.56986		
nu star	14.51073		
5% Approximate Chi Square Value	6.92132		
Adjusted Level of Significance	0.02896		
Adjusted Chi Square Value	6.138233		
Anderson-Darling Test Statistic	0.831189		
Anderson-Darling 5% Critical Value	0.766986		
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level	
Kolmogrov-Smirnov Test Statistic	0.223303		
Kolmogrov-Smirnov 5% Critical Value	0.255087		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	APPROX GAMMA	Data follow approximate gamma distribution at 5% significance level	
95% Approximate Gamma UCL	149.7793		
95% Adjusted Gamma UCL	168.8875		
Lognormal Statistics			
Minimum of log data	1.686399		
Maximum of log data	6.184149		
Mean of log data	3.448461		
Standard Deviation of log data	1.22571		
Variance of log data	1.502365		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.947333		
Shapiro-Wilk 5% Critical Value	0.859		
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level	
MLE Mean	66.66259		
MLE Standard Deviation	124.5771		
MLE Coefficient of Variation	1.86877		
MLE Skewness	12.13262		
MLE Median	31.45196		
MLE 80% Quantile	88.60483		
MLE 90% Quantile	151.942		
MLE 95% Quantile	236.2178		
MLE 99% Quantile	544.2796		
MVU Estimate of Median	29.53447		
MVU Estimate of Mean	60.60888		
MVU Estimate of Standard Deviation	85.0898		
MVU Estimate of SE of Mean	23.27472		
95% H-UCL	229.1443		
95% Chebyshev (MVUE) UCL	162.061		
97.5% Chebyshev (MVUE) UCL	205.9595		
99% Chebyshev (MVUE) UCL	292.1894		
Non-parametric Statistics			
95% CLT UCL	134.3433		
95% Adjusted-CLT UCL	172.8201		
95% Modified-t UCL	146.1205		
95% Jackknife UCL	140.1189		
95% Chebyshev (Mean, Sd) UCL	238.1323		
97.5% Chebyshev (Mean, Sd) UCL	310.2595		
99% Chebyshev (Mean, Sd) UCL	451.9393		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	130.3766		
95% Bootstrap-t UCL	369.2997		
95% Hall's Bootstrap UCL	379.2566		
95% Percentile Bootstrap UCL	143.0458		
95% BCA Bootstrap UCL	187.3458		
Recommendations			
Human Inspection Recommended?	NO		
Appropriate Distribution	GAMMA		
1st Recommended UCL	149.7793	95% Approximate Gamma UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - lp-c.xls		
Variable:	Barium		
<b>Raw Statistics</b>			
Number of Observations	12		
Number of Missing Data	0		
Number of Valid Observations	12		
Number of Distinct Observations	12		
Minimum	11.2		
Maximum	68.9		
Mean	32.09167		
Standard Deviation	16.52312		
Variance	273.0136		
Coefficient of Variation	0.514873		
Skewness	1.034533		
Too Few Distinct Observations?	NO		
<b>Normal Statistics</b>			
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.92897		
Shapiro-Wilk 5% Critical Value	0.859		
5% Normality Test Result	NORMAL		Data are normal at 5% significance level
95% Student's-t UCL	40.6577		
<b>Gamma Statistics</b>			
k hat	4.387625		
k star (bias corrected)	3.346275		
Theta hat	7.314131		
Theta star	9.590267		
nu hat	105.303		
nu star	80.31059		
5% Approximate Chi Square Value	60.65787		
Adjusted Level of Significance	0.02896		
Adjusted Chi Square Value	58.05729		
Anderson-Darling Test Statistic	0.140717		
Anderson-Darling 5% Critical Value	0.734329		
Anderson-Darling 5% Gamma Test Result	AD GAMMA		Data follow gamma distribution at 5% significance level.
Kolmogrov-Smirnov Test Statistic	0.11321		
Kolmogrov-Smirnov 5% Critical Value	0.246218		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA		Data follow gamma distribution at 5% significance level
5% Gamma Test Result	GAMMA		Data follow gamma distribution at 5% significance level
95% Approximate Gamma UCL	42.48914		
95% Adjusted Gamma UCL	44.39237		
<b>Lognormal Statistics</b>			
Minimum of log data	2.415914		
Maximum of log data	4.232656		
Mean of log data	3.350333		
Standard Deviation of log data	0.512489		
Variance of log data	0.262645		
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.994062		
Shapiro-Wilk 5% Critical Value	0.859		
5% Lognormality Test Result	LOGNORMAL		Data are lognormal at 5% significance level
MLE Mean	32.51349		
MLE Standard Deviation	17.8192		
MLE Coefficient of Variation	0.548055		
MLE Skewness	1.808783		
MLE Median	28.51222		
MLE 80% Quantile	43.96465		
MLE 90% Quantile	55.08519		
MLE 95% Quantile	66.24613		
MLE 99% Quantile	93.91423		
MVU Estimate of Median	28.20164		
MVU Estimate of Mean	32.12454		
MVU Estimate of Standard Deviation	16.91246		
MVU Estimate of SE of Mean	4.870253		
95% H-UCL	45.37073		
95% Chebyshev (MVUE) UCL	53.35348		
97.5% Chebyshev (MVUE) UCL	62.53926		
99% Chebyshev (MVUE) UCL	80.58295		
<b>Non-parametric Statistics</b>			
95% CLT UCL	39.93731		
95% Adjusted-CLT UCL	41.45939		
95% Modified-t UCL	40.89512		
95% Jackknife UCL	40.6577		
95% Chebyshev (Mean, Sd) UCL	52.88281		
97.5% Chebyshev (Mean, Sd) UCL	61.87915		
99% Chebyshev (Mean, Sd) UCL	79.55072		
<b>Bootstrap Statistics</b>			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	39.65018		
95% Bootstrap-t UCL	43.05807		
95% Hall's Bootstrap UCL	44.16875		
95% Percentile Bootstrap UCL	40.3		
95% BCA Bootstrap UCL	43.3		
<b>Recommendations</b>			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	40.6577		95% Student's-t UCL
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - lp-c.xls		
Variable:	Cadmium		
<b>Raw Statistics</b>			
Number of Observations	12		
Number of Missing Data	0		
Number of Valid Observations	12		
Number of Distinct Observations	11		
Minimum	0.06		
Maximum	5.6		
Mean	1.959167		
Standard Deviation	1.802253		
Variance	3.248117		
Coefficient of Variation	0.919908		
Skewness	0.653969		
Too Few Distinct Observations?	NO		
<b>Normal Statistics</b>			
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.908152		
Shapiro-Wilk 5% Critical Value	0.859		
5% Normality Test Result	NORMAL		Data are normal at 5% significance level
95% Student's-t UCL	2.893504		
<b>Gamma Statistics</b>			
k hat	0.746498		
k star (bias corrected)	0.615429		
Theta hat	2.624475		
Theta star	3.183414		
nu hat	17.91596		
nu star	14.77031		
5% Approximate Chi Square Value	7.100875		
Adjusted Level of Significance	0.02896		
Adjusted Chi Square Value	6.306014		
Anderson-Darling Test Statistic	0.50381		
Anderson-Darling 5% Critical Value	0.765871		
Anderson-Darling 5% Gamma Test Result	AD GAMMA		Data follow gamma distribution at 5% significance level.
Kolmogrov-Smirnov Test Statistic	0.152503		
Kolmogrov-Smirnov 5% Critical Value	0.254864		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA		Data follow gamma distribution at 5% significance level
5% Gamma Test Result	GAMMA		Data follow gamma distribution at 5% significance level
95% Approximate Gamma UCL	4.075201		
95% Adjusted Gamma UCL	4.588872		
<b>Lognormal Statistics</b>			
Minimum of log data	-2.813411		
Maximum of log data	1.722767		
Mean of log data	-0.129913		
Standard Deviation of log data	1.664876		
Variance of log data	2.771813		
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.858023		
Shapiro-Wilk 5% Critical Value	0.859		
5% Lognormality Test Result	NOT LOGNORMAL		Data not lognormal at 5% significance level
MLE Mean	3.511325		
MLE Standard Deviation	13.59368		
MLE Coefficient of Variation	3.871382		
MLE Skewness	69.63685		
MLE Median	0.878172		
MLE 80% Quantile	3.585534		
MLE 90% Quantile	7.459236		
MLE 95% Quantile	13.58286		
MLE 99% Quantile	42.20714		
MVU Estimate of Median	0.781568		
MVU Estimate of Mean	2.824248		
MVU Estimate of Standard Deviation	5.898032		
MVU Estimate of SE of Mean	1.487058		
95% H-UCL	29.5112		
95% Chebyshev (MVUE) UCL	9.306182		
97.5% Chebyshev (MVUE) UCL	12.11092		
99% Chebyshev (MVUE) UCL	17.62028		
<b>Non-parametric Statistics</b>			
95% CLT UCL	2.814928		
95% Adjusted-CLT UCL	2.919875		
95% Modified-t UCL	2.909874		
95% Jackknife UCL	2.893504		
95% Chebyshev (Mean, Sd) UCL	4.226953		
97.5% Chebyshev (Mean, Sd) UCL	5.208225		
99% Chebyshev (Mean, Sd) UCL	7.135746		
<b>Bootstrap Statistics</b>			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	2.785765		
95% Bootstrap-t UCL	3.028898		
95% Hall's Bootstrap UCL	2.926022		
95% Percentile Bootstrap UCL	2.828333		
95% BCA Bootstrap UCL	3.1925		
<b>Recommendations</b>			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	2.893504		95% Student's-t UCL
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - lp-c.xls		
Variable:	Chromium		
Raw Statistics			
Number of Observations	12		
Number of Missing Data	0		
Number of Valid Observations	12		
Number of Distinct Observations	12		
Minimum	8.2		
Maximum	134		
Mean	54.1125		
Standard Deviation	44.35596		
Variance	1967.451		
Coefficient of Variation	0.819699		
Skewness	0.979666		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.837304		
Shapiro-Wilk 5% Critical Value	0.859		
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level	
95% Student's-t UCL	77.10784		
Gamma Statistics			
k hat	1.615657		
k star (bias corrected)	1.267298		
Theta hat	33.49256		
Theta star	42.6991		
nu hat	38.77577		
nu star	30.41516		
5% Approximate Chi Square Value	18.81746		
Adjusted Level of Significance	0.02896		
Adjusted Chi Square Value	17.43674		
Anderson-Darling Test Statistic	0.362847		
Anderson-Darling 5% Critical Value	0.744587		
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.	
Kolmogrov-Smirnov Test Statistic	0.155746		
Kolmogrov-Smirnov 5% Critical Value	0.249296		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level	
95% Approximate Gamma UCL	87.46347		
95% Adjusted Gamma UCL	94.38921		
Lognormal Statistics			
Minimum of log data	2.104134		
Maximum of log data	4.89784		
Mean of log data	3.650726		
Standard Deviation of log data	0.909124		
Variance of log data	0.826507		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.940264		
Shapiro-Wilk 5% Critical Value	0.859		
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level	
MLE Mean	58.20546		
MLE Standard Deviation	65.9887		
MLE Coefficient of Variation	1.13372		
MLE Skewness	4.858355		
MLE Median	38.50261		
MLE 80% Quantile	83.0079		
MLE 90% Quantile	123.835		
MLE 95% Quantile	171.7835		
MLE 99% Quantile	319.0502		
MVU Estimate of Median	37.19582		
MVU Estimate of Mean	55.65589		
MVU Estimate of Standard Deviation	54.79111		
MVU Estimate of SE of Mean	15.50499		
95% H-UCL	123.8189		
95% Chebyshev (MVUE) UCL	123.2406		
97.5% Chebyshev (MVUE) UCL	152.4845		
99% Chebyshev (MVUE) UCL	209.9285		
Non-parametric Statistics			
95% CLT UCL	75.17397		
95% Adjusted-CLT UCL	79.04324		
95% Modified-t UCL	77.71136		
95% Jackknife UCL	77.10784		
95% Chebyshev (Mean, Sd) UCL	109.9259		
97.5% Chebyshev (Mean, Sd) UCL	134.0763		
99% Chebyshev (Mean, Sd) UCL	181.5153		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	74.19497		
95% Bootstrap-t UCL	83.5268		
95% Hall's Bootstrap UCL	74.52439		
95% Percentile Bootstrap UCL	74.62083		
95% BCA Bootstrap UCL	86.3625		
Recommendations			
Human Inspection Recommended?	NO		
Appropriate Distribution	GAMMA		
1st Recommended UCL	87.46347	95% Approximate Gamma UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - lp-c.xls		
Variable:	Copper		
Raw Statistics			
Number of Observations	12		
Number of Missing Data	0		
Number of Valid Observations	12		
Number of Distinct Observations	12		
Minimum	6.6		
Maximum	1560		
Mean	204.25		
Standard Deviation	433.1821		
Variance	187646.7		
Coefficient of Variation	2.120842		
Skewness	3.293129		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.470411		
Shapiro-Wilk 5% Critical Value	0.859		
5% Normality Test Result	NOT NORMAL		Data not normal at 5% significance level
95% Student's-t UCL	428.8234		
Gamma Statistics			
k hat	0.553496		
k star (bias corrected)	0.470677		
Theta hat	369.0182		
Theta star	433.9491		
nu hat	13.2839		
nu star	11.29626		
5% Approximate Chi Square Value	4.766283		
Adjusted Level of Significance	0.02896		
Adjusted Chi Square Value	4.138009		
Anderson-Darling Test Statistic	0.854986		
Anderson-Darling 5% Critical Value	0.780802		
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA		Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.246094		
Kolmogrov-Smirnov 5% Critical Value	0.257852		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA		Data follow gamma distribution at 5% significance level
5% Gamma Test Result	APPROX GAMMA		Data follow approximate gamma distribution at 5% significance level
95% Approximate Gamma UCL	484.0796		
95% Adjusted Gamma UCL	557.5773		
Lognormal Statistics			
Minimum of log data	1.88707		
Maximum of log data	7.352441		
Mean of log data	4.189494		
Standard Deviation of log data	1.476484		
Variance of log data	2.180004		
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.961979		
Shapiro-Wilk 5% Critical Value	0.859		
5% Lognormality Test Result	LOGNORMAL		Data are lognormal at 5% significance level
MLE Mean	196.271		
MLE Standard Deviation	549.7811		
MLE Coefficient of Variation	2.801133		
MLE Skewness	30.38206		
MLE Median	65.98939		
MLE 80% Quantile	229.7801		
MLE 90% Quantile	440.0004		
MLE 95% Quantile	748.6786		
MLE 99% Quantile	2046.314		
MVU Estimate of Median	60.22065		
MVU Estimate of Mean	167.8432		
MVU Estimate of Standard Deviation	298.5463		
MVU Estimate of SE of Mean	78.32653		
95% H-UCL	1087.947		
95% Chebyshev (MVUE) UCL	509.2606		
97.5% Chebyshev (MVUE) UCL	656.9922		
99% Chebyshev (MVUE) UCL	947.1823		
Non-parametric Statistics			
95% CLT UCL	409.9371		
95% Adjusted-CLT UCL	536.959		
95% Modified-t UCL	448.6362		
95% Jackknife UCL	428.8234		
95% Chebyshev (Mean, Sd) UCL	749.3255		
97.5% Chebyshev (Mean, Sd) UCL	985.1801		
99% Chebyshev (Mean, Sd) UCL	1448.471		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	402.7387		
95% Bootstrap-t UCL	1300.029		
95% Hall's Bootstrap UCL	1162.271		
95% Percentile Bootstrap UCL	443.4958		
95% BCA Bootstrap UCL	567.9458		
Recommendations			
Human Inspection Recommended?	NO		
Appropriate Distribution	GAMMA		
1st Recommended UCL	484.0796		95% Approximate Gamma UCL
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - lp-c.xls		
Variable:	Lead		
Raw Statistics			
Number of Observations	12		
Number of Missing Data	0		
Number of Valid Observations	12		
Number of Distinct Observations	12		
Minimum	6.4		
Maximum	400		
Mean	82.39167		
Standard Deviation	112.1132		
Variance	12569.38		
Coefficient of Variation	1.360735		
Skewness	2.475719		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.659791		
Shapiro-Wilk 5% Critical Value	0.859		
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level	
95% Student's-t UCL	140.5142		
Gamma Statistics			
k hat	0.901033		
k star (bias corrected)	0.73133		
Theta hat	91.44136		
Theta star	112.66		
nu hat	21.62479		
nu star	17.55192		
5% Approximate Chi Square Value	9.066495		
Adjusted Level of Significance	0.02896		
Adjusted Chi Square Value	8.151072		
Anderson-Darling Test Statistic	0.457809		
Anderson-Darling 5% Critical Value	0.760247		
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.	
Kolmogrov-Smirnov Test Statistic	0.197757		
Kolmogrov-Smirnov 5% Critical Value	0.253324		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level	
95% Approximate Gamma UCL	159.5029		
95% Adjusted Gamma UCL	177.4162		
Lognormal Statistics			
Minimum of log data	1.856298		
Maximum of log data	5.991465		
Mean of log data	3.762755		
Standard Deviation of log data	1.202804		
Variance of log data	1.446737		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.962539		
Shapiro-Wilk 5% Critical Value	0.859		
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level	
MLE Mean	88.77663		
MLE Standard Deviation	160.0253		
MLE Coefficient of Variation	1.802561		
MLE Skewness	11.26462		
MLE Median	43.06691		
MLE 80% Quantile	119.0001		
MLE 90% Quantile	202.0182		
MLE 95% Quantile	311.49		
MLE 99% Quantile	706.6084		
MVU Estimate of Median	40.53605		
MVU Estimate of Mean	81.08456		
MVU Estimate of Standard Deviation	111.2203		
MVU Estimate of SE of Mean	30.51824		
95% H-UCL	293.3813		
95% Chebyshev (MVUE) UCL	214.1105		
97.5% Chebyshev (MVUE) UCL	271.6709		
99% Chebyshev (MVUE) UCL	384.7372		
Non-parametric Statistics			
95% CLT UCL	135.6262		
95% Adjusted-CLT UCL	160.341		
95% Modified-t UCL	144.3692		
95% Jackknife UCL	140.5142		
95% Chebyshev (Mean, Sd) UCL	223.4644		
97.5% Chebyshev (Mean, Sd) UCL	284.5067		
99% Chebyshev (Mean, Sd) UCL	404.4124		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	133.6377		
95% Bootstrap-t UCL	280.9192		
95% Hall's Bootstrap UCL	404.4231		
95% Percentile Bootstrap UCL	136.6292		
95% BCA Bootstrap UCL	184.0917		
Recommendations			
Human Inspection Recommended?	NO		
Appropriate Distribution	GAMMA		
1st Recommended UCL	159.5029	95% Approximate Gamma UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - lp-c.xls		
Variable:	Manganese		
Raw Statistics			
Number of Observations	12		
Number of Missing Data	0		
Number of Valid Observations	12		
Number of Distinct Observations	12		
Minimum	47.5		
Maximum	333		
Mean	167.8333		
Standard Deviation	80.53298		
Variance	6485.561		
Coefficient of Variation	0.479839		
Skewness	0.644013		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.946587		
Shapiro-Wilk 5% Critical Value	0.859		
5% Normality Test Result	NORMAL	Data are normal at 5% significance level	
95% Student's-t UCL	209.5838		
Gamma Statistics			
k hat	4.478575		
k star (bias corrected)	3.414487		
Theta hat	37.47472		
Theta star	49.15331		
nu hat	107.4858		
nu star	81.94768		
5% Approximate Chi Square Value	62.08293		
Adjusted Level of Significance	0.02896		
Adjusted Chi Square Value	59.45011		
Anderson-Darling Test Statistic	0.276161		
Anderson-Darling 5% Critical Value	0.733982		
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.	
Kolmogrov-Smirnov Test Statistic	0.136048		
Kolmogrov-Smirnov 5% Critical Value	0.246175		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level	
95% Approximate Gamma UCL	221.5352		
95% Adjusted Gamma UCL	231.3461		
Lognormal Statistics			
Minimum of log data	3.86073		
Maximum of log data	5.808142		
Mean of log data	5.007194		
Standard Deviation of log data	0.52582		
Variance of log data	0.276487		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.948277		
Shapiro-Wilk 5% Critical Value	0.859		
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level	
MLE Mean	171.6466		
MLE Standard Deviation	96.86864		
MLE Coefficient of Variation	0.564349		
MLE Skewness	1.872787		
MLE Median	149.4847		
MLE 80% Quantile	233.1105		
MLE 90% Quantile	293.7925		
MLE 95% Quantile	355.0182		
MLE 99% Quantile	507.8838		
MVU Estimate of Median	147.771		
MVU Estimate of Mean	169.4757		
MVU Estimate of Standard Deviation	91.66977		
MVU Estimate of SE of Mean	26.39138		
95% H-UCL	242.2494		
95% Chebyshev (MVUE) UCL	284.513		
97.5% Chebyshev (MVUE) UCL	334.2898		
99% Chebyshev (MVUE) UCL	432.0665		
Non-parametric Statistics			
95% CLT UCL	206.0727		
95% Adjusted-CLT UCL	210.6908		
95% Modified-t UCL	210.3042		
95% Jackknife UCL	209.5838		
95% Chebyshev (Mean, Sd) UCL	269.1684		
97.5% Chebyshev (Mean, Sd) UCL	313.0162		
99% Chebyshev (Mean, Sd) UCL	399.1467		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	204.5552		
95% Bootstrap-t UCL	216.7597		
95% Hall's Bootstrap UCL	216.1726		
95% Percentile Bootstrap UCL	205.2083		
95% BCA Bootstrap UCL	219.75		
Recommendations			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	209.5838	95% Student's-t UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - lp-c.xls		
Variable:	Mercury		
Raw Statistics			
Number of Observations	12		
Number of Missing Data	0		
Number of Valid Observations	12		
Number of Distinct Observations	11		
Minimum	0.045		
Maximum	1.4		
Mean	0.4575		
Standard Deviation	0.433776		
Variance	0.188161		
Coefficient of Variation	0.948144		
Skewness	1.139076		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.847023		
Shapiro-Wilk 5% Critical Value	0.859		
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level	
95% Student's-t UCL	0.682381		
Gamma Statistics			
k hat	1.17544		
k star (bias corrected)	0.937136		
Theta hat	0.389216		
Theta star	0.48819		
nu hat	28.21057		
nu star	22.49126		
5% Approximate Chi Square Value	12.70562		
Adjusted Level of Significance	0.02896		
Adjusted Chi Square Value	11.59663		
Anderson-Darling Test Statistic	0.364292		
Anderson-Darling 5% Critical Value	0.7528		
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.	
Kolmogrov-Smirnov Test Statistic	0.218264		
Kolmogrov-Smirnov 5% Critical Value	0.251357		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level	
95% Approximate Gamma UCL	0.809859		
95% Adjusted Gamma UCL	0.887305		
Lognormal Statistics			
Minimum of log data	-3.101093		
Maximum of log data	0.336472		
Mean of log data	-1.264241		
Standard Deviation of log data	1.106607		
Variance of log data	1.224579		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.93814		
Shapiro-Wilk 5% Critical Value	0.859		
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level	
MLE Mean	0.521028		
MLE Standard Deviation	0.807632		
MLE Coefficient of Variation	1.550075		
MLE Skewness	8.374638		
MLE Median	0.282453		
MLE 80% Quantile	0.719529		
MLE 90% Quantile	1.170871		
MLE 95% Quantile	1.743905		
MLE 99% Quantile	3.705158		
MVU Estimate of Median	0.268349		
MVU Estimate of Mean	0.484295		
MVU Estimate of Standard Deviation	0.600319		
MVU Estimate of SE of Mean	0.166718		
95% H-UCL	1.47146		
95% Chebyshev (MVUE) UCL	1.211001		
97.5% Chebyshev (MVUE) UCL	1.525447		
99% Chebyshev (MVUE) UCL	2.143116		
Non-parametric Statistics			
95% CLT UCL	0.663469		
95% Adjusted-CLT UCL	0.707465		
95% Modified-t UCL	0.689244		
95% Jackknife UCL	0.682381		
95% Chebyshev (Mean, Sd) UCL	1.003322		
97.5% Chebyshev (Mean, Sd) UCL	1.2395		
99% Chebyshev (Mean, Sd) UCL	1.703426		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	0.658576		
95% Bootstrap-t UCL	0.751789		
95% Hall's Bootstrap UCL	0.689636		
95% Percentile Bootstrap UCL	0.668333		
95% BCA Bootstrap UCL	0.781667		
Recommendations			
Human Inspection Recommended?	NO		
Appropriate Distribution	GAMMA		
1st Recommended UCL	0.809859	95% Approximate Gamma UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - lp-c.xls	
Variable:	Nickel	
Raw Statistics		
Number of Observations	12	
Number of Missing Data	0	
Number of Valid Observations	12	
Number of Distinct Observations	12	
Minimum	0.59	
Maximum	30.6	
Mean	10.36167	
Standard Deviation	7.893501	
Variance	62.30736	
Coefficient of Variation	0.761798	
Skewness	1.55185	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.8714	
Shapiro-Wilk 5% Critical Value	0.859	
5% Normality Test Result	NORMAL	Data are normal at 5% significance level
95% Student's-t UCL	14.45387	
Gamma Statistics		
k hat	1.643462	
k star (bias corrected)	1.288152	
Theta hat	6.304781	
Theta star	8.043823	
nu hat	39.44309	
nu star	30.91565	
5% Approximate Chi Square Value	19.21206	
Adjusted Level of Significance	0.02896	
Adjusted Chi Square Value	17.81542	
Anderson-Darling Test Statistic	0.338702	
Anderson-Darling 5% Critical Value	0.744365	
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.
Kolmogrov-Smirnov Test Statistic	0.182237	
Kolmogrov-Smirnov 5% Critical Value	0.249242	
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level
95% Approximate Gamma UCL	16.67378	
95% Adjusted Gamma UCL	17.98092	
Lognormal Statistics		
Minimum of log data	-0.527633	
Maximum of log data	3.421	
Mean of log data	2.004015	
Standard Deviation of log data	1.007044	
Variance of log data	1.014138	
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.881778	
Shapiro-Wilk 5% Critical Value	0.859	
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level
MLE Mean	12.31827	
MLE Standard Deviation	16.32803	
MLE Coefficient of Variation	1.325513	
MLE Skewness	6.305446	
MLE Median	7.418783	
MLE 80% Quantile	17.37387	
MLE 90% Quantile	27.06027	
MLE 95% Quantile	38.88476	
MLE 99% Quantile	77.2	
MVU Estimate of Median	7.110844	
MVU Estimate of Mean	11.62842	
MVU Estimate of Standard Deviation	12.88866	
MVU Estimate of SE of Mean	3.616946	
95% H-UCL	29.96556	
95% Chebyshev (MVUE) UCL	27.39432	
97.5% Chebyshev (MVUE) UCL	34.21624	
99% Chebyshev (MVUE) UCL	47.61657	
Non-parametric Statistics		
95% CLT UCL	14.10972	
95% Adjusted-CLT UCL	15.20046	
95% Modified-t UCL	14.62401	
95% Jackknife UCL	14.45387	
95% Chebyshev (Mean, Sd) UCL	20.2941	
97.5% Chebyshev (Mean, Sd) UCL	24.59188	
99% Chebyshev (Mean, Sd) UCL	33.03402	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	13.86498	
95% Bootstrap-t UCL	16.17449	
95% Hall's Bootstrap UCL	32.57432	
95% Percentile Bootstrap UCL	14.02917	
95% BCA Bootstrap UCL	16.50333	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	NORMAL	
1st Recommended UCL	14.45387	95% Student's-t UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value	NO	
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - lp-c.xls		
Variable:	Thallium		
<b>Raw Statistics</b>			
Number of Observations	12		
Number of Missing Data	0		
Number of Valid Observations	12		
Number of Distinct Observations	10		
Minimum	0.85		
Maximum	2.9		
Mean	1.53125		
Standard Deviation	0.731524		
Variance	0.535128		
Coefficient of Variation	0.47773		
Skewness	0.793897		
Too Few Distinct Observations?	NO		
<b>Normal Statistics</b>			
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.851216		
Shapiro-Wilk 5% Critical Value	0.859		
5% Normality Test Result	NOT NORMAL		Data not normal at 5% significance level
95% Student's-t UCL	1.910492		
<b>Gamma Statistics</b>			
k hat	5.220231		
k star (bias corrected)	3.970729		
Theta hat	0.29333		
Theta star	0.385635		
nu hat	125.2855		
nu star	95.29749		
5% Approximate Chi Square Value	73.77762		
Adjusted Level of Significance	0.02896		
Adjusted Chi Square Value	70.89302		
Anderson-Darling Test Statistic	0.673996		
Anderson-Darling 5% Critical Value	0.731916		
Anderson-Darling 5% Gamma Test Result	AD GAMMA		Data follow gamma distribution at 5% significance level.
Kolmogrov-Smirnov Test Statistic	0.214341		
Kolmogrov-Smirnov 5% Critical Value	0.245906		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA		Data follow gamma distribution at 5% significance level
5% Gamma Test Result	GAMMA		Data follow gamma distribution at 5% significance level
95% Approximate Gamma UCL	1.977894		
95% Adjusted Gamma UCL	2.058373		
<b>Lognormal Statistics</b>			
Minimum of log data	-0.162519		
Maximum of log data	1.064711		
Mean of log data	0.327256		
Standard Deviation of log data	0.457295		
Variance of log data	0.209119		
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.879056		
Shapiro-Wilk 5% Critical Value	0.859		
5% Lognormality Test Result	LOGNORMAL		Data are lognormal at 5% significance level
MLE Mean	1.540051		
MLE Standard Deviation	0.742731		
MLE Coefficient of Variation	0.482277		
MLE Skewness	1.559004		
MLE Median	1.387157		
MLE 80% Quantile	2.04147		
MLE 90% Quantile	2.496476		
MLE 95% Quantile	2.943226		
MLE 99% Quantile	4.018561		
MVU Estimate of Median	1.375115		
MVU Estimate of Mean	1.52563		
MVU Estimate of Standard Deviation	0.712867		
MVU Estimate of SE of Mean	0.205461		
95% H-UCL	2.05438		
95% Chebyshev (MVUE) UCL	2.421212		
97.5% Chebyshev (MVUE) UCL	2.808731		
99% Chebyshev (MVUE) UCL	3.569938		
<b>Non-parametric Statistics</b>			
95% CLT UCL	1.878598		
95% Adjusted-CLT UCL	1.930311		
95% Modified-t UCL	1.918558		
95% Jackknife UCL	1.910492		
95% Chebyshev (Mean, Sd) UCL	2.451731		
97.5% Chebyshev (Mean, Sd) UCL	2.850024		
99% Chebyshev (Mean, Sd) UCL	3.632394		
<b>Bootstrap Statistics</b>			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	1.873644		
95% Bootstrap-t UCL	2.020941		
95% Hall's Bootstrap UCL	1.85993		
95% Percentile Bootstrap UCL	1.86875		
95% BCA Bootstrap UCL	2.052083		
<b>Recommendations</b>			
Human Inspection Recommended?	NO		
Appropriate Distribution	GAMMA		
1st Recommended UCL	1.977894		95% Approximate Gamma UCL
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - lp-c.xls		
Variable:	Vanadium		
Raw Statistics			
Number of Observations	12		
Number of Missing Data	0		
Number of Valid Observations	12		
Number of Distinct Observations	11		
Minimum	6.5		
Maximum	39.8		
Mean	17.59167		
Standard Deviation	10.05577		
Variance	101.1186		
Coefficient of Variation	0.571621		
Skewness	1.300107		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.862827		
Shapiro-Wilk 5% Critical Value	0.859		
5% Normality Test Result	NORMAL	Data are normal at 5% significance level	
95% Student's-t UCL	22.80485		
Gamma Statistics			
k hat	3.827961		
k star (bias corrected)	2.926526		
Theta hat	4.595571		
Theta star	6.011109		
nu hat	91.87106		
nu star	70.23663		
5% Approximate Chi Square Value	51.9395		
Adjusted Level of Significance	0.02896		
Adjusted Chi Square Value	49.54493		
Anderson-Darling Test Statistic	0.344096		
Anderson-Darling 5% Critical Value	0.736361		
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.	
Kolmogrov-Smirnov Test Statistic	0.154736		
Kolmogrov-Smirnov 5% Critical Value	0.246574		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level	
95% Approximate Gamma UCL	23.78882		
95% Adjusted Gamma UCL	24.93856		
Lognormal Statistics			
Minimum of log data	1.871802		
Maximum of log data	3.683867		
Mean of log data	2.731158		
Standard Deviation of log data	0.541821		
Variance of log data	0.29357		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.960429		
Shapiro-Wilk 5% Critical Value	0.859		
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level	
MLE Mean	17.77767		
MLE Standard Deviation	10.38446		
MLE Coefficient of Variation	0.584129		
MLE Skewness	1.951697		
MLE Median	15.35065		
MLE 80% Quantile	24.26407		
MLE 90% Quantile	30.79641		
MLE 95% Quantile	37.42929		
MLE 99% Quantile	54.13245		
MVU Estimate of Median	15.16385		
MVU Estimate of Mean	17.53766		
MVU Estimate of Standard Deviation	9.791331		
MVU Estimate of SE of Mean	2.817972		
95% H-UCL	25.43921		
95% Chebyshev (MVUE) UCL	29.82092		
97.5% Chebyshev (MVUE) UCL	35.13589		
99% Chebyshev (MVUE) UCL	45.57613		
Non-parametric Statistics			
95% CLT UCL	22.36643		
95% Adjusted-CLT UCL	23.53054		
95% Modified-t UCL	22.98643		
95% Jackknife UCL	22.80485		
95% Chebyshev (Mean, Sd) UCL	30.2449		
97.5% Chebyshev (Mean, Sd) UCL	35.71997		
99% Chebyshev (Mean, Sd) UCL	46.47467		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	22.14878		
95% Bootstrap-t UCL	26.20442		
95% Hall's Bootstrap UCL	51.03974		
95% Percentile Bootstrap UCL	22.64167		
95% BCA Bootstrap UCL	25.575		
Recommendations			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	22.80485	95% Student's-t UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - lp-c.xls		
Variable:	Zinc		
Raw Statistics			
Number of Observations	12		
Number of Missing Data	0		
Number of Valid Observations	12		
Number of Distinct Observations	12		
Minimum	15.2		
Maximum	2800		
Mean	781.325		
Standard Deviation	928.7164		
Variance	862514.2		
Coefficient of Variation	1.188643		
Skewness	1.490798		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.786535		
Shapiro-Wilk 5% Critical Value	0.859		
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level	
95% Student's-t UCL	1262.797		
Gamma Statistics			
k hat	0.671167		
k star (bias corrected)	0.558931		
Theta hat	1164.128		
Theta star	1397.891		
nu hat	16.10802		
nu star	13.41435		
5% Approximate Chi Square Value	6.17131		
Adjusted Level of Significance	0.02896		
Adjusted Chi Square Value	5.439069		
Anderson-Darling Test Statistic	0.205334		
Anderson-Darling 5% Critical Value	0.771698		
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.	
Kolmogrov-Smirnov Test Statistic	0.110752		
Kolmogrov-Smirnov 5% Critical Value	0.25603		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level	
95% Approximate Gamma UCL	1698.337		
95% Adjusted Gamma UCL	1926.978		
Lognormal Statistics			
Minimum of log data	2.721295		
Maximum of log data	7.937375		
Mean of log data	5.755209		
Standard Deviation of log data	1.682863		
Variance of log data	2.832028		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.936123		
Shapiro-Wilk 5% Critical Value	0.859		
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level	
MLE Mean	1301.436		
MLE Standard Deviation	5202.466		
MLE Coefficient of Variation	3.997483		
MLE Skewness	75.8717		
MLE Median	315.8315		
MLE 80% Quantile	1309.274		
MLE 90% Quantile	2745.417		
MLE 95% Quantile	5031.729		
MLE 99% Quantile	15828.2		
MVU Estimate of Median	280.371		
MVU Estimate of Mean	1039.879		
MVU Estimate of Standard Deviation	2203.774		
MVU Estimate of SE of Mean	553.3263		
95% H-UCL	11411.03		
95% Chebyshev (MVUE) UCL	3451.773		
97.5% Chebyshev (MVUE) UCL	4495.401		
99% Chebyshev (MVUE) UCL	6545.407		
Non-parametric Statistics			
95% CLT UCL	1222.306		
95% Adjusted-CLT UCL	1345.588		
95% Modified-t UCL	1282.026		
95% Jackknife UCL	1262.797		
95% Chebyshev (Mean, Sd) UCL	1949.934		
97.5% Chebyshev (Mean, Sd) UCL	2455.592		
99% Chebyshev (Mean, Sd) UCL	3448.86		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	1203.381		
95% Bootstrap-t UCL	1719.517		
95% Hall's Bootstrap UCL	2335.208		
95% Percentile Bootstrap UCL	1223.525		
95% BCA Bootstrap UCL	1520.733		
Recommendations			
Human Inspection Recommended?	NO		
Appropriate Distribution	GAMMA		
1st Recommended UCL	1698.337	95% Approximate Gamma UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - lp-f.xls		
Variable:	Antimony		
<b>Raw Statistics</b>			
Number of Observations	15		
Number of Missing Data	0		
Number of Valid Observations	15		
Number of Distinct Observations	6		
Minimum	0.85		
Maximum	5.1		
Mean	1.22		
Standard Deviation	1.079649		
Variance	1.165643		
Coefficient of Variation	0.884959		
Skewness	3.798537		
Too Few Distinct Observations?	NO		
<b>Normal Statistics</b>			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.359004		
Shapiro-Wilk 5% Critical Value	0.881		
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level	
95% Student's-t UCL	1.71099		
<b>Gamma Statistics</b>			
k hat	3.462562		
k star (bias corrected)	2.814494		
Theta hat	0.35234		
Theta star	0.43347		
nu hat	103.8769		
nu star	84.43483		
5% Approximate Chi Square Value	64.25198		
Adjusted Level of Significance	0.03235		
Adjusted Chi Square Value	62.08687		
Anderson-Darling Test Statistic	3.764744		
Anderson-Darling 5% Critical Value	0.742438		
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level	
Kolmogrov-Smirnov Test Statistic	0.403812		
Kolmogrov-Smirnov 5% Critical Value	0.222942		
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level	
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level	
95% Approximate Gamma UCL	1.603227		
95% Adjusted Gamma UCL	1.659135		
<b>Lognormal Statistics</b>			
Minimum of log data	-0.162519		
Maximum of log data	1.629241		
Mean of log data	0.047554		
Standard Deviation of log data	0.45136		
Variance of log data	0.203726		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.463505		
Shapiro-Wilk 5% Critical Value	0.881		
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level	
MLE Mean	1.161157		
MLE Standard Deviation	0.551961		
MLE Coefficient of Variation	0.475354		
MLE Skewness	1.533475		
MLE Median	1.048703		
MLE 80% Quantile	1.535649		
MLE 90% Quantile	1.873019		
MLE 95% Quantile	2.203487		
MLE 99% Quantile	2.996416		
MVU Estimate of Median	1.041603		
MVU Estimate of Mean	1.152656		
MVU Estimate of Standard Deviation	0.534106		
MVU Estimate of SE of Mean	0.137663		
95% H-UCL	1.481127		
95% Chebyshev (MVUE) UCL	1.752717		
97.5% Chebyshev (MVUE) UCL	2.012364		
99% Chebyshev (MVUE) UCL	2.522391		
<b>Non-parametric Statistics</b>			
95% CLT UCL	1.678526		
95% Adjusted-CLT UCL	1.970665		
95% Modified-t UCL	1.756558		
95% Jackknife UCL	1.71099		
95% Chebyshev (Mean, Sd) UCL	2.435105		
97.5% Chebyshev (Mean, Sd) UCL	2.960882		
99% Chebyshev (Mean, Sd) UCL	3.99367		
<b>Bootstrap Statistics</b>			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	1.657486		
95% Bootstrap-t UCL	6.615669		
95% Hall's Bootstrap UCL	4.569485		
95% Percentile Bootstrap UCL	1.77		
95% BCA Bootstrap UCL	2.11		
<b>Recommendations</b>			
Human Inspection Recommended?	YES	Users must select one of the recommended UCLS	
Appropriate Distribution	NON-PARAMETRIC		
1st Recommended UCL	1.71099	95% Student's-t UCL	
2nd Recommended UCL	1.756558	95% Modified-t UCL	
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - lp-f.xls		
Variable:	Arsenic		
Raw Statistics			
Number of Observations	15		
Number of Missing Data	0		
Number of Valid Observations	15		
Number of Distinct Observations	15		
Minimum	5.4		
Maximum	505		
Mean	69.94667		
Standard Deviation	123.1293		
Variance	15160.81		
Coefficient of Variation	1.76033		
Skewness	3.581538		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.475481		
Shapiro-Wilk 5% Critical Value	0.881		
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level	
95% Student's-t UCL	125.9419		
Gamma Statistics			
k hat	0.840724		
k star (bias corrected)	0.717024		
Theta hat	83.19814		
Theta star	97.55142		
nu hat	25.22172		
nu star	21.51071		
5% Approximate Chi Square Value	11.97061		
Adjusted Level of Significance	0.03235		
Adjusted Chi Square Value	11.10161		
Anderson-Darling Test Statistic	0.882697		
Anderson-Darling 5% Critical Value	0.770726		
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level	
Kolmogrov-Smirnov Test Statistic	0.237873		
Kolmogrov-Smirnov 5% Critical Value	0.229385		
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level	
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level	
95% Approximate Gamma UCL	125.6913		
95% Adjusted Gamma UCL	135.5301		
Lognormal Statistics			
Minimum of log data	1.686399		
Maximum of log data	6.224558		
Mean of log data	3.546351		
Standard Deviation of log data	1.138877		
Variance of log data	1.297042		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.945241		
Shapiro-Wilk 5% Critical Value	0.881		
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level	
MLE Mean	66.34526		
MLE Standard Deviation	108.1745		
MLE Coefficient of Variation	1.630478		
MLE Skewness	9.22599		
MLE Median	34.68653		
MLE 80% Quantile	90.80395		
MLE 90% Quantile	149.8761		
MLE 95% Quantile	225.835		
MLE 99% Quantile	490.4779		
MVU Estimate of Median	33.21492		
MVU Estimate of Mean	62.21407		
MVU Estimate of Standard Deviation	82.61857		
MVU Estimate of SE of Mean	20.29147		
95% H-UCL	163.8974		
95% Chebyshev (MVUE) UCL	150.6626		
97.5% Chebyshev (MVUE) UCL	188.9343		
99% Chebyshev (MVUE) UCL	264.1117		
Non-parametric Statistics			
95% CLT UCL	122.2396		
95% Adjusted-CLT UCL	153.6533		
95% Modified-t UCL	130.8419		
95% Jackknife UCL	125.9419		
95% Chebyshev (Mean, Sd) UCL	208.5241		
97.5% Chebyshev (Mean, Sd) UCL	268.4866		
99% Chebyshev (Mean, Sd) UCL	386.2714		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	120.4437		
95% Bootstrap-t UCL	269.3959		
95% Hall's Bootstrap UCL	323.0525		
95% Percentile Bootstrap UCL	129.4233		
95% BCA Bootstrap UCL	165.92		
Recommendations			
Human Inspection Recommended?	NO		
Appropriate Distribution	LOGNORMAL		
1st Recommended UCL	150.6626	95% Chebyshev (MVUE) UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - lp-f.xls		
Variable:	Barium		
<b>Raw Statistics</b>			
Number of Observations	15		
Number of Missing Data	0		
Number of Valid Observations	15		
Number of Distinct Observations	15		
Minimum	11.2		
Maximum	68.9		
Mean	30.05333		
Standard Deviation	15.50331		
Variance	240.3527		
Coefficient of Variation	0.51586		
Skewness	1.257792		
Too Few Distinct Observations?	NO		
<b>Normal Statistics</b>			
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.902867		
Shapiro-Wilk 5% Critical Value	0.881		
5% Normality Test Result	NORMAL		Data are normal at 5% significance level
95% Student's-t UCL	37.10375		
<b>Gamma Statistics</b>			
k hat	4.556558		
k star (bias corrected)	3.689691		
Theta hat	6.595621		
Theta star	8.145216		
nu hat	136.6968		
nu star	110.6907		
5% Approximate Chi Square Value	87.40119		
Adjusted Level of Significance	0.03235		
Adjusted Chi Square Value	84.8553		
Anderson-Darling Test Statistic	0.186071		
Anderson-Darling 5% Critical Value	0.739206		
Anderson-Darling 5% Gamma Test Result	AD GAMMA		Data follow gamma distribution at 5% significance level.
Kolmogrov-Smirnov Test Statistic	0.126491		
Kolmogrov-Smirnov 5% Critical Value	0.222288		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA		Data follow gamma distribution at 5% significance level
5% Gamma Test Result	GAMMA		Data follow gamma distribution at 5% significance level
95% Approximate Gamma UCL	38.06156		
95% Adjusted Gamma UCL	39.20351		
<b>Lognormal Statistics</b>			
Minimum of log data	2.415914		
Maximum of log data	4.232656		
Mean of log data	3.289247		
Standard Deviation of log data	0.490649		
Variance of log data	0.240736		
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.992118		
Shapiro-Wilk 5% Critical Value	0.881		
5% Lognormality Test Result	LOGNORMAL		Data are lognormal at 5% significance level
MLE Mean	30.25359		
MLE Standard Deviation	15.78372		
MLE Coefficient of Variation	0.521714		
MLE Skewness	1.707145		
MLE Median	26.82265		
MLE 80% Quantile	40.60313		
MLE 90% Quantile	50.38687		
MLE 95% Quantile	60.1213		
MLE 99% Quantile	83.97306		
MVU Estimate of Median	26.60817		
MVU Estimate of Mean	29.98852		
MVU Estimate of Standard Deviation	15.17606		
MVU Estimate of SE of Mean	3.908978		
95% H-UCL	39.62621		
95% Chebyshev (MVUE) UCL	47.02735		
97.5% Chebyshev (MVUE) UCL	54.40007		
99% Chebyshev (MVUE) UCL	68.88235		
<b>Non-parametric Statistics</b>			
95% CLT UCL	36.63758		
95% Adjusted-CLT UCL	38.02664		
95% Modified-t UCL	37.32041		
95% Jackknife UCL	37.10375		
95% Chebyshev (Mean, Sd) UCL	47.50173		
97.5% Chebyshev (Mean, Sd) UCL	55.05167		
99% Chebyshev (Mean, Sd) UCL	69.88206		
<b>Bootstrap Statistics</b>			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	36.52882		
95% Bootstrap-t UCL	39.467		
95% Hall's Bootstrap UCL	41.86903		
95% Percentile Bootstrap UCL	36.88667		
95% BCA Bootstrap UCL	39.98		
<b>Recommendations</b>			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	37.10375	95% Student's-t UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - lp-f.xls		
Variable:	Cadmium		
Raw Statistics			
Number of Observations	15		
Number of Missing Data	0		
Number of Valid Observations	15		
Number of Distinct Observations	14		
Minimum	0.06		
Maximum	5.6		
Mean	1.900667		
Standard Deviation	1.620434		
Variance	2.625807		
Coefficient of Variation	0.852561		
Skewness	0.794561		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.921939		
Shapiro-Wilk 5% Critical Value	0.881		
5% Normality Test Result	NORMAL	Data are normal at 5% significance level	
95% Student's-t UCL	2.637589		
Gamma Statistics			
k hat	0.895565		
k star (bias corrected)	0.760897		
Theta hat	2.122309		
Theta star	2.49793		
nu hat	26.86696		
nu star	22.8269		
5% Approximate Chi Square Value	12.95846		
Adjusted Level of Significance	0.03235		
Adjusted Chi Square Value	12.04994		
Anderson-Darling Test Statistic	0.533134		
Anderson-Darling 5% Critical Value	0.768076		
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.	
Kolmogrov-Smirnov Test Statistic	0.191099		
Kolmogrov-Smirnov 5% Critical Value	0.228881		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level	
95% Approximate Gamma UCL	3.348108		
95% Adjusted Gamma UCL	3.600544		
Lognormal Statistics			
Minimum of log data	-2.813411		
Maximum of log data	1.722767		
Mean of log data	-0.01098		
Standard Deviation of log data	1.502464		
Variance of log data	2.257398		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.85027		
Shapiro-Wilk 5% Critical Value	0.881		
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level	
MLE Mean	3.057872		
MLE Standard Deviation	8.945612		
MLE Coefficient of Variation	2.925437		
MLE Skewness	33.81274		
MLE Median	0.98908		
MLE 80% Quantile	3.520498		
MLE 90% Quantile	6.81882		
MLE 95% Quantile	11.71153		
MLE 99% Quantile	32.58172		
MVU Estimate of Median	0.917058		
MVU Estimate of Mean	2.670186		
MVU Estimate of Standard Deviation	5.157743		
MVU Estimate of SE of Mean	1.182163		
95% H-UCL	13.06499		
95% Chebyshev (MVUE) UCL	7.823116		
97.5% Chebyshev (MVUE) UCL	10.05279		
99% Chebyshev (MVUE) UCL	14.43256		
Non-parametric Statistics			
95% CLT UCL	2.588864		
95% Adjusted-CLT UCL	2.680581		
95% Modified-t UCL	2.651895		
95% Jackknife UCL	2.637589		
95% Chebyshev (Mean, Sd) UCL	3.724405		
97.5% Chebyshev (Mean, Sd) UCL	4.513538		
99% Chebyshev (Mean, Sd) UCL	6.063637		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	2.562959		
95% Bootstrap-t UCL	2.7788		
95% Hall's Bootstrap UCL	2.771587		
95% Percentile Bootstrap UCL	2.58		
95% BCA Bootstrap UCL	2.993333		
Recommendations			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	2.637589	95% Student's-t UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - lp-f.xls		
Variable:	Chromium		
Raw Statistics			
Number of Observations	15		
Number of Missing Data	0		
Number of Valid Observations	15		
Number of Distinct Observations	15		
Minimum	8.2		
Maximum	134		
Mean	52.46333		
Standard Deviation	40.412		
Variance	1633.129		
Coefficient of Variation	0.77029		
Skewness	1.086527		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.855592		
Shapiro-Wilk 5% Critical Value	0.881		
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level	
95% Student's-t UCL	70.84143		
Gamma Statistics			
k hat	1.853525		
k star (bias corrected)	1.527264		
Theta hat	28.30463		
Theta star	34.35118		
nu hat	55.60574		
nu star	45.81793		
5% Approximate Chi Square Value	31.28573		
Adjusted Level of Significance	0.03235		
Adjusted Chi Square Value	29.81139		
Anderson-Darling Test Statistic	0.293173		
Anderson-Darling 5% Critical Value	0.748876		
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.	
Kolmogrov-Smirnov Test Statistic	0.120986		
Kolmogrov-Smirnov 5% Critical Value	0.224697		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level	
95% Approximate Gamma UCL	76.8325		
95% Adjusted Gamma UCL	80.63231		
Lognormal Statistics			
Minimum of log data	2.104134		
Maximum of log data	4.89784		
Mean of log data	3.666731		
Standard Deviation of log data	0.832972		
Variance of log data	0.693842		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.955273		
Shapiro-Wilk 5% Critical Value	0.881		
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level	
MLE Mean	55.34861		
MLE Standard Deviation	55.38706		
MLE Coefficient of Variation	1.000695		
MLE Skewness	4.004169		
MLE Median	39.12379		
MLE 80% Quantile	79.09042		
MLE 90% Quantile	114.1027		
MLE 95% Quantile	154.0025		
MLE 99% Quantile	271.5708		
MVU Estimate of Median	38.22804		
MVU Estimate of Mean	53.74588		
MVU Estimate of Standard Deviation	48.78476		
MVU Estimate of SE of Mean	12.382		
95% H-UCL	96.35218		
95% Chebyshev (MVUE) UCL	107.7178		
97.5% Chebyshev (MVUE) UCL	131.0714		
99% Chebyshev (MVUE) UCL	176.9452		
Non-parametric Statistics			
95% CLT UCL	69.62628		
95% Adjusted-CLT UCL	72.75409		
95% Modified-t UCL	71.3293		
95% Jackknife UCL	70.84143		
95% Chebyshev (Mean, Sd) UCL	97.94553		
97.5% Chebyshev (Mean, Sd) UCL	117.6257		
99% Chebyshev (Mean, Sd) UCL	156.2836		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	68.89913		
95% Bootstrap-t UCL	75.89094		
95% Hall's Bootstrap UCL	69.87522		
95% Percentile Bootstrap UCL	69.61		
95% BCA Bootstrap UCL	78.84333		
Recommendations			
Human Inspection Recommended?	NO		
Appropriate Distribution	GAMMA		
1st Recommended UCL	76.8325	95% Approximate Gamma UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - lp-f.xls		
Variable:	Copper		
Raw Statistics			
Number of Observations	15		
Number of Missing Data	0		
Number of Valid Observations	15		
Number of Distinct Observations	15		
Minimum	6.6		
Maximum	1560		
Mean	187.2467		
Standard Deviation	385.9859		
Variance	148985.1		
Coefficient of Variation	2.061376		
Skewness	3.664922		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.441446		
Shapiro-Wilk 5% Critical Value	0.881		
5% Normality Test Result	NOT NORMAL		Data not normal at 5% significance level
95% Student's-t UCL	362.7808		
Gamma Statistics			
k hat	0.651317		
k star (bias corrected)	0.565498		
Theta hat	287.4893		
Theta star	331.1181		
nu hat	19.53951		
nu star	16.96494		
5% Approximate Chi Square Value	8.645867		
Adjusted Level of Significance	0.03235		
Adjusted Chi Square Value	7.923217		
Anderson-Darling Test Statistic	0.958571		
Anderson-Darling 5% Critical Value	0.782168		
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA		Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.206973		
Kolmogrov-Smirnov 5% Critical Value	0.231637		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA		Data follow gamma distribution at 5% significance level
5% Gamma Test Result	APPROX GAMMA		Data follow approximate gamma distribution at 5% significance level
95% Approximate Gamma UCL	367.4159		
95% Adjusted Gamma UCL	400.9267		
Lognormal Statistics			
Minimum of log data	1.88707		
Maximum of log data	7.352441		
Mean of log data	4.295033		
Standard Deviation of log data	1.338297		
Variance of log data	1.791038		
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.955536		
Shapiro-Wilk 5% Critical Value	0.881		
5% Lognormality Test Result	LOGNORMAL		Data are lognormal at 5% significance level
MLE Mean	179.5676		
MLE Standard Deviation	401.3515		
MLE Coefficient of Variation	2.2351		
MLE Skewness	17.87113		
MLE Median	73.3346		
MLE 80% Quantile	227.2142		
MLE 90% Quantile	409.4209		
MLE 95% Quantile	662.838		
MLE 99% Quantile	1648.977		
MVU Estimate of Median	69.06904		
MVU Estimate of Mean	162.6919		
MVU Estimate of Standard Deviation	267.3254		
MVU Estimate of SE of Mean	63.47699		
95% H-UCL	588.3793		
95% Chebyshev (MVUE) UCL	439.3817		
97.5% Chebyshev (MVUE) UCL	559.1056		
99% Chebyshev (MVUE) UCL	794.2799		
Non-parametric Statistics			
95% CLT UCL	351.1746		
95% Adjusted-CLT UCL	451.9432		
95% Modified-t UCL	378.4987		
95% Jackknife UCL	362.7808		
95% Chebyshev (Mean, Sd) UCL	621.6594		
97.5% Chebyshev (Mean, Sd) UCL	809.6302		
99% Chebyshev (Mean, Sd) UCL	1178.862		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	342.2956		
95% Bootstrap-t UCL	972.8353		
95% Hall's Bootstrap UCL	986.6114		
95% Percentile Bootstrap UCL	370.93		
95% BCA Bootstrap UCL	504.33		
Recommendations			
Human Inspection Recommended?	NO		
Appropriate Distribution	GAMMA		
1st Recommended UCL	367.4159		95% Approximate Gamma UCL
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - lp-f.xls		
Variable:	Lead		
Raw Statistics			
Number of Observations	15		
Number of Missing Data	0		
Number of Valid Observations	15		
Number of Distinct Observations	14		
Minimum	6.4		
Maximum	400		
Mean	82.81333		
Standard Deviation	101.175		
Variance	10236.38		
Coefficient of Variation	1.221723		
Skewness	2.523135		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.698233		
Shapiro-Wilk 5% Critical Value	0.881		
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level	
95% Student's-t UCL	128.8245		
Gamma Statistics			
k hat	1.034878		
k star (bias corrected)	0.872346		
Theta hat	80.02235		
Theta star	94.9317		
nu hat	31.04633		
nu star	26.17039		
5% Approximate Chi Square Value	15.5088		
Adjusted Level of Significance	0.03235		
Adjusted Chi Square Value	14.50457		
Anderson-Darling Test Statistic	0.302908		
Anderson-Darling 5% Critical Value	0.762385		
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.	
Kolmogrov-Smirnov Test Statistic	0.13443		
Kolmogrov-Smirnov 5% Critical Value	0.227752		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level	
95% Approximate Gamma UCL	139.7437		
95% Adjusted Gamma UCL	149.4189		
Lognormal Statistics			
Minimum of log data	1.856298		
Maximum of log data	5.991465		
Mean of log data	3.861044		
Standard Deviation of log data	1.128587		
Variance of log data	1.273709		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.974747		
Shapiro-Wilk 5% Critical Value	0.881		
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level	
MLE Mean	89.82815		
MLE Standard Deviation	144.1199		
MLE Coefficient of Variation	1.604396		
MLE Skewness	8.943038		
MLE Median	47.51492		
MLE 80% Quantile	123.3098		
MLE 90% Quantile	202.6091		
MLE 95% Quantile	304.1649		
MLE 99% Quantile	655.9849		
MVU Estimate of Median	45.53464		
MVU Estimate of Mean	84.36116		
MVU Estimate of Standard Deviation	110.738		
MVU Estimate of SE of Mean	27.2377		
95% H-UCL	218.9567		
95% Chebyshev (MVUE) UCL	203.0875		
97.5% Chebyshev (MVUE) UCL	254.4605		
99% Chebyshev (MVUE) UCL	355.3728		
Non-parametric Statistics			
95% CLT UCL	125.7823		
95% Adjusted-CLT UCL	143.9669		
95% Modified-t UCL	131.6609		
95% Jackknife UCL	128.8245		
95% Chebyshev (Mean, Sd) UCL	196.682		
97.5% Chebyshev (Mean, Sd) UCL	245.9531		
99% Chebyshev (Mean, Sd) UCL	342.7366		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	124.2513		
95% Bootstrap-t UCL	186.5345		
95% Hall's Bootstrap UCL	317.7062		
95% Percentile Bootstrap UCL	128.2733		
95% BCA Bootstrap UCL	155.4133		
Recommendations			
Human Inspection Recommended?	NO		
Appropriate Distribution	GAMMA		
1st Recommended UCL	139.7437	95% Approximate Gamma UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - lp-f.xls		
Variable:	Manganese		
<b>Raw Statistics</b>			
Number of Observations	15		
Number of Missing Data	0		
Number of Valid Observations	15		
Number of Distinct Observations	15		
Minimum	47.5		
Maximum	333		
Mean	171.8533		
Standard Deviation	79.96822		
Variance	6394.916		
Coefficient of Variation	0.465328		
Skewness	0.425381		
Too Few Distinct Observations?	NO		
<b>Normal Statistics</b>			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.95852		
Shapiro-Wilk 5% Critical Value	0.881		
5% Normality Test Result	NORMAL	Data are normal at 5% significance level	
95% Student's-t UCL	208.2203		
<b>Gamma Statistics</b>			
k hat	4.538057		
k star (bias corrected)	3.67489		
Theta hat	37.86936		
Theta star	46.76421		
nu hat	136.1417		
nu star	110.2467		
5% Approximate Chi Square Value	87.0064		
Adjusted Level of Significance	0.03235		
Adjusted Chi Square Value	84.46655		
Anderson-Darling Test Statistic	0.275486		
Anderson-Darling 5% Critical Value	0.739234		
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.	
Kolmogrov-Smirnov Test Statistic	0.143542		
Kolmogrov-Smirnov 5% Critical Value	0.222297		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level	
95% Approximate Gamma UCL	217.7571		
95% Adjusted Gamma UCL	224.3049		
<b>Lognormal Statistics</b>			
Minimum of log data	3.86073		
Maximum of log data	5.808142		
Mean of log data	5.032435		
Standard Deviation of log data	0.518834		
Variance of log data	0.269189		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.953768		
Shapiro-Wilk 5% Critical Value	0.881		
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level	
MLE Mean	175.393		
MLE Standard Deviation	97.48162		
MLE Coefficient of Variation	0.55579		
MLE Skewness	1.839054		
MLE Median	153.3058		
MLE 80% Quantile	237.662		
MLE 90% Quantile	298.6094		
MLE 95% Quantile	359.9326		
MLE 99% Quantile	512.4703		
MVU Estimate of Median	151.9356		
MVU Estimate of Mean	173.658		
MVU Estimate of Standard Deviation	93.26267		
MVU Estimate of SE of Mean	24.00838		
95% H-UCL	234.2995		
95% Chebyshev (MVUE) UCL	278.3081		
97.5% Chebyshev (MVUE) UCL	323.5903		
99% Chebyshev (MVUE) UCL	412.5383		
<b>Non-parametric Statistics</b>			
95% CLT UCL	205.8158		
95% Adjusted-CLT UCL	208.239		
95% Modified-t UCL	208.5983		
95% Jackknife UCL	208.2203		
95% Chebyshev (Mean, Sd) UCL	261.8546		
97.5% Chebyshev (Mean, Sd) UCL	300.7982		
99% Chebyshev (Mean, Sd) UCL	377.2954		
<b>Bootstrap Statistics</b>			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	204.7715		
95% Bootstrap-t UCL	209.9911		
95% Hall's Bootstrap UCL	210.46		
95% Percentile Bootstrap UCL	205.72		
95% BCA Bootstrap UCL	217.4333		
<b>Recommendations</b>			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	208.2203	95% Student's-t UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - lp-f.xls		
Variable:	Mercury		
Raw Statistics			
Number of Observations	15		
Number of Missing Data	0		
Number of Valid Observations	15		
Number of Distinct Observations	14		
Minimum	0.045		
Maximum	1.4		
Mean	0.461333		
Standard Deviation	0.403743		
Variance	0.163009		
Coefficient of Variation	0.875167		
Skewness	1.074998		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.864318		
Shapiro-Wilk 5% Critical Value	0.881		
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level	
95% Student's-t UCL	0.644943		
Gamma Statistics			
k hat	1.331542		
k star (bias corrected)	1.109678		
Theta hat	0.346466		
Theta star	0.415736		
nu hat	39.94625		
nu star	33.29034		
5% Approximate Chi Square Value	21.0958		
Adjusted Level of Significance	0.03235		
Adjusted Chi Square Value	19.90587		
Anderson-Darling Test Statistic	0.379703		
Anderson-Darling 5% Critical Value	0.756903		
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.	
Kolmogrov-Smirnov Test Statistic	0.1943		
Kolmogrov-Smirnov 5% Critical Value	0.226322		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level	
95% Approximate Gamma UCL	0.728009		
95% Adjusted Gamma UCL	0.771528		
Lognormal Statistics			
Minimum of log data	-3.101093		
Maximum of log data	0.336472		
Mean of log data	-1.19397		
Standard Deviation of log data	1.030057		
Variance of log data	1.061018		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.938894		
Shapiro-Wilk 5% Critical Value	0.881		
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level	
MLE Mean	0.515065		
MLE Standard Deviation	0.707969		
MLE Coefficient of Variation	1.374522		
MLE Skewness	6.720467		
MLE Median	0.303016		
MLE 80% Quantile	0.72356		
MLE 90% Quantile	1.138434		
MLE 95% Quantile	1.649503		
MLE 99% Quantile	3.326575		
MVU Estimate of Median	0.292463		
MVU Estimate of Mean	0.490111		
MVU Estimate of Standard Deviation	0.573658		
MVU Estimate of SE of Mean	0.142909		
95% H-UCL	1.110888		
95% Chebyshev (MVUE) UCL	1.113037		
97.5% Chebyshev (MVUE) UCL	1.382578		
99% Chebyshev (MVUE) UCL	1.912039		
Non-parametric Statistics			
95% CLT UCL	0.632803		
95% Adjusted-CLT UCL	0.66372		
95% Modified-t UCL	0.649766		
95% Jackknife UCL	0.644943		
95% Chebyshev (Mean, Sd) UCL	0.915732		
97.5% Chebyshev (Mean, Sd) UCL	1.11235		
99% Chebyshev (Mean, Sd) UCL	1.498569		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	0.627352		
95% Bootstrap-t UCL	0.706194		
95% Hall's Bootstrap UCL	0.671766		
95% Percentile Bootstrap UCL	0.629667		
95% BCA Bootstrap UCL	0.718		
Recommendations			
Human Inspection Recommended?	NO		
Appropriate Distribution	GAMMA		
1st Recommended UCL	0.728009	95% Approximate Gamma UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - lp-f.xls		
Variable:	Nickel		
<b>Raw Statistics</b>			
Number of Observations	15		
Number of Missing Data	0		
Number of Valid Observations	15		
Number of Distinct Observations	15		
Minimum	0.59		
Maximum	30.6		
Mean	9.709333		
Standard Deviation	7.143195		
Variance	51.02524		
Coefficient of Variation	0.735704		
Skewness	1.868158		
Too Few Distinct Observations?	NO		
<b>Normal Statistics</b>			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.835183		
Shapiro-Wilk 5% Critical Value	0.881		
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level	
95% Student's-t UCL	12.95783		
<b>Gamma Statistics</b>			
k hat	1.935093		
k star (bias corrected)	1.592519		
Theta hat	5.017503		
Theta star	6.096841		
nu hat	58.05278		
nu star	47.77556		
5% Approximate Chi Square Value	32.90886		
Adjusted Level of Significance	0.03235		
Adjusted Chi Square Value	31.39373		
Anderson-Darling Test Statistic	0.42493		
Anderson-Darling 5% Critical Value	0.747742		
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.	
Kolmogrov-Smirnov Test Statistic	0.153349		
Kolmogrov-Smirnov 5% Critical Value	0.224509		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level	
95% Approximate Gamma UCL	14.09556		
95% Adjusted Gamma UCL	14.77584		
<b>Lognormal Statistics</b>			
Minimum of log data	-0.527633		
Maximum of log data	3.421		
Mean of log data	1.992981		
Standard Deviation of log data	0.895621		
Variance of log data	0.802137		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.874107		
Shapiro-Wilk 5% Critical Value	0.881		
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level	
MLE Mean	10.95778		
MLE Standard Deviation	12.15427		
MLE Coefficient of Variation	1.10919		
MLE Skewness	4.692211		
MLE Median	7.337376		
MLE 80% Quantile	15.63921		
MLE 90% Quantile	23.1931		
MLE 95% Quantile	32.01736		
MLE 99% Quantile	58.92093		
MVU Estimate of Median	7.143469		
MVU Estimate of Mean	10.58045		
MVU Estimate of Standard Deviation	10.45687		
MVU Estimate of SE of Mean	2.640835		
95% H-UCL	20.33188		
95% Chebyshev (MVUE) UCL	22.09158		
97.5% Chebyshev (MVUE) UCL	27.07246		
99% Chebyshev (MVUE) UCL	36.85642		
<b>Non-parametric Statistics</b>			
95% CLT UCL	12.74304		
95% Adjusted-CLT UCL	13.69364		
95% Modified-t UCL	13.10611		
95% Jackknife UCL	12.95783		
95% Chebyshev (Mean, Sd) UCL	17.74873		
97.5% Chebyshev (Mean, Sd) UCL	21.22739		
99% Chebyshev (Mean, Sd) UCL	28.06053		
<b>Bootstrap Statistics</b>			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	12.75176		
95% Bootstrap-t UCL	14.47484		
95% Hall's Bootstrap UCL	28.65875		
95% Percentile Bootstrap UCL	12.77		
95% BCA Bootstrap UCL	14.68333		
<b>Recommendations</b>			
Human Inspection Recommended?	NO		
Appropriate Distribution	GAMMA		
1st Recommended UCL	14.09556	95% Approximate Gamma UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - lp-f.xls		
Variable:	Thallium		
<b>Raw Statistics</b>			
Number of Observations	15		
Number of Missing Data	0		
Number of Valid Observations	15		
Number of Distinct Observations	12		
Minimum	0.85		
Maximum	2.9		
Mean	1.585		
Standard Deviation	0.662234		
Variance	0.438554		
Coefficient of Variation	0.417813		
Skewness	0.561653		
Too Few Distinct Observations?	NO		
<b>Normal Statistics</b>			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.909513		
Shapiro-Wilk 5% Critical Value	0.881		
5% Normality Test Result	NORMAL	Data are normal at 5% significance level	
95% Student's-t UCL	1.886163		
<b>Gamma Statistics</b>			
k hat	6.255767		
k star (bias corrected)	5.049058		
Theta hat	0.253366		
Theta star	0.31392		
nu hat	187.673		
nu star	151.4717		
5% Approximate Chi Square Value	124.0184		
Adjusted Level of Significance	0.03235		
Adjusted Chi Square Value	120.9616		
Anderson-Darling Test Statistic	0.491961		
Anderson-Darling 5% Critical Value	0.738259		
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.	
Kolmogrov-Smirnov Test Statistic	0.165399		
Kolmogrov-Smirnov 5% Critical Value	0.221937		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level	
95% Approximate Gamma UCL	1.935863		
95% Adjusted Gamma UCL	1.984785		
<b>Lognormal Statistics</b>			
Minimum of log data	-0.162519		
Maximum of log data	1.064711		
Mean of log data	0.378534		
Standard Deviation of log data	0.421137		
Variance of log data	0.177357		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.917475		
Shapiro-Wilk 5% Critical Value	0.881		
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level	
MLE Mean	1.59554		
MLE Standard Deviation	0.702865		
MLE Coefficient of Variation	0.440519		
MLE Skewness	1.407042		
MLE Median	1.460143		
MLE 80% Quantile	2.084221		
MLE 90% Quantile	2.508526		
MLE 95% Quantile	2.919186		
MLE 99% Quantile	3.888795		
MVU Estimate of Median	1.451533		
MVU Estimate of Mean	1.585465		
MVU Estimate of Standard Deviation	0.683174		
MVU Estimate of SE of Mean	0.176158		
95% H-UCL	1.995642		
95% Chebyshev (MVUE) UCL	2.353318		
97.5% Chebyshev (MVUE) UCL	2.685569		
99% Chebyshev (MVUE) UCL	3.338212		
<b>Non-parametric Statistics</b>			
95% CLT UCL	1.86625		
95% Adjusted-CLT UCL	1.892746		
95% Modified-t UCL	1.890296		
95% Jackknife UCL	1.886163		
95% Chebyshev (Mean, Sd) UCL	2.33032		
97.5% Chebyshev (Mean, Sd) UCL	2.65282		
99% Chebyshev (Mean, Sd) UCL	3.286309		
<b>Bootstrap Statistics</b>			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	1.861935		
95% Bootstrap-t UCL	1.933019		
95% Hall's Bootstrap UCL	1.88625		
95% Percentile Bootstrap UCL	1.85		
95% BCA Bootstrap UCL	2.001667		
<b>Recommendations</b>			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	1.886163	95% Student's-t UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - lp-f.xls		
Variable:	Vanadium		
Raw Statistics			
Number of Observations	15		
Number of Missing Data	0		
Number of Valid Observations	15		
Number of Distinct Observations	14		
Minimum	6.5		
Maximum	39.8		
Mean	16.44667		
Standard Deviation	9.250376		
Variance	85.56945		
Coefficient of Variation	0.562447		
Skewness	1.62213		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.820448		
Shapiro-Wilk 5% Critical Value	0.881		
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level	
95% Student's-t UCL	20.65344		
Gamma Statistics			
k hat	4.256646		
k star (bias corrected)	3.449761		
Theta hat	3.863762		
Theta star	4.76748		
nu hat	127.6994		
nu star	103.4928		
5% Approximate Chi Square Value	81.01428		
Adjusted Level of Significance	0.03235		
Adjusted Chi Square Value	78.56784		
Anderson-Darling Test Statistic	0.510475		
Anderson-Darling 5% Critical Value	0.73965		
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.	
Kolmogrov-Smirnov Test Statistic	0.197375		
Kolmogrov-Smirnov 5% Critical Value	0.222429		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level	
95% Approximate Gamma UCL	21.01003		
95% Adjusted Gamma UCL	21.66424		
Lognormal Statistics			
Minimum of log data	1.871802		
Maximum of log data	3.683867		
Mean of log data	2.678085		
Standard Deviation of log data	0.496045		
Variance of log data	0.246061		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.9549		
Shapiro-Wilk 5% Critical Value	0.881		
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level	
MLE Mean	16.463		
MLE Standard Deviation	8.695476		
MLE Coefficient of Variation	0.528183		
MLE Skewness	1.7319		
MLE Median	14.55719		
MLE 80% Quantile	22.13684		
MLE 90% Quantile	27.53624		
MLE 95% Quantile	32.91996		
MLE 99% Quantile	46.14949		
MVU Estimate of Median	14.43822		
MVU Estimate of Mean	16.31529		
MVU Estimate of Standard Deviation	8.352959		
MVU Estimate of SE of Mean	2.151293		
95% H-UCL	21.64378		
95% Chebyshev (MVUE) UCL	25.69256		
97.5% Chebyshev (MVUE) UCL	29.75012		
99% Chebyshev (MVUE) UCL	37.72039		
Non-parametric Statistics			
95% CLT UCL	20.3753		
95% Adjusted-CLT UCL	21.44419		
95% Modified-t UCL	20.82017		
95% Jackknife UCL	20.65344		
95% Chebyshev (Mean, Sd) UCL	26.85762		
97.5% Chebyshev (Mean, Sd) UCL	31.36245		
99% Chebyshev (Mean, Sd) UCL	40.21131		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	20.31496		
95% Bootstrap-t UCL	23.66806		
95% Hall's Bootstrap UCL	44.0194		
95% Percentile Bootstrap UCL	20.61667		
95% BCA Bootstrap UCL	22.23667		
Recommendations			
Human Inspection Recommended?	NO		
Appropriate Distribution	GAMMA		
1st Recommended UCL	21.01003	95% Approximate Gamma UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - lp-f.xls		
Variable:	Zinc		
<b>Raw Statistics</b>			
Number of Observations	15		
Number of Missing Data	0		
Number of Valid Observations	15		
Number of Distinct Observations	15		
Minimum	15.2		
Maximum	2800		
Mean	699.46		
Standard Deviation	844.784		
Variance	713660.1		
Coefficient of Variation	1.207766		
Skewness	1.789659		
Too Few Distinct Observations?	NO		
<b>Normal Statistics</b>			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.749208		
Shapiro-Wilk 5% Critical Value	0.881		
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level	
95% Student's-t UCL	1083.641		
<b>Gamma Statistics</b>			
k hat	0.761596		
k star (bias corrected)	0.653721		
Theta hat	918.4139		
Theta star	1069.967		
nu hat	22.84787		
nu star	19.61163		
5% Approximate Chi Square Value	10.56387		
Adjusted Level of Significance	0.03235		
Adjusted Chi Square Value	9.754015		
Anderson-Darling Test Statistic	0.244474		
Anderson-Darling 5% Critical Value	0.77455		
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.	
Kolmogrov-Smirnov Test Statistic	0.117133		
Kolmogrov-Smirnov 5% Critical Value	0.230113		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level	
95% Approximate Gamma UCL	1298.534		
95% Adjusted Gamma UCL	1406.349		
<b>Lognormal Statistics</b>			
Minimum of log data	2.721295		
Maximum of log data	7.937375		
Mean of log data	5.76591		
Standard Deviation of log data	1.506537		
Variance of log data	2.269653		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.943937		
Shapiro-Wilk 5% Critical Value	0.881		
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level	
MLE Mean	993.0064		
MLE Standard Deviation	2924.913		
MLE Coefficient of Variation	2.945513		
MLE Skewness	34.39194		
MLE Median	319.2296		
MLE 80% Quantile	1140.172		
MLE 90% Quantile	2212.349		
MLE 95% Quantile	3805.351		
MLE 99% Quantile	10615.97		
MVU Estimate of Median	295.8621		
MVU Estimate of Mean	866.223		
MVU Estimate of Standard Deviation	1679.713		
MVU Estimate of SE of Mean	384.6223		
95% H-UCL	4272.284		
95% Chebyshev (MVUE) UCL	2542.753		
97.5% Chebyshev (MVUE) UCL	3268.189		
99% Chebyshev (MVUE) UCL	4693.167		
<b>Non-parametric Statistics</b>			
95% CLT UCL	1058.239		
95% Adjusted-CLT UCL	1165.937		
95% Modified-t UCL	1100.44		
95% Jackknife UCL	1083.641		
95% Chebyshev (Mean, Sd) UCL	1650.233		
97.5% Chebyshev (Mean, Sd) UCL	2061.633		
99% Chebyshev (Mean, Sd) UCL	2869.749		
<b>Bootstrap Statistics</b>			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	1049.353		
95% Bootstrap-t UCL	1524.361		
95% Hall's Bootstrap UCL	2873.242		
95% Percentile Bootstrap UCL	1051.273		
95% BCA Bootstrap UCL	1296.147		
<b>Recommendations</b>			
Human Inspection Recommended?	NO		
Appropriate Distribution	GAMMA		
1st Recommended UCL	1298.534	95% Approximate Gamma UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-supplemental\HHRA\Statistics\HH - June 2004\Sed stat - 01.xls		
Variable:	Benzo(a)anthracene		
<b>Raw Statistics</b>			
Number of Observations	4		
Number of Missing Data	0		
Number of Valid Observations	4		
Number of Distinct Observations	4		
Minimum	0.12		
Maximum	0.25		
Mean	0.19125		
Standard Deviation	0.0536		
Variance	0.002873		
Coefficient of Variation	0.280259		
Skewness	-0.684919		
Too Few Distinct Observations?	NO		
<b>Normal Statistics</b>			
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.943459		
Shapiro-Wilk 5% Critical Value	0.748		
5% Normality Test Result	NORMAL		Data are normal at 5% significance level
95% Student's-t UCL	0.25432		
<b>Gamma Statistics</b>			
k hat	15.08388		
k star (bias corrected)	3.937636		
Theta hat	0.012679		
Theta star	0.04857		
nu hat	120.671		
nu star	31.50109		
5% Approximate Chi Square Value	19.67474		
Adjusted Level of Significance	N/A		
Adjusted Chi Square Value	N/A		
Anderson-Darling Test Statistic	0.368246		
Anderson-Darling 5% Critical Value	0.657095		
Anderson-Darling 5% Gamma Test Result	AD GAMMA		Data follow gamma distribution at 5% significance level.
Kolmogrov-Smirnov Test Statistic	0.314143		
Kolmogrov-Smirnov 5% Critical Value	0.394579		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA		Data follow gamma distribution at 5% significance level
5% Gamma Test Result	GAMMA		Data follow gamma distribution at 5% significance level
95% Approximate Gamma UCL	0.306209		
95% Adjusted Gamma UCL	N/A		
<b>Lognormal Statistics</b>			
Minimum of log data	-2.120264		
Maximum of log data	-1.386294		
Mean of log data	-1.687688		
Standard Deviation of log data	0.309238		
Variance of log data	0.095628		
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.90177		
Shapiro-Wilk 5% Critical Value	0.748		
5% Lognormality Test Result	LOGNORMAL		Data are lognormal at 5% significance level
MLE Mean	0.194005		
MLE Standard Deviation	0.061457		
MLE Coefficient of Variation	0.316781		
MLE Skewness	0.98213		
MLE Median	0.184947		
MLE 80% Quantile	0.240176		
MLE 90% Quantile	0.275184		
MLE 95% Quantile	0.307589		
MLE 99% Quantile	0.37969		
MVU Estimate of Median	0.182744		
MVU Estimate of Mean	0.191651		
MVU Estimate of Standard Deviation	0.058846		
MVU Estimate of SE of Mean	0.029421		
95% H-UCL	0.350391		
95% Chebyshev (MVUE) UCL	0.319894		
97.5% Chebyshev (MVUE) UCL	0.375385		
99% Chebyshev (MVUE) UCL	0.484386		
<b>Non-parametric Statistics</b>			
95% CLT UCL	0.235332		
95% Adjusted-CLT UCL	0.225525		
95% Modified-t UCL	0.25279		
95% Jackknife UCL	0.25432		
95% Chebyshev (Mean, Sd) UCL	0.308068		
97.5% Chebyshev (Mean, Sd) UCL	0.358615		
99% Chebyshev (Mean, Sd) UCL	0.457905		
<b>Bootstrap Statistics</b>			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	N/R		Not enough distinct data warning
95% Bootstrap-t UCL	N/R		Not enough distinct data warning
95% Hall's Bootstrap UCL	N/R		Not enough distinct data warning
95% Percentile Bootstrap UCL	N/R		Not enough distinct data warning
95% BCA Bootstrap UCL	N/R		Not enough distinct data warning
<b>Recommendations</b>			
Human Inspection Recommended?	YES		
Appropriate Distribution	NORMAL		
1st Recommended UCL	0.25432		95% Student's-t UCL
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	YES		Recommended UCL exceeds the maximum data value
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-supplemental\HHRA\Statistics\HH - June 2004\Sed stat - 01.xls		
Variable:	Benzo(a)pyrene		
<b>Raw Statistics</b>			
Number of Observations	4		
Number of Missing Data	0		
Number of Valid Observations	4		
Number of Distinct Observations	4		
Minimum	0.093		
Maximum	0.21		
Mean	0.1745		
Standard Deviation	0.05469		
Variance	0.002991		
Coefficient of Variation	0.31341		
Skewness	-1.921238		
Too Few Distinct Observations?	NO		
<b>Normal Statistics</b>			
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.735549		
Shapiro-Wilk 5% Critical Value	0.748		
5% Normality Test Result	NOT NORMAL		Data not normal at 5% significance level
95% Student's-t UCL	0.238853		
<b>Gamma Statistics</b>			
k hat	10.33293		
k star (bias corrected)	2.749899		
Theta hat	0.016888		
Theta star	0.063457		
nu hat	82.66344		
nu star	21.99919		
5% Approximate Chi Square Value	12.33608		
Adjusted Level of Significance	N/A		
Adjusted Chi Square Value	N/A		
Anderson-Darling Test Statistic	0.767279		
Anderson-Darling 5% Critical Value	0.6571		
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA		Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.429657		
Kolmogrov-Smirnov 5% Critical Value	0.394907		
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA		Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA		Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	0.31119		
95% Adjusted Gamma UCL	N/A		
<b>Lognormal Statistics</b>			
Minimum of log data	-2.375156		
Maximum of log data	-1.560648		
Mean of log data	-1.794999		
Standard Deviation of log data	0.387992		
Variance of log data	0.150538		
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.704294		
Shapiro-Wilk 5% Critical Value	0.748		
5% Lognormality Test Result	NOT LOGNORMAL		Data not lognormal at 5% significance level
MLE Mean	0.179114		
MLE Standard Deviation	0.072194		
MLE Coefficient of Variation	0.403062		
MLE Skewness	1.274668		
MLE Median	0.166128		
MLE 80% Quantile	0.230583		
MLE 90% Quantile	0.273507		
MLE 95% Quantile	0.314506		
MLE 99% Quantile	0.409618		
MVU Estimate of Median	0.163019		
MVU Estimate of Mean	0.175666		
MVU Estimate of Standard Deviation	0.067403		
MVU Estimate of SE of Mean	0.033696		
95% H-UCL	0.423812		
95% Chebyshev (MVUE) UCL	0.322543		
97.5% Chebyshev (MVUE) UCL	0.386096		
99% Chebyshev (MVUE) UCL	0.510935		
<b>Non-parametric Statistics</b>			
95% CLT UCL	0.219479		
95% Adjusted-CLT UCL	0.191411		
95% Modified-t UCL	0.234475		
95% Jackknife UCL	0.238853		
95% Chebyshev (Mean, Sd) UCL	0.293694		
97.5% Chebyshev (Mean, Sd) UCL	0.34527		
99% Chebyshev (Mean, Sd) UCL	0.446579		
<b>Bootstrap Statistics</b>			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	N/R		Not enough distinct data warning
95% Bootstrap-t UCL	N/R		Not enough distinct data warning
95% Hall's Bootstrap UCL	N/R		Not enough distinct data warning
95% Percentile Bootstrap UCL	N/R		Not enough distinct data warning
95% BCA Bootstrap UCL	N/R		Not enough distinct data warning
<b>Recommendations</b>			
Human Inspection Recommended?	YES		Users must select one of the recommended UCLS
Appropriate Distribution	NON-PARAMETRIC		
1st Recommended UCL	0.238853		95% Student's-t UCL
2nd Recommended UCL	0.234475		95% Modified-t UCL
3rd Recommended UCL			
Recommended UCL > Max Data Value	YES		Recommended UCL exceeds the maximum data value
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-supplemental\HHRA\Statistics\HH - June 2004\Sed stat - 01.xls		
Variable:	Benzo(b)fluoranthene		
<b>Raw Statistics</b>			
Number of Observations	4		
Number of Missing Data	0		
Number of Valid Observations	4		
Number of Distinct Observations	4		
Minimum	0.098		
Maximum	0.2		
Mean	0.16575		
Standard Deviation	0.047035		
Variance	0.002212		
Coefficient of Variation	0.283768		
Skewness	-1.574193		
Too Few Distinct Observations?	NO		
<b>Normal Statistics</b>			
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.831513		
Shapiro-Wilk 5% Critical Value	0.748		
5% Normality Test Result	NORMAL		Data are normal at 5% significance level
95% Student's-t UCL	0.221095		
<b>Gamma Statistics</b>			
k hat	13.51215		
k star (bias corrected)	3.544703		
Theta hat	0.012267		
Theta star	0.04676		
nu hat	108.0972		
nu star	28.35763		
5% Approximate Chi Square Value	17.20479		
Adjusted Level of Significance	N/A		
Adjusted Chi Square Value	N/A		
Anderson-Darling Test Statistic	0.548685		
Anderson-Darling 5% Critical Value	0.657096		
Anderson-Darling 5% Gamma Test Result	AD GAMMA		Data follow gamma distribution at 5% significance level.
Kolmogrov-Smirnov Test Statistic	0.323035		
Kolmogrov-Smirnov 5% Critical Value	0.394688		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA		Data follow gamma distribution at 5% significance level
5% Gamma Test Result	GAMMA		Data follow gamma distribution at 5% significance level
95% Approximate Gamma UCL	0.273196		
95% Adjusted Gamma UCL	N/A		
<b>Lognormal Statistics</b>			
Minimum of log data	-2.322788		
Maximum of log data	-1.609438		
Mean of log data	-1.834735		
Standard Deviation of log data	0.33311		
Variance of log data	0.110962		
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.791252		
Shapiro-Wilk 5% Critical Value	0.748		
5% Lognormality Test Result	LOGNORMAL		Data are lognormal at 5% significance level
MLE Mean	0.168764		
MLE Standard Deviation	0.057813		
MLE Coefficient of Variation	0.342568		
MLE Skewness	1.067905		
MLE Median	0.159656		
MLE 80% Quantile	0.211558		
MLE 90% Quantile	0.244953		
MLE 95% Quantile	0.276162		
MLE 99% Quantile	0.346483		
MVU Estimate of Median	0.157451		
MVU Estimate of Mean	0.166383		
MVU Estimate of Standard Deviation	0.05497		
MVU Estimate of SE of Mean	0.027482		
95% H-UCL	0.32841		
95% Chebyshev (MVUE) UCL	0.286175		
97.5% Chebyshev (MVUE) UCL	0.338009		
99% Chebyshev (MVUE) UCL	0.439827		
<b>Non-parametric Statistics</b>			
95% CLT UCL	0.204432		
95% Adjusted-CLT UCL	0.184654		
95% Modified-t UCL	0.21801		
95% Jackknife UCL	0.221095		
95% Chebyshev (Mean, Sd) UCL	0.268259		
97.5% Chebyshev (Mean, Sd) UCL	0.312615		
99% Chebyshev (Mean, Sd) UCL	0.399744		
<b>Bootstrap Statistics</b>			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	N/R		Not enough distinct data warning
95% Bootstrap-t UCL	N/R		Not enough distinct data warning
95% Hall's Bootstrap UCL	N/R		Not enough distinct data warning
95% Percentile Bootstrap UCL	N/R		Not enough distinct data warning
95% BCA Bootstrap UCL	N/R		Not enough distinct data warning
<b>Recommendations</b>			
Human Inspection Recommended?	YES		
Appropriate Distribution	NORMAL		
1st Recommended UCL	0.221095		95% Student's-t UCL
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	YES		Recommended UCL exceeds the maximum data value
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-supplemental\HHRA\Statistics\HH - June 2004\Sed stat - 01.xls		
Variable:	Benzo(k)fluoranthene		
<b>Raw Statistics</b>			
Number of Observations	4		
Number of Missing Data	0		
Number of Valid Observations	4		
Number of Distinct Observations	4		
Minimum	0.1		
Maximum	0.21		
Mean	0.17625		
Standard Deviation	0.051214		
Variance	0.002623		
Coefficient of Variation	0.290578		
Skewness	-1.910158		
Too Few Distinct Observations?	NO		
<b>Normal Statistics</b>			
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.742382		
Shapiro-Wilk 5% Critical Value	0.748		
5% Normality Test Result	NOT NORMAL		Data not normal at 5% significance level
95% Student's-t UCL	0.236513		
<b>Gamma Statistics</b>			
k hat	12.35804		
k star (bias corrected)	3.256177		
Theta hat	0.014262		
Theta star	0.054128		
nu hat	98.86434		
nu star	26.04942		
5% Approximate Chi Square Value	15.41559		
Adjusted Level of Significance	N/A		
Adjusted Chi Square Value	N/A		
Anderson-Darling Test Statistic	0.750646		
Anderson-Darling 5% Critical Value	0.657098		
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA		Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.425688		
Kolmogrov-Smirnov 5% Critical Value	0.394767		
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA		Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA		Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	0.297829		
95% Adjusted Gamma UCL	N/A		
<b>Lognormal Statistics</b>			
Minimum of log data	-2.302585		
Maximum of log data	-1.560648		
Mean of log data	-1.776857		
Standard Deviation of log data	0.351833		
Variance of log data	0.123786		
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.711722		
Shapiro-Wilk 5% Critical Value	0.748		
5% Lognormality Test Result	NOT LOGNORMAL		Data not lognormal at 5% significance level
MLE Mean	0.17997		
MLE Standard Deviation	0.06533		
MLE Coefficient of Variation	0.363007		
MLE Skewness	1.136855		
MLE Median	0.169169		
MLE 80% Quantile	0.227738		
MLE 90% Quantile	0.265869		
MLE 95% Quantile	0.301769		
MLE 99% Quantile	0.38347		
MVU Estimate of Median	0.166564		
MVU Estimate of Mean	0.177132		
MVU Estimate of Standard Deviation	0.061752		
MVU Estimate of SE of Mean	0.030872		
95% H-UCL	0.372912		
95% Chebyshev (MVUE) UCL	0.311702		
97.5% Chebyshev (MVUE) UCL	0.36993		
99% Chebyshev (MVUE) UCL	0.484309		
<b>Non-parametric Statistics</b>			
95% CLT UCL	0.21837		
95% Adjusted-CLT UCL	0.192238		
95% Modified-t UCL	0.232437		
95% Jackknife UCL	0.236513		
95% Chebyshev (Mean, Sd) UCL	0.287869		
97.5% Chebyshev (Mean, Sd) UCL	0.336167		
99% Chebyshev (Mean, Sd) UCL	0.431039		
<b>Bootstrap Statistics</b>			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	N/R		Not enough distinct data warning
95% Bootstrap-t UCL	N/R		Not enough distinct data warning
95% Hall's Bootstrap UCL	N/R		Not enough distinct data warning
95% Percentile Bootstrap UCL	N/R		Not enough distinct data warning
95% BCA Bootstrap UCL	N/R		Not enough distinct data warning
<b>Recommendations</b>			
Human Inspection Recommended?	YES		Users must select one of the recommended UCLS
Appropriate Distribution	NON-PARAMETRIC		
1st Recommended UCL	0.236513		95% Student's-t UCL
2nd Recommended UCL	0.232437		95% Modified-t UCL
3rd Recommended UCL			
Recommended UCL > Max Data Value	YES		Recommended UCL exceeds the maximum data value
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-supplemental\HHRA\Statistics\HH - June 2004\Sed stat - 01.xls		
Variable:	Indeno(1,2,3-cd)pyrene		
<b>Raw Statistics</b>			
Number of Observations	4		
Number of Missing Data	0		
Number of Valid Observations	4		
Number of Distinct Observations	4		
Minimum	0.12		
Maximum	0.2		
Mean	0.175		
Standard Deviation	0.037193		
Variance	0.001383		
Coefficient of Variation	0.212533		
Skewness	-1.836714		
Too Few Distinct Observations?	NO		
<b>Normal Statistics</b>			
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.773389		
Shapiro-Wilk 5% Critical Value	0.748		
5% Normality Test Result	NORMAL		Data are normal at 5% significance level
95% Student's-t UCL	0.218765		
<b>Gamma Statistics</b>			
k hat	25.17198		
k star (bias corrected)	6.459662		
Theta hat	0.006952		
Theta star	0.027091		
nu hat	201.3759		
nu star	51.6773		
5% Approximate Chi Square Value	36.16393		
Adjusted Level of Significance	N/A		
Adjusted Chi Square Value	N/A		
Anderson-Darling Test Statistic	0.662551		
Anderson-Darling 5% Critical Value	0.656892		
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA		Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.38593		
Kolmogrov-Smirnov 5% Critical Value	0.394168		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA		Data follow gamma distribution at 5% significance level
5% Gamma Test Result	APPROX GAMMA		Data follow approximate gamma distribution at 5% significance level
95% Approximate Gamma UCL	0.25007		
95% Adjusted Gamma UCL	N/A		
<b>Lognormal Statistics</b>			
Minimum of log data	-2.120264		
Maximum of log data	-1.609438		
Mean of log data	-1.762964		
Standard Deviation of log data	0.240403		
Variance of log data	0.057794		
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.746939		
Shapiro-Wilk 5% Critical Value	0.748		
5% Lognormality Test Result	NOT LOGNORMAL		Data not lognormal at 5% significance level
MLE Mean	0.176565		
MLE Standard Deviation	0.043067		
MLE Coefficient of Variation	0.243918		
MLE Skewness	0.746268		
MLE Median	0.171536		
MLE 80% Quantile	0.210173		
MLE 90% Quantile	0.233623		
MLE 95% Quantile	0.254743		
MLE 99% Quantile	0.300056		
MVU Estimate of Median	0.170299		
MVU Estimate of Mean	0.175278		
MVU Estimate of Standard Deviation	0.041956		
MVU Estimate of SE of Mean	0.020977		
95% H-UCL	0.265296		
95% Chebyshev (MVUE) UCL	0.266716		
97.5% Chebyshev (MVUE) UCL	0.306282		
99% Chebyshev (MVUE) UCL	0.384001		
<b>Non-parametric Statistics</b>			
95% CLT UCL	0.205589		
95% Adjusted-CLT UCL	0.18734		
95% Modified-t UCL	0.215918		
95% Jackknife UCL	0.218765		
95% Chebyshev (Mean, Sd) UCL	0.256061		
97.5% Chebyshev (Mean, Sd) UCL	0.291136		
99% Chebyshev (Mean, Sd) UCL	0.360034		
<b>Bootstrap Statistics</b>			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	N/R		Not enough distinct data warning
95% Bootstrap-t UCL	N/R		Not enough distinct data warning
95% Hall's Bootstrap UCL	N/R		Not enough distinct data warning
95% Percentile Bootstrap UCL	N/R		Not enough distinct data warning
95% BCA Bootstrap UCL	N/R		Not enough distinct data warning
<b>Recommendations</b>			
Human Inspection Recommended?	YES		
Appropriate Distribution	NORMAL		
1st Recommended UCL	0.218765		95% Student's-t UCL
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	YES		Recommended UCL exceeds the maximum data value
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-supplemental\HHRA\Statistics\HH - June 2004\Sed stat - 01.xls		
Variable:	Phenanthrene		
<b>Raw Statistics</b>			
Number of Observations	4		
Number of Missing Data	0		
Number of Valid Observations	4		
Number of Distinct Observations	4		
Minimum	0.195		
Maximum	0.5		
Mean	0.29625		
Standard Deviation	0.142675		
Variance	0.020356		
Coefficient of Variation	0.481604		
Skewness	1.49859		
Too Few Distinct Observations?	NO		
<b>Normal Statistics</b>			
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.826694		
Shapiro-Wilk 5% Critical Value	0.748		
5% Normality Test Result	NORMAL		Data are normal at 5% significance level
95% Student's-t UCL	0.464133		
<b>Gamma Statistics</b>			
k hat	6.634533		
k star (bias corrected)	1.8253		
Theta hat	0.044653		
Theta star	0.162302		
nu hat	53.07626		
nu star	14.6024		
5% Approximate Chi Square Value	6.984647		
Adjusted Level of Significance	N/A		
Adjusted Chi Square Value	N/A		
Anderson-Darling Test Statistic	0.440456		
Anderson-Darling 5% Critical Value	0.658399		
Anderson-Darling 5% Gamma Test Result	AD GAMMA		Data follow gamma distribution at 5% significance level.
Kolmogrov-Smirnov Test Statistic	0.292793		
Kolmogrov-Smirnov 5% Critical Value	0.395576		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA		Data follow gamma distribution at 5% significance level
5% Gamma Test Result	GAMMA		Data follow gamma distribution at 5% significance level
95% Approximate Gamma UCL	0.619353		
95% Adjusted Gamma UCL	N/A		
<b>Lognormal Statistics</b>			
Minimum of log data	-1.634756		
Maximum of log data	-0.693147		
Mean of log data	-1.293804		
Standard Deviation of log data	0.439617		
Variance of log data	0.193263		
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.867947		
Shapiro-Wilk 5% Critical Value	0.748		
5% Lognormality Test Result	LOGNORMAL		Data are lognormal at 5% significance level
MLE Mean	0.302047		
MLE Standard Deviation	0.139467		
MLE Coefficient of Variation	0.461738		
MLE Skewness	1.483658		
MLE Median	0.274226		
MLE 80% Quantile	0.397593		
MLE 90% Quantile	0.482441		
MLE 95% Quantile	0.565167		
MLE 99% Quantile	0.762422		
MVU Estimate of Median	0.267649		
MVU Estimate of Mean	0.294536		
MVU Estimate of Standard Deviation	0.127656		
MVU Estimate of SE of Mean	0.06381		
95% H-UCL	0.884698		
95% Chebyshev (MVUE) UCL	0.572678		
97.5% Chebyshev (MVUE) UCL	0.693031		
99% Chebyshev (MVUE) UCL	0.929439		
<b>Non-parametric Statistics</b>			
95% CLT UCL	0.41359		
95% Adjusted-CLT UCL	0.470705		
95% Modified-t UCL	0.473042		
95% Jackknife UCL	0.464133		
95% Chebyshev (Mean, Sd) UCL	0.607204		
97.5% Chebyshev (Mean, Sd) UCL	0.741754		
99% Chebyshev (Mean, Sd) UCL	1.006051		
<b>Bootstrap Statistics</b>			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	N/R		Not enough distinct data warning
95% Bootstrap-t UCL	N/R		Not enough distinct data warning
95% Hall's Bootstrap UCL	N/R		Not enough distinct data warning
95% Percentile Bootstrap UCL	N/R		Not enough distinct data warning
95% BCA Bootstrap UCL	N/R		Not enough distinct data warning
<b>Recommendations</b>			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	0.464133		95% Student's-t UCL
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-supplemental\HHRA\Statistics\HH - June 2004\Sed stat - 01.xls		
Variable:	Antimony		
Raw Statistics			
Number of Observations	4		
Number of Missing Data	0		
Number of Valid Observations	4		
Number of Distinct Observations	4		
Minimum	0.22		
Maximum	0.93999		
Mean	0.488748		
Standard Deviation	0.33616		
Variance	0.113003		
Coefficient of Variation	0.687798		
Skewness	1.021743		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.879133		
Shapiro-Wilk 5% Critical Value	0.748		
5% Normality Test Result	NORMAL	Data are normal at 5% significance level	
95% Student's-t UCL	0.8843		
Gamma Statistics			
k hat	2.946635		
k star (bias corrected)	0.903325		
Theta hat	0.165866		
Theta star	0.541054		
nu hat	23.57308		
nu star	7.226603		
5% Approximate Chi Square Value	2.295143		
Adjusted Level of Significance	N/A		
Adjusted Chi Square Value	N/A		
Anderson-Darling Test Statistic	0.370777		
Anderson-Darling 5% Critical Value	0.659471		
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.	
Kolmogrov-Smirnov Test Statistic	0.304745		
Kolmogrov-Smirnov 5% Critical Value	0.396632		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level	
95% Approximate Gamma UCL	1.538895		
95% Adjusted Gamma UCL	N/A		
Lognormal Statistics			
Minimum of log data	-1.514128		
Maximum of log data	-0.061886		
Mean of log data	-0.895087		
Standard Deviation of log data	0.689766		
Variance of log data	0.475778		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.900303		
Shapiro-Wilk 5% Critical Value	0.748		
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level	
MLE Mean	0.518302		
MLE Standard Deviation	0.404563		
MLE Coefficient of Variation	0.780554		
MLE Skewness	2.817228		
MLE Median	0.408572		
MLE 80% Quantile	0.73181		
MLE 90% Quantile	0.991301		
MLE 95% Quantile	1.270714		
MLE 99% Quantile	2.032588		
MVU Estimate of Median	0.384703		
MVU Estimate of Mean	0.485471		
MVU Estimate of Standard Deviation	0.323663		
MVU Estimate of SE of Mean	0.161578		
95% H-UCL	6.380254		
95% Chebyshev (MVUE) UCL	1.189773		
97.5% Chebyshev (MVUE) UCL	1.494525		
99% Chebyshev (MVUE) UCL	2.093151		
Non-parametric Statistics			
95% CLT UCL	0.765214		
95% Adjusted-CLT UCL	0.856964		
95% Modified-t UCL	0.898611		
95% Jackknife UCL	0.8843		
95% Chebyshev (Mean, Sd) UCL	1.22139		
97.5% Chebyshev (Mean, Sd) UCL	1.538405		
99% Chebyshev (Mean, Sd) UCL	2.16112		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	N/R	Not enough distinct data warning	
95% Bootstrap-t UCL	N/R	Not enough distinct data warning	
95% Hall's Bootstrap UCL	N/R	Not enough distinct data warning	
95% Percentile Bootstrap UCL	N/R	Not enough distinct data warning	
95% BCA Bootstrap UCL	N/R	Not enough distinct data warning	
Recommendations			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	0.8843	95% Student's-t UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-supplemental\HHRA\Statistics\HH - June 2004\Sed stat - 01.xls		
Variable:	Arsenic		
<b>Raw Statistics</b>			
Number of Observations	4		
Number of Missing Data	0		
Number of Valid Observations	4		
Number of Distinct Observations	4		
Minimum	3.1		
Maximum	6.2		
Mean	4.625		
Standard Deviation	1.307351		
Variance	1.709167		
Coefficient of Variation	0.28267		
Skewness	0.100359		
Too Few Distinct Observations?	NO		
<b>Normal Statistics</b>			
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	1.000072		
Shapiro-Wilk 5% Critical Value	0.748		
5% Normality Test Result	NORMAL		Data are normal at 5% significance level
95% Student's-t UCL	6.163336		
<b>Gamma Statistics</b>			
k hat	16.10984		
k star (bias corrected)	4.194126		
Theta hat	0.287092		
Theta star	1.102733		
nu hat	128.8787		
nu star	33.55301		
5% Approximate Chi Square Value	21.30527		
Adjusted Level of Significance	N/A		
Adjusted Chi Square Value	N/A		
Anderson-Darling Test Statistic	0.194662		
Anderson-Darling 5% Critical Value	0.657094		
Anderson-Darling 5% Gamma Test Result	AD GAMMA		Data follow gamma distribution at 5% significance level.
Kolmogrov-Smirnov Test Statistic	0.172164		
Kolmogrov-Smirnov 5% Critical Value	0.394508		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA		Data follow gamma distribution at 5% significance level
5% Gamma Test Result	GAMMA		Data follow gamma distribution at 5% significance level
95% Approximate Gamma UCL	7.283769		
95% Adjusted Gamma UCL	N/A		
<b>Lognormal Statistics</b>			
Minimum of log data	1.131402		
Maximum of log data	1.824549		
Mean of log data	1.500118		
Standard Deviation of log data	0.292909		
Variance of log data	0.085796		
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.993059		
Shapiro-Wilk 5% Critical Value	0.748		
5% Lognormality Test Result	LOGNORMAL		Data are lognormal at 5% significance level
MLE Mean	4.678681		
MLE Standard Deviation	1.400355		
MLE Coefficient of Variation	0.299305		
MLE Skewness	0.924729		
MLE Median	4.48222		
MLE 80% Quantile	5.740961		
MLE 90% Quantile	6.530651		
MLE 95% Quantile	7.256909		
MLE 99% Quantile	8.858922		
MVU Estimate of Median	4.434305		
MVU Estimate of Mean	4.627827		
MVU Estimate of Standard Deviation	1.346914		
MVU Estimate of SE of Mean	0.673419		
95% H-UCL	8.057398		
95% Chebyshev (MVUE) UCL	7.56319		
97.5% Chebyshev (MVUE) UCL	8.833324		
99% Chebyshev (MVUE) UCL	11.32826		
<b>Non-parametric Statistics</b>			
95% CLT UCL	5.700201		
95% Adjusted-CLT UCL	5.735249		
95% Modified-t UCL	6.168803		
95% Jackknife UCL	6.163336		
95% Chebyshev (Mean, Sd) UCL	7.474305		
97.5% Chebyshev (Mean, Sd) UCL	8.707202		
99% Chebyshev (Mean, Sd) UCL	11.12899		
<b>Bootstrap Statistics</b>			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	N/R		Not enough distinct data warning
95% Bootstrap-t UCL	N/R		Not enough distinct data warning
95% Hall's Bootstrap UCL	N/R		Not enough distinct data warning
95% Percentile Bootstrap UCL	N/R		Not enough distinct data warning
95% BCA Bootstrap UCL	N/R		Not enough distinct data warning
<b>Recommendations</b>			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	6.163336		95% Student's-t UCL
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		



Data File	J:\NE\WELLSG&H\OU3-supplemental\HHRA\Statistics\HH - June 2004\Sed stat - 01.xls		
Variable:	Cadmium		
<b>Raw Statistics</b>			
Number of Observations	4		
Number of Missing Data	0		
Number of Valid Observations	4		
Number of Distinct Observations	4		
Minimum	0.0205		
Maximum	0.18		
Mean	0.078125		
Standard Deviation	0.074958		
Variance	0.005619		
Coefficient of Variation	0.959465		
Skewness	1.107603		
Too Few Distinct Observations?	NO		
<b>Normal Statistics</b>			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.863946		
Shapiro-Wilk 5% Critical Value	0.748		
5% Normality Test Result	NORMAL	Data are normal at 5% significance level	
95% Student's-t UCL	0.166327		
<b>Gamma Statistics</b>			
k hat	1.396553		
k star (bias corrected)	0.515805		
Theta hat	0.055941		
Theta star	0.151462		
nu hat	11.17242		
nu star	4.126438		
5% Approximate Chi Square Value	0.771973		
Adjusted Level of Significance	N/A		
Adjusted Chi Square Value	N/A		
Anderson-Darling Test Statistic	0.396222		
Anderson-Darling 5% Critical Value	0.663247		
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.	
Kolmogrov-Smirnov Test Statistic	0.315363		
Kolmogrov-Smirnov 5% Critical Value	0.400102		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level	
95% Approximate Gamma UCL	0.417602		
95% Adjusted Gamma UCL	N/A		
<b>Lognormal Statistics</b>			
Minimum of log data	-3.88733		
Maximum of log data	-1.714798		
Mean of log data	-2.948377		
Standard Deviation of log data	1.058655		
Variance of log data	1.12075		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.879771		
Shapiro-Wilk 5% Critical Value	0.748		
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level	
MLE Mean	0.091813		
MLE Standard Deviation	0.132005		
MLE Coefficient of Variation	1.437759		
MLE Skewness	7.285346		
MLE Median	0.052425		
MLE 80% Quantile	0.128245		
MLE 90% Quantile	0.204333		
MLE 95% Quantile	0.299126		
MLE 99% Quantile	0.615115		
MVU Estimate of Median	0.045383		
MVU Estimate of Mean	0.077409		
MVU Estimate of Standard Deviation	0.075997		
MVU Estimate of SE of Mean	0.037723		
95% H-UCL	30.31451		
95% Chebyshev (MVUE) UCL	0.241838		
97.5% Chebyshev (MVUE) UCL	0.312987		
99% Chebyshev (MVUE) UCL	0.452745		
<b>Non-parametric Statistics</b>			
95% CLT UCL	0.139773		
95% Adjusted-CLT UCL	0.161951		
95% Modified-t UCL	0.169786		
95% Jackknife UCL	0.166327		
95% Chebyshev (Mean, Sd) UCL	0.241493		
97.5% Chebyshev (Mean, Sd) UCL	0.312182		
99% Chebyshev (Mean, Sd) UCL	0.451037		
<b>Bootstrap Statistics</b>			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	N/R	Not enough distinct data warning	
95% Bootstrap-t UCL	N/R	Not enough distinct data warning	
95% Hall's Bootstrap UCL	N/R	Not enough distinct data warning	
95% Percentile Bootstrap UCL	N/R	Not enough distinct data warning	
95% BCA Bootstrap UCL	N/R	Not enough distinct data warning	
<b>Recommendations</b>			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	0.166327	95% Student's-t UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-supplemental\HHRA\Statistics\HH - June 2004\Sed stat - 01.xls		
Variable:	Chromium		
Raw Statistics			
Number of Observations	4		
Number of Missing Data	0		
Number of Valid Observations	4		
Number of Distinct Observations	4		
Minimum	7		
Maximum	9.8		
Mean	8.325		
Standard Deviation	1.431491		
Variance	2.049167		
Coefficient of Variation	0.171951		
Skewness	0.087698		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.842892		
Shapiro-Wilk 5% Critical Value	0.748		
5% Normality Test Result	NORMAL	Data are normal at 5% significance level	
95% Student's-t UCL	10.00941		
Gamma Statistics			
k hat	44.94465		
k star (bias corrected)	11.40283		
Theta hat	0.185228		
Theta star	0.730082		
nu hat	359.5572		
nu star	91.22264		
5% Approximate Chi Square Value	70.19487		
Adjusted Level of Significance	N/A		
Adjusted Chi Square Value	N/A		
Anderson-Darling Test Statistic	0.497649		
Anderson-Darling 5% Critical Value	0.656134		
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.	
Kolmogrov-Smirnov Test Statistic	0.315937		
Kolmogrov-Smirnov 5% Critical Value	0.393891		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level	
95% Approximate Gamma UCL	10.81886		
95% Adjusted Gamma UCL	N/A		
Lognormal Statistics			
Minimum of log data	1.94591		
Maximum of log data	2.282382		
Mean of log data	2.108097		
Standard Deviation of log data	0.172727		
Variance of log data	0.029835		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.83968		
Shapiro-Wilk 5% Critical Value	0.748		
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level	
MLE Mean	8.356288		
MLE Standard Deviation	1.454191		
MLE Coefficient of Variation	0.174024		
MLE Skewness	0.527341		
MLE Median	8.23256		
MLE 80% Quantile	9.526253		
MLE 90% Quantile	10.27847		
MLE 95% Quantile	10.93789		
MLE 99% Quantile	12.30321		
MVU Estimate of Median	8.201892		
MVU Estimate of Mean	8.324975		
MVU Estimate of Standard Deviation	1.434746		
MVU Estimate of SE of Mean	0.717368		
95% H-UCL	10.86716		
95% Chebyshev (MVUE) UCL	11.45191		
97.5% Chebyshev (MVUE) UCL	12.80494		
99% Chebyshev (MVUE) UCL	15.4627		
Non-parametric Statistics			
95% CLT UCL	9.502297		
95% Adjusted-CLT UCL	9.535832		
95% Modified-t UCL	10.01464		
95% Jackknife UCL	10.00941		
95% Chebyshev (Mean, Sd) UCL	11.44486		
97.5% Chebyshev (Mean, Sd) UCL	12.79483		
99% Chebyshev (Mean, Sd) UCL	15.44658		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	N/R	Not enough distinct data warning	
95% Bootstrap-t UCL	N/R	Not enough distinct data warning	
95% Hall's Bootstrap UCL	N/R	Not enough distinct data warning	
95% Percentile Bootstrap UCL	N/R	Not enough distinct data warning	
95% BCA Bootstrap UCL	N/R	Not enough distinct data warning	
Recommendations			
Human Inspection Recommended?	YES		
Appropriate Distribution	NORMAL		
1st Recommended UCL	10.00941	95% Student's-t UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	YES	Recommended UCL exceeds the maximum data value	
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-supplemental\HHRA\Statistics\HH - June 2004\Sed stat - 01.xls		
Variable:	Copper		
Raw Statistics			
Number of Observations	4		
Number of Missing Data	0		
Number of Valid Observations	4		
Number of Distinct Observations	4		
Minimum	6.7		
Maximum	16.6		
Mean	11.725		
Standard Deviation	4.813436		
Variance	23.16917		
Coefficient of Variation	0.410528		
Skewness	-0.038366		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.892568		
Shapiro-Wilk 5% Critical Value	0.748		
5% Normality Test Result	NORMAL	Data are normal at 5% significance level	
95% Student's-t UCL	17.38888		
Gamma Statistics			
k hat	7.420386		
k star (bias corrected)	2.021763		
Theta hat	1.580107		
Theta star	5.799394		
nu hat	59.36309		
nu star	16.17411		
5% Approximate Chi Square Value	8.083878		
Adjusted Level of Significance	N/A		
Adjusted Chi Square Value	N/A		
Anderson-Darling Test Statistic	0.38591		
Anderson-Darling 5% Critical Value	0.658096		
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.	
Kolmogrov-Smirnov Test Statistic	0.293854		
Kolmogrov-Smirnov 5% Critical Value	0.395425		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level	
95% Approximate Gamma UCL	23.45921		
95% Adjusted Gamma UCL	N/A		
Lognormal Statistics			
Minimum of log data	1.902108		
Maximum of log data	2.809403		
Mean of log data	2.392831		
Standard Deviation of log data	0.436585		
Variance of log data	0.190606		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.898497		
Shapiro-Wilk 5% Critical Value	0.748		
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level	
MLE Mean	12.03879		
MLE Standard Deviation	5.516642		
MLE Coefficient of Variation	0.458239		
MLE Skewness	1.470939		
MLE Median	10.94443		
MLE 80% Quantile	15.82743		
MLE 90% Quantile	19.1795		
MLE 95% Quantile	22.44376		
MLE 99% Quantile	30.21465		
MVU Estimate of Median	10.68553		
MVU Estimate of Mean	11.74366		
MVU Estimate of Standard Deviation	5.055725		
MVU Estimate of SE of Mean	2.527169		
95% H-UCL	34.79509		
95% Chebyshev (MVUE) UCL	22.75933		
97.5% Chebyshev (MVUE) UCL	27.52582		
99% Chebyshev (MVUE) UCL	36.88867		
Non-parametric Statistics			
95% CLT UCL	15.6837		
95% Adjusted-CLT UCL	15.63437		
95% Modified-t UCL	17.38119		
95% Jackknife UCL	17.38888		
95% Chebyshev (Mean, Sd) UCL	22.21564		
97.5% Chebyshev (Mean, Sd) UCL	26.75495		
99% Chebyshev (Mean, Sd) UCL	35.67154		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	N/R	Not enough distinct data warning	
95% Bootstrap-t UCL	N/R	Not enough distinct data warning	
95% Hall's Bootstrap UCL	N/R	Not enough distinct data warning	
95% Percentile Bootstrap UCL	N/R	Not enough distinct data warning	
95% BCA Bootstrap UCL	N/R	Not enough distinct data warning	
Recommendations			
Human Inspection Recommended?	YES		
Appropriate Distribution	NORMAL		
1st Recommended UCL	17.38888	95% Student's-t UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	YES	Recommended UCL exceeds the maximum data value	
Recommendation Warning!	NONE		
Alternative UCL	NONE		



Data File	J:\NE\WELLSG&H\OU3-supplemental\HHRA\Statistics\HH - June 2004\Sed stat - 01.xls	
Variable:	Manganese	
<b>Raw Statistics</b>		
Number of Observations	4	
Number of Missing Data	0	
Number of Valid Observations	4	
Number of Distinct Observations	4	
Minimum	60.4	
Maximum	103	
Mean	81.65	
Standard Deviation	18.97692	
Variance	360.1233	
Coefficient of Variation	0.232418	
Skewness	0.010746	
Too Few Distinct Observations?	NO	
<b>Normal Statistics</b>		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.971304	
Shapiro-Wilk 5% Critical Value	0.748	
5% Normality Test Result	NORMAL	Data are normal at 5% significance level
95% Student's-t UCL	103.9798	
<b>Gamma Statistics</b>		
k hat	24.12762	
k star (bias corrected)	6.198572	
Theta hat	3.384089	
Theta star	13.17239	
nu hat	193.021	
nu star	49.58857	
5% Approximate Chi Square Value	34.4182	
Adjusted Level of Significance	N/A	
Adjusted Chi Square Value	N/A	
Anderson-Darling Test Statistic	0.243902	
Anderson-Darling 5% Critical Value	0.656932	
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.
Kolmogrov-Smirnov Test Statistic	0.227097	
Kolmogrov-Smirnov 5% Critical Value	0.394182	
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level
95% Approximate Gamma UCL	117.6385	
95% Adjusted Gamma UCL	N/A	
<b>Lognormal Statistics</b>		
Minimum of log data	4.100989	
Maximum of log data	4.634729	
Mean of log data	4.381576	
Standard Deviation of log data	0.237625	
Variance of log data	0.056466	
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.969139	
Shapiro-Wilk 5% Critical Value	0.748	
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level
MLE Mean	82.25371	
MLE Standard Deviation	19.82476	
MLE Coefficient of Variation	0.24102	
MLE Skewness	0.73706	
MLE Median	79.96392	
MLE 80% Quantile	97.74568	
MLE 90% Quantile	108.5189	
MLE 95% Quantile	118.2108	
MLE 99% Quantile	138.9748	
MVU Estimate of Median	79.40071	
MVU Estimate of Mean	81.66792	
MVU Estimate of Standard Deviation	19.32484	
MVU Estimate of SE of Mean	9.662176	
95% H-UCL	122.7793	
95% Chebyshev (MVUE) UCL	123.7844	
97.5% Chebyshev (MVUE) UCL	142.0082	
99% Chebyshev (MVUE) UCL	177.8054	
<b>Non-parametric Statistics</b>		
95% CLT UCL	97.25712	
95% Adjusted-CLT UCL	97.3116	
95% Modified-t UCL	103.9883	
95% Jackknife UCL	103.9798	
95% Chebyshev (Mean, Sd) UCL	123.0092	
97.5% Chebyshev (Mean, Sd) UCL	140.9054	
99% Chebyshev (Mean, Sd) UCL	176.059	
<b>Bootstrap Statistics</b>		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	N/R	Not enough distinct data warning
95% Bootstrap-t UCL	N/R	Not enough distinct data warning
95% Hall's Bootstrap UCL	N/R	Not enough distinct data warning
95% Percentile Bootstrap UCL	N/R	Not enough distinct data warning
95% BCA Bootstrap UCL	N/R	Not enough distinct data warning
<b>Recommendations</b>		
Human Inspection Recommended?	YES	
Appropriate Distribution	NORMAL	
1st Recommended UCL	103.9798	95% Student's-t UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value	YES	Recommended UCL exceeds the maximum data value
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Data File	J:\NE\WELLSG&H\OU3-supplemental\HHRA\Statistics\HH - June 2004\Sed stat - 01.xls		
Variable:	Nickel		
<b>Raw Statistics</b>			
Number of Observations	4		
Number of Missing Data	0		
Number of Valid Observations	4		
Number of Distinct Observations	4		
Minimum	4.9		
Maximum	7.2		
Mean	6.375		
Standard Deviation	1.040433		
Variance	1.0825		
Coefficient of Variation	0.163205		
Skewness	-1.422618		
Too Few Distinct Observations?	NO		
<b>Normal Statistics</b>			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.870321		
Shapiro-Wilk 5% Critical Value	0.748		
5% Normality Test Result	NORMAL	Data are normal at 5% significance level	
95% Student's-t UCL	7.599258		
<b>Gamma Statistics</b>			
k hat	45.60821		
k star (bias corrected)	11.56872		
Theta hat	0.139777		
Theta star	0.551055		
nu hat	364.8657		
nu star	92.54975		
5% Approximate Chi Square Value	71.36052		
Adjusted Level of Significance	N/A		
Adjusted Chi Square Value	N/A		
Anderson-Darling Test Statistic	0.44931		
Anderson-Darling 5% Critical Value	0.656108		
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.	
Kolmogrov-Smirnov Test Statistic	0.280218		
Kolmogrov-Smirnov 5% Critical Value	0.393881		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level	
95% Approximate Gamma UCL	8.267942		
95% Adjusted Gamma UCL	N/A		
<b>Lognormal Statistics</b>			
Minimum of log data	1.589235		
Maximum of log data	1.974081		
Mean of log data	1.841381		
Standard Deviation of log data	0.175438		
Variance of log data	0.030779		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.84601		
Shapiro-Wilk 5% Critical Value	0.748		
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level	
MLE Mean	6.403024		
MLE Standard Deviation	1.132034		
MLE Coefficient of Variation	0.176797		
MLE Skewness	0.535917		
MLE Median	6.30524		
MLE 80% Quantile	7.312801		
MLE 90% Quantile	7.899655		
MLE 95% Quantile	8.414672		
MLE 99% Quantile	9.482522		
MVU Estimate of Median	6.28101		
MVU Estimate of Mean	6.378268		
MVU Estimate of Standard Deviation	1.11642		
MVU Estimate of SE of Mean	0.558206		
95% H-UCL	8.370385		
95% Chebyshev (MVUE) UCL	8.81143		
97.5% Chebyshev (MVUE) UCL	9.864261		
99% Chebyshev (MVUE) UCL	11.93234		
<b>Non-parametric Statistics</b>			
95% CLT UCL	7.23068		
95% Adjusted-CLT UCL	6.835292		
95% Modified-t UCL	7.537585		
95% Jackknife UCL	7.599258		
95% Chebyshev (Mean, Sd) UCL	8.64257		
97.5% Chebyshev (Mean, Sd) UCL	9.62375		
99% Chebyshev (Mean, Sd) UCL	11.55109		
<b>Bootstrap Statistics</b>			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	N/R	Not enough distinct data warning	
95% Bootstrap-t UCL	N/R	Not enough distinct data warning	
95% Hall's Bootstrap UCL	N/R	Not enough distinct data warning	
95% Percentile Bootstrap UCL	N/R	Not enough distinct data warning	
95% BCA Bootstrap UCL	N/R	Not enough distinct data warning	
<b>Recommendations</b>			
Human Inspection Recommended?	YES		
Appropriate Distribution	NORMAL		
1st Recommended UCL	7.599258	95% Student's-t UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	YES	Recommended UCL exceeds the maximum data value	
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-supplemental\HHRA\Statistics\HH - June 2004\Sed stat - 01.xls		
Variable:	Thallium		
<b>Raw Statistics</b>			
Number of Observations	4		
Number of Missing Data	0		
Number of Valid Observations	4		
Number of Distinct Observations	4		
Minimum	0.32		
Maximum	0.54		
Mean	0.40375		
Standard Deviation	0.096555		
Variance	0.009323		
Coefficient of Variation	0.239146		
Skewness	1.352339		
Too Few Distinct Observations?	NO		
<b>Normal Statistics</b>			
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.90084		
Shapiro-Wilk 5% Critical Value	0.748		
5% Normality Test Result	NORMAL		Data are normal at 5% significance level
95% Student's-t UCL	0.517365		
<b>Gamma Statistics</b>			
k hat	25.25618		
k star (bias corrected)	6.480712		
Theta hat	0.015986		
Theta star	0.0623		
nu hat	202.0494		
nu star	51.84569		
5% Approximate Chi Square Value	36.30498		
Adjusted Level of Significance	N/A		
Adjusted Chi Square Value	N/A		
Anderson-Darling Test Statistic	0.320631		
Anderson-Darling 5% Critical Value	0.656889		
Anderson-Darling 5% Gamma Test Result	AD GAMMA		Data follow gamma distribution at 5% significance level.
Kolmogrov-Smirnov Test Statistic	0.242174		
Kolmogrov-Smirnov 5% Critical Value	0.394166		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA		Data follow gamma distribution at 5% significance level
5% Gamma Test Result	GAMMA		Data follow gamma distribution at 5% significance level
95% Approximate Gamma UCL	0.576579		
95% Adjusted Gamma UCL	N/A		
<b>Lognormal Statistics</b>			
Minimum of log data	-1.139434		
Maximum of log data	-0.616186		
Mean of log data	-0.926887		
Standard Deviation of log data	0.226311		
Variance of log data	0.051217		
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.937772		
Shapiro-Wilk 5% Critical Value	0.748		
5% Lognormality Test Result	LOGNORMAL		Data are lognormal at 5% significance level
MLE Mean	0.40605		
MLE Standard Deviation	0.093083		
MLE Coefficient of Variation	0.22924		
MLE Skewness	0.699767		
MLE Median	0.395784		
MLE 80% Quantile	0.479192		
MLE 90% Quantile	0.529365		
MLE 95% Quantile	0.574299		
MLE 99% Quantile	0.669994		
MVU Estimate of Median	0.393255		
MVU Estimate of Mean	0.403429		
MVU Estimate of Standard Deviation	0.090952		
MVU Estimate of SE of Mean	0.045475		
95% H-UCL	0.590442		
95% Chebyshev (MVUE) UCL	0.601651		
97.5% Chebyshev (MVUE) UCL	0.687422		
99% Chebyshev (MVUE) UCL	0.855902		
<b>Non-parametric Statistics</b>			
95% CLT UCL	0.48316		
95% Adjusted-CLT UCL	0.51804		
95% Modified-t UCL	0.522805		
95% Jackknife UCL	0.517365		
95% Chebyshev (Mean, Sd) UCL	0.614187		
97.5% Chebyshev (Mean, Sd) UCL	0.705244		
99% Chebyshev (Mean, Sd) UCL	0.884106		
<b>Bootstrap Statistics</b>			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	N/R		Not enough distinct data warning
95% Bootstrap-t UCL	N/R		Not enough distinct data warning
95% Hall's Bootstrap UCL	N/R		Not enough distinct data warning
95% Percentile Bootstrap UCL	N/R		Not enough distinct data warning
95% BCA Bootstrap UCL	N/R		Not enough distinct data warning
<b>Recommendations</b>			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	0.517365		95% Student's-t UCL
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-supplemental\HHRA\Statistics\HH - June 2004\Sed stat - 01.xls		
Variable:	Vanadium		
<b>Raw Statistics</b>			
Number of Observations	4		
Number of Missing Data	0		
Number of Valid Observations	4		
Number of Distinct Observations	4		
Minimum	7.3		
Maximum	11.6		
Mean	9.6		
Standard Deviation	1.78699		
Variance	3.193333		
Coefficient of Variation	0.186145		
Skewness	-0.473148		
Too Few Distinct Observations?	NO		
<b>Normal Statistics</b>			
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.985317		
Shapiro-Wilk 5% Critical Value	0.748		
5% Normality Test Result	NORMAL		Data are normal at 5% significance level
95% Student's-t UCL	11.70272		
<b>Gamma Statistics</b>			
k hat	36.57731		
k star (bias corrected)	9.310994		
Theta hat	0.262458		
Theta star	1.031039		
nu hat	292.6185		
nu star	74.48795		
5% Approximate Chi Square Value	55.60755		
Adjusted Level of Significance	N/A		
Adjusted Chi Square Value	N/A		
Anderson-Darling Test Statistic	0.246181		
Anderson-Darling 5% Critical Value	0.656455		
Anderson-Darling 5% Gamma Test Result	AD GAMMA		Data follow gamma distribution at 5% significance level.
Kolmogrov-Smirnov Test Statistic	0.221445		
Kolmogrov-Smirnov 5% Critical Value	0.394008		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA		Data follow gamma distribution at 5% significance level
5% Gamma Test Result	GAMMA		Data follow gamma distribution at 5% significance level
95% Approximate Gamma UCL	12.85948		
95% Adjusted Gamma UCL	N/A		
<b>Lognormal Statistics</b>			
Minimum of log data	1.987874		
Maximum of log data	2.451005		
Mean of log data	2.248031		
Standard Deviation of log data	0.19416		
Variance of log data	0.037698		
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.964714		
Shapiro-Wilk 5% Critical Value	0.748		
5% Lognormality Test Result	LOGNORMAL		Data are lognormal at 5% significance level
MLE Mean	9.64925		
MLE Standard Deviation	1.891295		
MLE Coefficient of Variation	0.196004		
MLE Skewness	0.595543		
MLE Median	9.469074		
MLE 80% Quantile	11.15733		
MLE 90% Quantile	12.1524		
MLE 95% Quantile	13.03222		
MLE 99% Quantile	14.87449		
MVU Estimate of Median	9.424516		
MVU Estimate of Mean	9.603505		
MVU Estimate of Standard Deviation	1.859373		
MVU Estimate of SE of Mean	0.929676		
95% H-UCL	13.0915		
95% Chebyshev (MVUE) UCL	13.65587		
97.5% Chebyshev (MVUE) UCL	15.40933		
99% Chebyshev (MVUE) UCL	18.85367		
<b>Non-parametric Statistics</b>			
95% CLT UCL	11.06967		
95% Adjusted-CLT UCL	10.84381		
95% Modified-t UCL	11.66749		
95% Jackknife UCL	11.70272		
95% Chebyshev (Mean, Sd) UCL	13.49465		
97.5% Chebyshev (Mean, Sd) UCL	15.17987		
99% Chebyshev (Mean, Sd) UCL	18.49016		
<b>Bootstrap Statistics</b>			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	N/R		Not enough distinct data warning
95% Bootstrap-t UCL	N/R		Not enough distinct data warning
95% Hall's Bootstrap UCL	N/R		Not enough distinct data warning
95% Percentile Bootstrap UCL	N/R		Not enough distinct data warning
95% BCA Bootstrap UCL	N/R		Not enough distinct data warning
<b>Recommendations</b>			
Human Inspection Recommended?	YES		
Appropriate Distribution	NORMAL		
1st Recommended UCL	11.70272		95% Student's-t UCL
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	YES		Recommended UCL exceeds the maximum data value
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-supplemental\HHRA\Statistics\HH - June 2004\Sed stat - 01.xls		
Variable:	Zinc		
<b>Raw Statistics</b>			
Number of Observations	4		
Number of Missing Data	0		
Number of Valid Observations	4		
Number of Distinct Observations	4		
Minimum	46.1		
Maximum	153		
Mean	102.25		
Standard Deviation	47.31233		
Variance	2238.457		
Coefficient of Variation	0.462712		
Skewness	-0.241756		
Too Few Distinct Observations?	NO		
<b>Normal Statistics</b>			
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.973572		
Shapiro-Wilk 5% Critical Value	0.748		
5% Normality Test Result	NORMAL		Data are normal at 5% significance level
95% Student's-t UCL	157.9216		
<b>Gamma Statistics</b>			
k hat	5.334245		
k star (bias corrected)	1.500228		
Theta hat	19.1686		
Theta star	68.15631		
nu hat	42.67396		
nu star	12.00182		
5% Approximate Chi Square Value	5.227223		
Adjusted Level of Significance	N/A		
Adjusted Chi Square Value	N/A		
Anderson-Darling Test Statistic	0.261681		
Anderson-Darling 5% Critical Value	0.658901		
Anderson-Darling 5% Gamma Test Result	AD GAMMA		Data follow gamma distribution at 5% significance level.
Kolmogrov-Smirnov Test Statistic	0.245906		
Kolmogrov-Smirnov 5% Critical Value	0.395826		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA		Data follow gamma distribution at 5% significance level
5% Gamma Test Result	GAMMA		Data follow gamma distribution at 5% significance level
95% Approximate Gamma UCL	234.7683		
95% Adjusted Gamma UCL	N/A		
<b>Lognormal Statistics</b>			
Minimum of log data	3.830813		
Maximum of log data	5.030438		
Mean of log data	4.530768		
Standard Deviation of log data	0.53249		
Variance of log data	0.283546		
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.943602		
Shapiro-Wilk 5% Critical Value	0.748		
5% Lognormality Test Result	LOGNORMAL		Data are lognormal at 5% significance level
MLE Mean	106.9692		
MLE Standard Deviation	61.24676		
MLE Coefficient of Variation	0.572564		
MLE Skewness	1.905396		
MLE Median	92.82985		
MLE 80% Quantile	145.5795		
MLE 90% Quantile	184.0152		
MLE 95% Quantile	222.8981		
MLE 99% Quantile	320.3265		
MVU Estimate of Median	89.57447		
MVU Estimate of Mean	103.0201		
MVU Estimate of Standard Deviation	53.73544		
MVU Estimate of SE of Mean	26.85188		
95% H-UCL	495.2559		
95% Chebyshev (MVUE) UCL	220.0647		
97.5% Chebyshev (MVUE) UCL	270.71		
99% Chebyshev (MVUE) UCL	370.1929		
<b>Non-parametric Statistics</b>			
95% CLT UCL	141.1609		
95% Adjusted-CLT UCL	138.1055		
95% Modified-t UCL	157.445		
95% Jackknife UCL	157.9216		
95% Chebyshev (Mean, Sd) UCL	205.3648		
97.5% Chebyshev (Mean, Sd) UCL	249.9827		
99% Chebyshev (Mean, Sd) UCL	337.6259		
<b>Bootstrap Statistics</b>			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	N/R		Not enough distinct data warning
95% Bootstrap-t UCL	N/R		Not enough distinct data warning
95% Hall's Bootstrap UCL	N/R		Not enough distinct data warning
95% Percentile Bootstrap UCL	N/R		Not enough distinct data warning
95% BCA Bootstrap UCL	N/R		Not enough distinct data warning
<b>Recommendations</b>			
Human Inspection Recommended?	YES		
Appropriate Distribution	NORMAL		
1st Recommended UCL	157.9216		95% Student's-t UCL
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	YES		Recommended UCL exceeds the maximum data value
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Soil stat - nr-so.xls		
Variable:	Arsenic		
Raw Statistics			
Number of Observations	5		
Number of Missing Data	0		
Number of Valid Observations	5		
Number of Distinct Observations	5		
Minimum	39.6		
Maximum	266		
Mean	111.78		
Standard Deviation	93.17136		
Variance	8680.902		
Coefficient of Variation	0.833524		
Skewness	1.515906		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.83831		
Shapiro-Wilk 5% Critical Value	0.762		
5% Normality Test Result	NORMAL	Data are normal at 5% significance level	
95% Student's-t UCL	200.6087		
Gamma Statistics			
k hat	2.082929		
k star (bias corrected)	0.966505		
Theta hat	53.6648		
Theta star	115.6538		
nu hat	20.82929		
nu star	9.665051		
5% Approximate Chi Square Value	3.7327		
Adjusted Level of Significance	0.0086		
Adjusted Chi Square Value	2.310219		
Anderson-Darling Test Statistic	0.325525		
Anderson-Darling 5% Critical Value	0.684299		
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.	
Kolmogrov-Smirnov Test Statistic	0.230435		
Kolmogrov-Smirnov 5% Critical Value	0.360383		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level	
95% Approximate Gamma UCL	289.4311		
95% Adjusted Gamma UCL	467.6438		
Lognormal Statistics			
Minimum of log data	3.678829		
Maximum of log data	5.583496		
Mean of log data	4.457681		
Standard Deviation of log data	0.793603		
Variance of log data	0.629806		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.926885		
Shapiro-Wilk 5% Critical Value	0.762		
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level	
MLE Mean	118.2244		
MLE Standard Deviation	110.7307		
MLE Coefficient of Variation	0.936615		
MLE Skewness	3.631487		
MLE Median	86.28721		
MLE 80% Quantile	168.726		
MLE 90% Quantile	239.2387		
MLE 95% Quantile	318.3524		
MLE 99% Quantile	546.5376		
MVU Estimate of Median	80.96568		
MVU Estimate of Mean	109.9289		
MVU Estimate of Standard Deviation	85.44409		
MVU Estimate of SE of Mean	38.04965		
95% H-UCL	586.3657		
95% Chebyshev (MVUE) UCL	275.7835		
97.5% Chebyshev (MVUE) UCL	347.5489		
99% Chebyshev (MVUE) UCL	488.5182		
Non-parametric Statistics			
95% CLT UCL	180.3169		
95% Adjusted-CLT UCL	210.5001		
95% Modified-t UCL	205.3167		
95% Jackknife UCL	200.6087		
95% Chebyshev (Mean, Sd) UCL	293.4044		
97.5% Chebyshev (Mean, Sd) UCL	371.9934		
99% Chebyshev (Mean, Sd) UCL	526.3664		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	175.2147		
95% Bootstrap-t UCL	319.6592		
95% Hall's Bootstrap UCL	489.2972		
95% Percentile Bootstrap UCL	176.6		
95% BCA Bootstrap UCL	165.52		
Recommendations			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	200.6087	95% Student's-t UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Soil stat - nr-so.xls		
Variable:	Cadmium		
Raw Statistics			
Number of Observations	5		
Number of Missing Data	0		
Number of Valid Observations	5		
Number of Distinct Observations	5		
Minimum	0.15		
Maximum	3		
Mean	0.981		
Standard Deviation	1.205593		
Variance	1.453455		
Coefficient of Variation	1.228943		
Skewness	1.652909		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.782562		
Shapiro-Wilk 5% Critical Value	0.762		
5% Normality Test Result	NORMAL	Data are normal at 5% significance level	
95% Student's-t UCL	2.130401		
Gamma Statistics			
k hat	0.926116		
k star (bias corrected)	0.50378		
Theta hat	1.059263		
Theta star	1.94728		
nu hat	9.261157		
nu star	5.037796		
5% Approximate Chi Square Value	1.169284		
Adjusted Level of Significance	0.0086		
Adjusted Chi Square Value	0.544792		
Anderson-Darling Test Statistic	0.393538		
Anderson-Darling 5% Critical Value	0.693382		
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.	
Kolmogrov-Smirnov Test Statistic	0.286997		
Kolmogrov-Smirnov 5% Critical Value	0.365078		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level	
95% Approximate Gamma UCL	4.226585		
95% Adjusted Gamma UCL	9.071495		
Lognormal Statistics			
Minimum of log data	-1.89712		
Maximum of log data	1.098612		
Mean of log data	-0.648209		
Standard Deviation of log data	1.255642		
Variance of log data	1.576637		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.922143		
Shapiro-Wilk 5% Critical Value	0.762		
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level	
MLE Mean	1.1504		
MLE Standard Deviation	2.253918		
MLE Coefficient of Variation	1.959248		
MLE Skewness	13.39862		
MLE Median	0.522982		
MLE 80% Quantile	1.511056		
MLE 90% Quantile	2.625551		
MLE 95% Quantile	4.126056		
MLE 99% Quantile	9.702796		
MVU Estimate of Median	0.444748		
MVU Estimate of Mean	0.929904		
MVU Estimate of Standard Deviation	1.110323		
MVU Estimate of SE of Mean	0.486549		
95% H-UCL	50.56998		
95% Chebyshev (MVUE) UCL	3.05072		
97.5% Chebyshev (MVUE) UCL	3.968399		
99% Chebyshev (MVUE) UCL	5.771002		
Non-parametric Statistics			
95% CLT UCL	1.867835		
95% Adjusted-CLT UCL	2.293689		
95% Modified-t UCL	2.196826		
95% Jackknife UCL	2.130401		
95% Chebyshev (Mean, Sd) UCL	3.331134		
97.5% Chebyshev (Mean, Sd) UCL	4.348039		
99% Chebyshev (Mean, Sd) UCL	6.345551		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	1.778535		
95% Bootstrap-t UCL	10.92755		
95% Hall's Bootstrap UCL	7.070815		
95% Percentile Bootstrap UCL	1.884		
95% BCA Bootstrap UCL	1.749		
Recommendations			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	2.130401	95% Student's-t UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Soil stat - nr-so.xls		
Variable:	Chromium		
Raw Statistics			
Number of Observations	5		
Number of Missing Data	0		
Number of Valid Observations	5		
Number of Distinct Observations	5		
Minimum	40		
Maximum	228		
Mean	97.72		
Standard Deviation	77.82642		
Variance	6056.952		
Coefficient of Variation	0.796423		
Skewness	1.617443		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.817959		
Shapiro-Wilk 5% Critical Value	0.762		
5% Normality Test Result	NORMAL	Data are normal at 5% significance level	
95% Student's-t UCL	171.919		
Gamma Statistics			
k hat	2.402357		
k star (bias corrected)	1.094276		
Theta hat	40.67671		
Theta star	89.30103		
nu hat	24.02357		
nu star	10.94276		
5% Approximate Chi Square Value	4.53831		
Adjusted Level of Significance	0.0086		
Adjusted Chi Square Value	2.921898		
Anderson-Darling Test Statistic	0.364967		
Anderson-Darling 5% Critical Value	0.683718		
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.	
Kolmogrov-Smirnov Test Statistic	0.218091		
Kolmogrov-Smirnov 5% Critical Value	0.360048		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level	
95% Approximate Gamma UCL	235.6222		
95% Adjusted Gamma UCL	365.9699		
Lognormal Statistics			
Minimum of log data	3.688879		
Maximum of log data	5.429346		
Mean of log data	4.359771		
Standard Deviation of log data	0.721987		
Variance of log data	0.521266		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.916434		
Shapiro-Wilk 5% Critical Value	0.762		
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level	
MLE Mean	101.535		
MLE Standard Deviation	83.98351		
MLE Coefficient of Variation	0.827139		
MLE Skewness	3.047309		
MLE Median	78.23918		
MLE 80% Quantile	144.0053		
MLE 90% Quantile	197.853		
MLE 95% Quantile	256.5799		
MLE 99% Quantile	419.5209		
MVU Estimate of Median	74.23109		
MVU Estimate of Mean	95.7266		
MVU Estimate of Standard Deviation	67.93062		
MVU Estimate of SE of Mean	30.28802		
95% H-UCL	392.8146		
95% Chebyshev (MVUE) UCL	227.749		
97.5% Chebyshev (MVUE) UCL	284.8752		
99% Chebyshev (MVUE) UCL	397.0886		
Non-parametric Statistics			
95% CLT UCL	154.9692		
95% Adjusted-CLT UCL	181.8701		
95% Modified-t UCL	176.115		
95% Jackknife UCL	171.919		
95% Chebyshev (Mean, Sd) UCL	249.4316		
97.5% Chebyshev (Mean, Sd) UCL	315.0774		
99% Chebyshev (Mean, Sd) UCL	444.0257		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	148.4181		
95% Bootstrap-t UCL	319.2669		
95% Hall's Bootstrap UCL	475.1969		
95% Percentile Bootstrap UCL	156		
95% BCA Bootstrap UCL	140.88		
Recommendations			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	171.919	95% Student's-t UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Soil stat - nr-so.xls		
Variable:	Copper		
Raw Statistics			
Number of Observations	5		
Number of Missing Data	0		
Number of Valid Observations	5		
Number of Distinct Observations	5		
Minimum	38.6		
Maximum	228		
Mean	96.72		
Standard Deviation	78.36078		
Variance	6140.412		
Coefficient of Variation	0.810182		
Skewness	1.613078		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.818099		
Shapiro-Wilk 5% Critical Value	0.762		
5% Normality Test Result	NORMAL	Data are normal at 5% significance level	
95% Student's-t UCL	171.4284		
Gamma Statistics			
k hat	2.296657		
k star (bias corrected)	1.051996		
Theta hat	42.11338		
Theta star	91.9395		
nu hat	22.96657		
nu star	10.51996		
5% Approximate Chi Square Value	4.268418		
Adjusted Level of Significance	0.0086		
Adjusted Chi Square Value	2.715111		
Anderson-Darling Test Statistic	0.36723		
Anderson-Darling 5% Critical Value	0.68391		
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.	
Kolmogrov-Smirnov Test Statistic	0.230432		
Kolmogrov-Smirnov 5% Critical Value	0.360159		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level	
95% Approximate Gamma UCL	238.3765		
95% Adjusted Gamma UCL	374.751		
Lognormal Statistics			
Minimum of log data	3.653252		
Maximum of log data	5.429346		
Mean of log data	4.33859		
Standard Deviation of log data	0.743348		
Variance of log data	0.552567		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.909901		
Shapiro-Wilk 5% Critical Value	0.762		
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level	
MLE Mean	100.975		
MLE Standard Deviation	86.72735		
MLE Coefficient of Variation	0.858899		
MLE Skewness	3.210312		
MLE Median	76.59947		
MLE 80% Quantile	143.5552		
MLE 90% Quantile	199.0971		
MLE 95% Quantile	260.1863		
MLE 99% Quantile	431.6513		
MVU Estimate of Median	72.44409		
MVU Estimate of Mean	94.82434		
MVU Estimate of Standard Deviation	69.21036		
MVU Estimate of SE of Mean	30.84816		
95% H-UCL	419.5776		
95% Chebyshev (MVUE) UCL	229.2884		
97.5% Chebyshev (MVUE) UCL	287.471		
99% Chebyshev (MVUE) UCL	401.7597		
Non-parametric Statistics			
95% CLT UCL	154.3623		
95% Adjusted-CLT UCL	181.3747		
95% Modified-t UCL	175.6418		
95% Jackknife UCL	171.4284		
95% Chebyshev (Mean, Sd) UCL	249.4733		
97.5% Chebyshev (Mean, Sd) UCL	315.5698		
99% Chebyshev (Mean, Sd) UCL	445.4035		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	150.552		
95% Bootstrap-t UCL	283.1953		
95% Hall's Bootstrap UCL	430.1015		
95% Percentile Bootstrap UCL	154.2		
95% BCA Bootstrap UCL	134.88		
Recommendations			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	171.4284	95% Student's-t UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Soil stat - nr-so.xls		
Variable:	Manganese		
Raw Statistics			
Number of Observations	5		
Number of Missing Data	0		
Number of Valid Observations	5		
Number of Distinct Observations	5		
Minimum	111		
Maximum	830		
Mean	308		
Standard Deviation	302.5525		
Variance	91538		
Coefficient of Variation	0.982313		
Skewness	1.884345		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.749022		
Shapiro-Wilk 5% Critical Value	0.762		
5% Normality Test Result	NOT NORMAL		Data not normal at 5% significance level
95% Student's-t UCL	596.4507		
Gamma Statistics			
k hat	1.744569		
k star (bias corrected)	0.831161		
Theta hat	176.5479		
Theta star	370.566		
nu hat	17.44569		
nu star	8.311611		
5% Approximate Chi Square Value	2.916063		
Adjusted Level of Significance	0.0086		
Adjusted Chi Square Value	1.710333		
Anderson-Darling Test Statistic	0.490804		
Anderson-Darling 5% Critical Value	0.685441		
Anderson-Darling 5% Gamma Test Result	AD GAMMA		Data follow gamma distribution at 5% significance level.
Kolmogrov-Smirnov Test Statistic	0.280335		
Kolmogrov-Smirnov 5% Critical Value	0.361083		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA		Data follow gamma distribution at 5% significance level
5% Gamma Test Result	GAMMA		Data follow gamma distribution at 5% significance level
95% Approximate Gamma UCL	877.8877		
95% Adjusted Gamma UCL	1496.771		
Lognormal Statistics			
Minimum of log data	4.70953		
Maximum of log data	6.721426		
Mean of log data	5.416907		
Standard Deviation of log data	0.833898		
Variance of log data	0.695385		
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.880408		
Shapiro-Wilk 5% Critical Value	0.762		
5% Lognormality Test Result	LOGNORMAL		Data are lognormal at 5% significance level
MLE Mean	318.8113		
MLE Standard Deviation	319.5248		
MLE Coefficient of Variation	1.002238		
MLE Skewness	4.013444		
MLE Median	225.1815		
MLE 80% Quantile	455.5703		
MLE 90% Quantile	657.5134		
MLE 95% Quantile	887.7305		
MLE 99% Quantile	1566.427		
MVU Estimate of Median	209.8815		
MVU Estimate of Mean	293.9009		
MVU Estimate of Standard Deviation	239.5285		
MVU Estimate of SE of Mean	106.578		
95% H-UCL	1837.743		
95% Chebyshev (MVUE) UCL	758.4635		
97.5% Chebyshev (MVUE) UCL	959.4801		
99% Chebyshev (MVUE) UCL	1354.338		
Non-parametric Statistics			
95% CLT UCL	530.5579		
95% Adjusted-CLT UCL	652.3927		
95% Modified-t UCL	615.4544		
95% Jackknife UCL	596.4507		
95% Chebyshev (Mean, Sd) UCL	897.7834		
97.5% Chebyshev (Mean, Sd) UCL	1152.983		
99% Chebyshev (Mean, Sd) UCL	1654.274		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	508.0407		
95% Bootstrap-t UCL	2100.416		
95% Hall's Bootstrap UCL	2178.156		
95% Percentile Bootstrap UCL	553.6		
95% BCA Bootstrap UCL	489.8		
Recommendations			
Human Inspection Recommended?	YES		
Appropriate Distribution	GAMMA		
1st Recommended UCL	877.8877		95% Approximate Gamma UCL
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	YES		Recommended UCL exceeds the maximum data value
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Soil stat - nr-so.xls		
Variable:	Mercury		
<b>Raw Statistics</b>			
Number of Observations	5		
Number of Missing Data	0		
Number of Valid Observations	5		
Number of Distinct Observations	5		
Minimum	0.36		
Maximum	2		
Mean	0.804		
Standard Deviation	0.695219		
Variance	0.48333		
Coefficient of Variation	0.864701		
Skewness	1.863329		
Too Few Distinct Observations?	NO		
<b>Normal Statistics</b>			
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.743008		
Shapiro-Wilk 5% Critical Value	0.762		
5% Normality Test Result	NOT NORMAL		Data not normal at 5% significance level
95% Student's-t UCL	1.466816		
<b>Gamma Statistics</b>			
k hat	2.253147		
k star (bias corrected)	1.034592		
Theta hat	0.356834		
Theta star	0.777118		
nu hat	22.53147		
nu star	10.34592		
5% Approximate Chi Square Value	4.158239		
Adjusted Level of Significance	0.0086		
Adjusted Chi Square Value	2.631209		
Anderson-Darling Test Statistic	0.56415		
Anderson-Darling 5% Critical Value	0.683989		
Anderson-Darling 5% Gamma Test Result	AD GAMMA		Data follow gamma distribution at 5% significance level.
Kolmogrov-Smirnov Test Statistic	0.312823		
Kolmogrov-Smirnov 5% Critical Value	0.360204		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA		Data follow gamma distribution at 5% significance level
5% Gamma Test Result	GAMMA		Data follow gamma distribution at 5% significance level
95% Approximate Gamma UCL	2.000395		
95% Adjusted Gamma UCL	3.16133		
<b>Lognormal Statistics</b>			
Minimum of log data	-1.021651		
Maximum of log data	0.693147		
Mean of log data	-0.456185		
Standard Deviation of log data	0.723231		
Variance of log data	0.523063		
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.84313		
Shapiro-Wilk 5% Critical Value	0.762		
5% Lognormality Test Result	LOGNORMAL		Data are lognormal at 5% significance level
MLE Mean	0.82312		
MLE Standard Deviation	0.68234		
MLE Coefficient of Variation	0.828968		
MLE Skewness	3.05656		
MLE Median	0.633697		
MLE 80% Quantile	1.167594		
MLE 90% Quantile	1.605069		
MLE 95% Quantile	2.082418		
MLE 99% Quantile	3.407743		
MVU Estimate of Median	0.601123		
MVU Estimate of Mean	0.775858		
MVU Estimate of Standard Deviation	0.551489		
MVU Estimate of SE of Mean	0.245886		
95% H-UCL	3.197531		
95% Chebyshev (MVUE) UCL	1.847651		
97.5% Chebyshev (MVUE) UCL	2.311416		
99% Chebyshev (MVUE) UCL	3.222394		
<b>Non-parametric Statistics</b>			
95% CLT UCL	1.315404		
95% Adjusted-CLT UCL	1.59224		
95% Modified-t UCL	1.509996		
95% Jackknife UCL	1.466816		
95% Chebyshev (Mean, Sd) UCL	2.159232		
97.5% Chebyshev (Mean, Sd) UCL	2.745642		
99% Chebyshev (Mean, Sd) UCL	3.897531		
<b>Bootstrap Statistics</b>			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	1.272618		
95% Bootstrap-t UCL	7.304643		
95% Hall's Bootstrap UCL	3.97542		
95% Percentile Bootstrap UCL	1.344		
95% BCA Bootstrap UCL	1.208		
<b>Recommendations</b>			
Human Inspection Recommended?	YES		
Appropriate Distribution	GAMMA		
1st Recommended UCL	2.000395		95% Approximate Gamma UCL
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	YES		Recommended UCL exceeds the maximum data value
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Soil stat - nr-so.xls		
Variable:	Vanadium		
Raw Statistics			
Number of Observations	5		
Number of Missing Data	0		
Number of Valid Observations	5		
Number of Distinct Observations	5		
Minimum	8.7		
Maximum	31.8		
Mean	16.18		
Standard Deviation	9.418439		
Variance	88.707		
Coefficient of Variation	0.582104		
Skewness	1.511428		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.841789		
Shapiro-Wilk 5% Critical Value	0.762		
5% Normality Test Result	NORMAL	Data are normal at 5% significance level	
95% Student's-t UCL	25.15945		
Gamma Statistics			
k hat	4.357918		
k star (bias corrected)	1.8765		
Theta hat	3.712782		
Theta star	8.622433		
nu hat	43.57918		
nu star	18.765		
5% Approximate Chi Square Value	9.944556		
Adjusted Level of Significance	0.0086		
Adjusted Chi Square Value	7.305785		
Anderson-Darling Test Statistic	0.355988		
Anderson-Darling 5% Critical Value	0.68105		
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.	
Kolmogrov-Smirnov Test Statistic	0.223653		
Kolmogrov-Smirnov 5% Critical Value	0.3584		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level	
95% Approximate Gamma UCL	30.53105		
95% Adjusted Gamma UCL	41.55854		
Lognormal Statistics			
Minimum of log data	2.163323		
Maximum of log data	3.459466		
Mean of log data	2.664677		
Standard Deviation of log data	0.529598		
Variance of log data	0.280474		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.915812		
Shapiro-Wilk 5% Critical Value	0.762		
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level	
MLE Mean	16.52565		
MLE Standard Deviation	9.403038		
MLE Coefficient of Variation	0.568997		
MLE Skewness	1.891206		
MLE Median	14.36331		
MLE 80% Quantile	22.47013		
MLE 90% Quantile	28.36654		
MLE 95% Quantile	34.32471		
MLE 99% Quantile	49.2309		
MVU Estimate of Median	13.9642		
MVU Estimate of Mean	16.03612		
MVU Estimate of Standard Deviation	8.41383		
MVU Estimate of SE of Mean	3.759217		
95% H-UCL	36.9923		
95% Chebyshev (MVUE) UCL	32.42217		
97.5% Chebyshev (MVUE) UCL	39.51243		
99% Chebyshev (MVUE) UCL	53.43986		
Non-parametric Statistics			
95% CLT UCL	23.10821		
95% Adjusted-CLT UCL	26.15034		
95% Modified-t UCL	25.63396		
95% Jackknife UCL	25.15945		
95% Chebyshev (Mean, Sd) UCL	34.53992		
97.5% Chebyshev (Mean, Sd) UCL	42.48427		
99% Chebyshev (Mean, Sd) UCL	58.08941		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	22.52119		
95% Bootstrap-t UCL	32.97602		
95% Hall's Bootstrap UCL	52.85714		
95% Percentile Bootstrap UCL	22.56		
95% BCA Bootstrap UCL	21.3		
Recommendations			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	25.15945	95% Student's-t UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Soil stat - nr-so.xls	
Variable:	Zinc	
Raw Statistics		
Number of Observations	5	
Number of Missing Data	0	
Number of Valid Observations	5	
Number of Distinct Observations	5	
Minimum	110	
Maximum	708	
Mean	291	
Standard Deviation	245.876	
Variance	60455	
Coefficient of Variation	0.844935	
Skewness	1.719294	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.805506	
Shapiro-Wilk 5% Critical Value	0.762	
5% Normality Test Result	NORMAL	Data are normal at 5% significance level
95% Student's-t UCL	525.4158	
Gamma Statistics		
k hat	2.189433	
k star (bias corrected)	1.009107	
Theta hat	132.9111	
Theta star	288.3739	
nu hat	21.89433	
nu star	10.09107	
5% Approximate Chi Square Value	3.997911	
Adjusted Level of Significance	0.0086	
Adjusted Chi Square Value	2.509682	
Anderson-Darling Test Statistic	0.359047	
Anderson-Darling 5% Critical Value	0.684105	
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.
Kolmogrov-Smirnov Test Statistic	0.206784	
Kolmogrov-Smirnov 5% Critical Value	0.360271	
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level
95% Approximate Gamma UCL	734.5087	
95% Adjusted Gamma UCL	1170.069	
Lognormal Statistics		
Minimum of log data	4.70048	
Maximum of log data	6.562444	
Mean of log data	5.427902	
Standard Deviation of log data	0.755318	
Variance of log data	0.570505	
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.928244	
Shapiro-Wilk 5% Critical Value	0.762	
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level
MLE Mean	302.8248	
MLE Standard Deviation	265.5826	
MLE Coefficient of Variation	0.877018	
MLE Skewness	3.305619	
MLE Median	227.6711	
MLE 80% Quantile	431.0161	
MLE 90% Quantile	600.934	
MLE 95% Quantile	788.7106	
MLE 99% Quantile	1319.187	
MVU Estimate of Median	214.927	
MVU Estimate of Mean	283.7319	
MVU Estimate of Standard Deviation	210.3016	
MVU Estimate of SE of Mean	93.71597	
95% H-UCL	1310.991	
95% Chebyshev (MVUE) UCL	692.2304	
97.5% Chebyshev (MVUE) UCL	868.988	
99% Chebyshev (MVUE) UCL	1216.194	
Non-parametric Statistics		
95% CLT UCL	471.8666	
95% Adjusted-CLT UCL	562.2059	
95% Modified-t UCL	539.5069	
95% Jackknife UCL	525.4158	
95% Chebyshev (Mean, Sd) UCL	770.3005	
97.5% Chebyshev (Mean, Sd) UCL	977.6943	
99% Chebyshev (Mean, Sd) UCL	1385.079	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	454.0581	
95% Bootstrap-t UCL	985.5711	
95% Hall's Bootstrap UCL	1248.055	
95% Percentile Bootstrap UCL	471.6	
95% BCA Bootstrap UCL	427.6	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	NORMAL	
1st Recommended UCL	525.4158	95% Student's-t UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value	NO	
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Soil stat - wss.xls		
Variable:	Arsenic		
Raw Statistics			
Number of Observations	5		
Number of Missing Data	0		
Number of Valid Observations	5		
Number of Distinct Observations	5		
Minimum	8.1		
Maximum	10.9		
Mean	8.93		
Standard Deviation	1.128938		
Variance	1.2745		
Coefficient of Variation	0.126421		
Skewness	1.966127		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.751553		
Shapiro-Wilk 5% Critical Value	0.762		
5% Normality Test Result	NOT NORMAL		Data not normal at 5% significance level
95% Student's-t UCL	10.00632		
Gamma Statistics			
k hat	85.44033		
k star (bias corrected)	34.30947		
Theta hat	0.104517		
Theta star	0.260278		
nu hat	854.4033		
nu star	343.0947		
5% Approximate Chi Square Value	301.1654		
Adjusted Level of Significance	0.0086		
Adjusted Chi Square Value	283.8059		
Anderson-Darling Test Statistic	0.696826		
Anderson-Darling 5% Critical Value	0.678132		
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA		Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.380822		
Kolmogrov-Smirnov 5% Critical Value	0.356832		
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA		Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA		Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	10.17326		
95% Adjusted Gamma UCL	10.79553		
Lognormal Statistics			
Minimum of log data	2.091864		
Maximum of log data	2.388763		
Mean of log data	2.183553		
Standard Deviation of log data	0.118461		
Variance of log data	0.014033		
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.775778		
Shapiro-Wilk 5% Critical Value	0.762		
5% Lognormality Test Result	LOGNORMAL		Data are lognormal at 5% significance level
MLE Mean	8.940302		
MLE Standard Deviation	1.062801		
MLE Coefficient of Variation	0.118878		
MLE Skewness	0.358313		
MLE Median	8.877793		
MLE 80% Quantile	9.812453		
MLE 90% Quantile	10.33747		
MLE 95% Quantile	10.78785		
MLE 99% Quantile	11.6942		
MVU Estimate of Median	8.86534		
MVU Estimate of Mean	8.927719		
MVU Estimate of Standard Deviation	1.05709		
MVU Estimate of SE of Mean	0.472744		
95% H-UCL	10.10169		
95% Chebyshev (MVUE) UCL	10.98836		
97.5% Chebyshev (MVUE) UCL	11.88		
99% Chebyshev (MVUE) UCL	13.63146		
Non-parametric Statistics			
95% CLT UCL	9.760447		
95% Adjusted-CLT UCL	10.23479		
95% Modified-t UCL	10.08031		
95% Jackknife UCL	10.00632		
95% Chebyshev (Mean, Sd) UCL	11.1307		
97.5% Chebyshev (Mean, Sd) UCL	12.08295		
99% Chebyshev (Mean, Sd) UCL	13.95345		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	9.664137		
95% Bootstrap-t UCL	12.14517		
95% Hall's Bootstrap UCL	13.89729		
95% Percentile Bootstrap UCL	9.82		
95% BCA Bootstrap UCL	10.02		
Recommendations			
Human Inspection Recommended?	YES		Users must select one of the recommended UCLS
Appropriate Distribution	LOGNORMAL		
1st Recommended UCL	10.00632		95% Student's-t UCL
2nd Recommended UCL	10.08031		95% Modified-t UCL
3rd Recommended UCL	10.10169		95% H-UCL
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Soil stat - wss.xls		
Variable:	Cadmium		
<b>Raw Statistics</b>			
Number of Observations	5		
Number of Missing Data	0		
Number of Valid Observations	5		
Number of Distinct Observations	4		
Minimum	0.095		
Maximum	0.37		
Mean	0.195		
Standard Deviation	0.134071		
Variance	0.017975		
Coefficient of Variation	0.687543		
Skewness	0.720199		
Too Few Distinct Observations?	NO		
<b>Normal Statistics</b>			
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.757904		
Shapiro-Wilk 5% Critical Value	0.762		
5% Normality Test Result	NOT NORMAL		Data not normal at 5% significance level
95% Student's-t UCL	0.322822		
<b>Gamma Statistics</b>			
k hat	2.785073		
k star (bias corrected)	1.247363		
Theta hat	0.070016		
Theta star	0.15633		
nu hat	27.85073		
nu star	12.47363		
5% Approximate Chi Square Value	5.539556		
Adjusted Level of Significance	0.0086		
Adjusted Chi Square Value	3.702701		
Anderson-Darling Test Statistic	0.77879		
Anderson-Darling 5% Critical Value	0.683021		
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA		Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.386062		
Kolmogrov-Smirnov 5% Critical Value	0.359646		
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA		Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA		Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	0.439089		
95% Adjusted Gamma UCL	0.656914		
<b>Lognormal Statistics</b>			
Minimum of log data	-2.353878		
Maximum of log data	-0.994252		
Mean of log data	-1.824897		
Standard Deviation of log data	0.680718		
Variance of log data	0.463376		
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.746921		
Shapiro-Wilk 5% Critical Value	0.762		
5% Lognormality Test Result	NOT LOGNORMAL		Data not lognormal at 5% significance level
MLE Mean	0.203272		
MLE Standard Deviation	0.156061		
MLE Coefficient of Variation	0.767744		
MLE Skewness	2.755766		
MLE Median	0.161234		
MLE 80% Quantile	0.286594		
MLE 90% Quantile	0.386673		
MLE 95% Quantile	0.494051		
MLE 99% Quantile	0.785411		
MVU Estimate of Median	0.153878		
MVU Estimate of Mean	0.193024		
MVU Estimate of Standard Deviation	0.129391		
MVU Estimate of SE of Mean	0.057725		
95% H-UCL	0.689111		
95% Chebyshev (MVUE) UCL	0.444642		
97.5% Chebyshev (MVUE) UCL	0.553517		
99% Chebyshev (MVUE) UCL	0.767382		
<b>Non-parametric Statistics</b>			
95% CLT UCL	0.293623		
95% Adjusted-CLT UCL	0.314257		
95% Modified-t UCL	0.32604		
95% Jackknife UCL	0.322822		
95% Chebyshev (Mean, Sd) UCL	0.456352		
97.5% Chebyshev (Mean, Sd) UCL	0.56944		
99% Chebyshev (Mean, Sd) UCL	0.791578		
<b>Bootstrap Statistics</b>			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	N/R		Not enough distinct data warning
95% Bootstrap-t UCL	N/R		Not enough distinct data warning
95% Hall's Bootstrap UCL	N/R		Not enough distinct data warning
95% Percentile Bootstrap UCL	N/R		Not enough distinct data warning
95% BCA Bootstrap UCL	N/R		Not enough distinct data warning
<b>Recommendations</b>			
Human Inspection Recommended?	YES		
Appropriate Distribution	NON-PARAMETRIC		
1st Recommended UCL	0.456352		95% Chebyshev (Mean, Sd) UCL
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	YES		Recommended UCL exceeds the maximum data value
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Soil stat - wss.xls		
Variable:	Chromium		
Raw Statistics			
Number of Observations	5		
Number of Missing Data	0		
Number of Valid Observations	5		
Number of Distinct Observations	5		
Minimum	9.3		
Maximum	19.7		
Mean	13.48		
Standard Deviation	5.16062		
Variance	26.632		
Coefficient of Variation	0.382835		
Skewness	0.617082		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.770435		
Shapiro-Wilk 5% Critical Value	0.762		
5% Normality Test Result	NORMAL		Data are normal at 5% significance level
95% Student's-t UCL	18.40009		
Gamma Statistics			
k hat	8.974786		
k star (bias corrected)	3.723248		
Theta hat	1.501986		
Theta star	3.620495		
nu hat	89.74786		
nu star	37.23248		
5% Approximate Chi Square Value	24.26055		
Adjusted Level of Significance	0.0086		
Adjusted Chi Square Value	19.81144		
Anderson-Darling Test Statistic	0.694837		
Anderson-Darling 5% Critical Value	0.679255		
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA		Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.3446		
Kolmogrov-Smirnov 5% Critical Value	0.357738		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA		Data follow gamma distribution at 5% significance level
5% Gamma Test Result	APPROX GAMMA		Data follow approximate gamma distribution at 5% significance level
95% Approximate Gamma UCL	20.68765		
95% Adjusted Gamma UCL	25.33354		
Lognormal Statistics			
Minimum of log data	2.230014		
Maximum of log data	2.980619		
Mean of log data	2.544462		
Standard Deviation of log data	0.371977		
Variance of log data	0.138367		
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.780247		
Shapiro-Wilk 5% Critical Value	0.762		
5% Lognormality Test Result	LOGNORMAL		Data are lognormal at 5% significance level
MLE Mean	13.64872		
MLE Standard Deviation	5.257798		
MLE Coefficient of Variation	0.385223		
MLE Skewness	1.212834		
MLE Median	12.73638		
MLE 80% Quantile	17.44028		
MLE 90% Quantile	20.5416		
MLE 95% Quantile	23.48505		
MLE 99% Quantile	30.25557		
MVU Estimate of Median	12.56096		
MVU Estimate of Mean	13.45442		
MVU Estimate of Standard Deviation	4.981714		
MVU Estimate of SE of Mean	2.22735		
95% H-UCL	22.04044		
95% Chebyshev (MVUE) UCL	23.16321		
97.5% Chebyshev (MVUE) UCL	27.36421		
99% Chebyshev (MVUE) UCL	35.61627		
Non-parametric Statistics			
95% CLT UCL	17.27616		
95% Adjusted-CLT UCL	17.9567		
95% Modified-t UCL	18.50624		
95% Jackknife UCL	18.40009		
95% Chebyshev (Mean, Sd) UCL	23.5399		
97.5% Chebyshev (Mean, Sd) UCL	27.89283		
99% Chebyshev (Mean, Sd) UCL	36.44331		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	16.88594		
95% Bootstrap-t UCL	52.4835		
95% Hall's Bootstrap UCL	105.6343		
95% Percentile Bootstrap UCL	17.2		
95% BCA Bootstrap UCL	16.9		
Recommendations			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	18.40009		95% Student's-t UCL
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Soil stat - wss.xls		
Variable:	Copper		
Raw Statistics			
Number of Observations	5		
Number of Missing Data	0		
Number of Valid Observations	5		
Number of Distinct Observations	5		
Minimum	18.3		
Maximum	33.8		
Mean	26.74		
Standard Deviation	7.678737		
Variance	58.963		
Coefficient of Variation	0.287163		
Skewness	-0.531454		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.782259		
Shapiro-Wilk 5% Critical Value	0.762		
5% Normality Test Result	NORMAL		Data are normal at 5% significance level
95% Student's-t UCL	34.06083		
Gamma Statistics			
k hat	13.83873		
k star (bias corrected)	5.668824		
Theta hat	1.932259		
Theta star	4.717028		
nu hat	138.3873		
nu star	56.68824		
5% Approximate Chi Square Value	40.37946		
Adjusted Level of Significance	0.0086		
Adjusted Chi Square Value	34.45609		
Anderson-Darling Test Statistic	0.715683		
Anderson-Darling 5% Critical Value	0.678807		
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA		Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.342941		
Kolmogrov-Smirnov 5% Critical Value	0.357425		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA		Data follow gamma distribution at 5% significance level
5% Gamma Test Result	APPROX GAMMA		Data follow approximate gamma distribution at 5% significance level
95% Approximate Gamma UCL	37.53997		
95% Adjusted Gamma UCL	43.99348		
Lognormal Statistics			
Minimum of log data	2.906901		
Maximum of log data	3.520461		
Mean of log data	3.249595		
Standard Deviation of log data	0.309431		
Variance of log data	0.095748		
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.763489		
Shapiro-Wilk 5% Critical Value	0.762		
5% Lognormality Test Result	LOGNORMAL		Data are lognormal at 5% significance level
MLE Mean	27.0441		
MLE Standard Deviation	8.572654		
MLE Coefficient of Variation	0.316988		
MLE Skewness	0.982815		
MLE Median	25.7799		
MLE 80% Quantile	33.48389		
MLE 90% Quantile	38.36763		
MLE 95% Quantile	42.88875		
MLE 99% Quantile	52.94916		
MVU Estimate of Median	25.53385		
MVU Estimate of Mean	26.77993		
MVU Estimate of Standard Deviation	8.260148		
MVU Estimate of SE of Mean	3.693615		
95% H-UCL	39.34747		
95% Chebyshev (MVUE) UCL	42.88003		
97.5% Chebyshev (MVUE) UCL	49.84655		
99% Chebyshev (MVUE) UCL	63.53094		
Non-parametric Statistics			
95% CLT UCL	32.38849		
95% Adjusted-CLT UCL	31.51639		
95% Modified-t UCL	33.9248		
95% Jackknife UCL	34.06083		
95% Chebyshev (Mean, Sd) UCL	41.70861		
97.5% Chebyshev (Mean, Sd) UCL	48.18554		
99% Chebyshev (Mean, Sd) UCL	60.90822		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	31.78246		
95% Bootstrap-t UCL	33.75753		
95% Hall's Bootstrap UCL	29.29902		
95% Percentile Bootstrap UCL	32.22		
95% BCA Bootstrap UCL	32.9		
Recommendations			
Human Inspection Recommended?	YES		
Appropriate Distribution	NORMAL		
1st Recommended UCL	34.06083		95% Student's-t UCL
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	YES		Recommended UCL exceeds the maximum data value
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Soil stat - wss.xls		
Variable:	Manganese		
Raw Statistics			
Number of Observations	5		
Number of Missing Data	0		
Number of Valid Observations	5		
Number of Distinct Observations	5		
Minimum	90.6		
Maximum	204		
Mean	147.52		
Standard Deviation	43.81954		
Variance	1920.152		
Coefficient of Variation	0.297041		
Skewness	-0.012101		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.995249		
Shapiro-Wilk 5% Critical Value	0.762		
5% Normality Test Result	NORMAL		Data are normal at 5% significance level
95% Student's-t UCL	189.2971		
Gamma Statistics			
k hat	13.36856		
k star (bias corrected)	5.480757		
Theta hat	11.03485		
Theta star	26.91599		
nu hat	133.6856		
nu star	54.80757		
5% Approximate Chi Square Value	38.793		
Adjusted Level of Significance	0.0086		
Adjusted Chi Square Value	32.99999		
Anderson-Darling Test Statistic	0.174728		
Anderson-Darling 5% Critical Value	0.678816		
Anderson-Darling 5% Gamma Test Result	AD GAMMA		Data follow gamma distribution at 5% significance level.
Kolmogrov-Smirnov Test Statistic	0.15444		
Kolmogrov-Smirnov 5% Critical Value	0.357445		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA		Data follow gamma distribution at 5% significance level
5% Gamma Test Result	GAMMA		Data follow gamma distribution at 5% significance level
95% Approximate Gamma UCL	208.4194		
95% Adjusted Gamma UCL	245.0065		
Lognormal Statistics			
Minimum of log data	4.506454		
Maximum of log data	5.31812		
Mean of log data	4.956097		
Standard Deviation of log data	0.313853		
Variance of log data	0.098504		
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.981089		
Shapiro-Wilk 5% Critical Value	0.762		
5% Lognormality Test Result	LOGNORMAL		Data are lognormal at 5% significance level
MLE Mean	149.2091		
MLE Standard Deviation	48.00695		
MLE Coefficient of Variation	0.321743		
MLE Skewness	0.998535		
MLE Median	142.0383		
MLE 80% Quantile	185.1752		
MLE 90% Quantile	212.5968		
MLE 95% Quantile	238.0271		
MLE 99% Quantile	294.7474		
MVU Estimate of Median	140.6437		
MVU Estimate of Mean	147.7088		
MVU Estimate of Standard Deviation	46.20691		
MVU Estimate of SE of Mean	20.66178		
95% H-UCL	218.6074		
95% Chebyshev (MVUE) UCL	237.7714		
97.5% Chebyshev (MVUE) UCL	276.7416		
99% Chebyshev (MVUE) UCL	353.2909		
Non-parametric Statistics			
95% CLT UCL	179.7537		
95% Adjusted-CLT UCL	179.6404		
95% Modified-t UCL	189.2795		
95% Jackknife UCL	189.2971		
95% Chebyshev (Mean, Sd) UCL	232.94		
97.5% Chebyshev (Mean, Sd) UCL	269.9013		
99% Chebyshev (Mean, Sd) UCL	342.5046		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	175.8136		
95% Bootstrap-t UCL	190.7465		
95% Hall's Bootstrap UCL	189.3539		
95% Percentile Bootstrap UCL	175.12		
95% BCA Bootstrap UCL	169.2		
Recommendations			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	189.2971		95% Student's-t UCL
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Soil stat - wss.xls		
Variable:	Mercury		
Raw Statistics			
Number of Observations	5		
Number of Missing Data	0		
Number of Valid Observations	5		
Number of Distinct Observations	3		
Minimum	0.09		
Maximum	0.13		
Mean	0.102		
Standard Deviation	0.016432		
Variance	0.00027		
Coefficient of Variation	0.161095		
Skewness	1.735582		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.778543		
Shapiro-Wilk 5% Critical Value	0.762		
5% Normality Test Result	NORMAL		Data are normal at 5% significance level
95% Student's-t UCL	0.117666		
Gamma Statistics			
k hat	52.94226		
k star (bias corrected)	21.31024		
Theta hat	0.001927		
Theta star	0.004786		
nu hat	529.4226		
nu star	213.1024		
5% Approximate Chi Square Value	180.3127		
Adjusted Level of Significance	0.0086		
Adjusted Chi Square Value	167.042		
Anderson-Darling Test Statistic	0.605988		
Anderson-Darling 5% Critical Value	0.678249		
Anderson-Darling 5% Gamma Test Result	AD GAMMA		Data follow gamma distribution at 5% significance level.
Kolmogrov-Smirnov Test Statistic	0.338917		
Kolmogrov-Smirnov 5% Critical Value	0.356858		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA		Data follow gamma distribution at 5% significance level
5% Gamma Test Result	GAMMA		Data follow gamma distribution at 5% significance level
95% Approximate Gamma UCL	0.120549		
95% Adjusted Gamma UCL	0.130126		
Lognormal Statistics			
Minimum of log data	-2.407946		
Maximum of log data	-2.040221		
Mean of log data	-2.292256		
Standard Deviation of log data	0.150419		
Variance of log data	0.022626		
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.804383		
Shapiro-Wilk 5% Critical Value	0.762		
5% Lognormality Test Result	LOGNORMAL		Data are lognormal at 5% significance level
MLE Mean	0.102188		
MLE Standard Deviation	0.015458		
MLE Coefficient of Variation	0.151274		
MLE Skewness	0.457283		
MLE Median	0.101038		
MLE 80% Quantile	0.114732		
MLE 90% Quantile	0.122583		
MLE 95% Quantile	0.129404		
MLE 99% Quantile	0.143362		
MVU Estimate of Median	0.10081		
MVU Estimate of Mean	0.101955		
MVU Estimate of Standard Deviation	0.015324		
MVU Estimate of SE of Mean	0.006853		
95% H-UCL	0.11978		
95% Chebyshev (MVUE) UCL	0.131828		
97.5% Chebyshev (MVUE) UCL	0.144754		
99% Chebyshev (MVUE) UCL	0.170144		
Non-parametric Statistics			
95% CLT UCL	0.114087		
95% Adjusted-CLT UCL	0.120182		
95% Modified-t UCL	0.118616		
95% Jackknife UCL	0.117666		
95% Chebyshev (Mean, Sd) UCL	0.134031		
97.5% Chebyshev (Mean, Sd) UCL	0.147891		
99% Chebyshev (Mean, Sd) UCL	0.175116		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	N/R		Not enough distinct data warning
95% Bootstrap-t UCL	N/R		Not enough distinct data warning
95% Hall's Bootstrap UCL	N/R		Not enough distinct data warning
95% Percentile Bootstrap UCL	N/R		Not enough distinct data warning
95% BCA Bootstrap UCL	N/R		Not enough distinct data warning
Recommendations			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	0.117666		95% Student's-t UCL
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Soil stat - wss.xls		
Variable:	Thallium		
<b>Raw Statistics</b>			
Number of Observations	5		
Number of Missing Data	0		
Number of Valid Observations	5		
Number of Distinct Observations	4		
Minimum	0.3		
Maximum	1.5		
Mean	0.77		
Standard Deviation	0.441022		
Variance	0.1945		
Coefficient of Variation	0.572755		
Skewness	1.373593		
Too Few Distinct Observations?	NO		
<b>Normal Statistics</b>			
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.842452		
Shapiro-Wilk 5% Critical Value	0.762		
5% Normality Test Result	NORMAL		Data are normal at 5% significance level
95% Student's-t UCL	1.190466		
<b>Gamma Statistics</b>			
k hat	4.091199		
k star (bias corrected)	1.769813		
Theta hat	0.188209		
Theta star	0.435074		
nu hat	40.91199		
nu star	17.69813		
5% Approximate Chi Square Value	9.171709		
Adjusted Level of Significance	0.0086		
Adjusted Chi Square Value	6.659226		
Anderson-Darling Test Statistic	0.445634		
Anderson-Darling 5% Critical Value	0.681192		
Anderson-Darling 5% Gamma Test Result	AD GAMMA		Data follow gamma distribution at 5% significance level.
Kolmogrov-Smirnov Test Statistic	0.309123		
Kolmogrov-Smirnov 5% Critical Value	0.358437		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA		Data follow gamma distribution at 5% significance level
5% Gamma Test Result	GAMMA		Data follow gamma distribution at 5% significance level
95% Approximate Gamma UCL	1.485826		
95% Adjusted Gamma UCL	2.046418		
<b>Lognormal Statistics</b>			
Minimum of log data	-1.203973		
Maximum of log data	0.405465		
Mean of log data	-0.388528		
Standard Deviation of log data	0.56991		
Variance of log data	0.324797		
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.910327		
Shapiro-Wilk 5% Critical Value	0.762		
5% Lognormality Test Result	LOGNORMAL		Data are lognormal at 5% significance level
MLE Mean	0.797615		
MLE Standard Deviation	0.494103		
MLE Coefficient of Variation	0.619476		
MLE Skewness	2.096152		
MLE Median	0.678054		
MLE 80% Quantile	1.097512		
MLE 90% Quantile	1.410306		
MLE 95% Quantile	1.731476		
MLE 99% Quantile	2.552524		
MVU Estimate of Median	0.656268		
MVU Estimate of Mean	0.770045		
MVU Estimate of Standard Deviation	0.434144		
MVU Estimate of SE of Mean	0.193912		
95% H-UCL	1.97397		
95% Chebyshev (MVUE) UCL	1.615289		
97.5% Chebyshev (MVUE) UCL	1.981026		
99% Chebyshev (MVUE) UCL	2.699447		
<b>Non-parametric Statistics</b>			
95% CLT UCL	1.094416		
95% Adjusted-CLT UCL	1.223874		
95% Modified-t UCL	1.210659		
95% Jackknife UCL	1.190466		
95% Chebyshev (Mean, Sd) UCL	1.629709		
97.5% Chebyshev (Mean, Sd) UCL	2.001706		
99% Chebyshev (Mean, Sd) UCL	2.732422		
<b>Bootstrap Statistics</b>			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	N/R		Not enough distinct data warning
95% Bootstrap-t UCL	N/R		Not enough distinct data warning
95% Hall's Bootstrap UCL	N/R		Not enough distinct data warning
95% Percentile Bootstrap UCL	N/R		Not enough distinct data warning
95% BCA Bootstrap UCL	N/R		Not enough distinct data warning
<b>Recommendations</b>			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	1.190466		95% Student's-t UCL
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Soil stat - wss.xls		
Variable:	Vanadium		
Raw Statistics			
Number of Observations	5		
Number of Missing Data	0		
Number of Valid Observations	5		
Number of Distinct Observations	5		
Minimum	13.1		
Maximum	24.3		
Mean	18.72		
Standard Deviation	5.252809		
Variance	27.592		
Coefficient of Variation	0.280599		
Skewness	0.122597		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.867364		
Shapiro-Wilk 5% Critical Value	0.762		
5% Normality Test Result	NORMAL	Data are normal at 5% significance level	
95% Student's-t UCL	23.72798		
Gamma Statistics			
k hat	15.61206		
k star (bias corrected)	6.378157		
Theta hat	1.199073		
Theta star	2.935017		
nu hat	156.1206		
nu star	63.78157		
5% Approximate Chi Square Value	46.40514		
Adjusted Level of Significance	0.0086		
Adjusted Chi Square Value	40.00827		
Anderson-Darling Test Statistic	0.415267		
Anderson-Darling 5% Critical Value	0.678773		
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.	
Kolmogrov-Smirnov Test Statistic	0.261897		
Kolmogrov-Smirnov 5% Critical Value	0.357349		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level	
95% Approximate Gamma UCL	25.72972		
95% Adjusted Gamma UCL	29.8436		
Lognormal Statistics			
Minimum of log data	2.572612		
Maximum of log data	3.190476		
Mean of log data	2.897224		
Standard Deviation of log data	0.28611		
Variance of log data	0.081859		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.878268		
Shapiro-Wilk 5% Critical Value	0.762		
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level	
MLE Mean	18.88095		
MLE Standard Deviation	5.514496		
MLE Coefficient of Variation	0.292067		
MLE Skewness	0.901114		
MLE Median	18.12377		
MLE 80% Quantile	23.08048		
MLE 90% Quantile	26.17686		
MLE 95% Quantile	29.01682		
MLE 99% Quantile	35.25886		
MVU Estimate of Median	17.97581		
MVU Estimate of Mean	18.72372		
MVU Estimate of Standard Deviation	5.342454		
MVU Estimate of SE of Mean	2.389011		
95% H-UCL	26.50592		
95% Chebyshev (MVUE) UCL	29.13717		
97.5% Chebyshev (MVUE) UCL	33.64309		
99% Chebyshev (MVUE) UCL	42.49408		
Non-parametric Statistics			
95% CLT UCL	22.58397		
95% Adjusted-CLT UCL	22.72159		
95% Modified-t UCL	23.74944		
95% Jackknife UCL	23.72798		
95% Chebyshev (Mean, Sd) UCL	28.95961		
97.5% Chebyshev (Mean, Sd) UCL	33.3903		
99% Chebyshev (Mean, Sd) UCL	42.09352		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	22.20041		
95% Bootstrap-t UCL	25.73933		
95% Hall's Bootstrap UCL	24.10531		
95% Percentile Bootstrap UCL	22.12		
95% BCA Bootstrap UCL	21.66		
Recommendations			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	23.72798	95% Student's-t UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Soil stat - wss.xls	
Variable:	Zinc	
Raw Statistics		
Number of Observations	5	
Number of Missing Data	0	
Number of Valid Observations	5	
Number of Distinct Observations	5	
Minimum	33.5	
Maximum	81.5	
Mean	54.04	
Standard Deviation	18.66837	
Variance	348.508	
Coefficient of Variation	0.345455	
Skewness	0.7519	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.944844	
Shapiro-Wilk 5% Critical Value	0.762	
5% Normality Test Result	NORMAL	Data are normal at 5% significance level
95% Student's-t UCL	71.83825	
Gamma Statistics		
k hat	10.85584	
k star (bias corrected)	4.475671	
Theta hat	4.977964	
Theta star	12.07417	
nu hat	108.5584	
nu star	44.75671	
5% Approximate Chi Square Value	30.40886	
Adjusted Level of Significance	0.0086	
Adjusted Chi Square Value	25.35312	
Anderson-Darling Test Statistic	0.245964	
Anderson-Darling 5% Critical Value	0.678864	
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.
Kolmogrov-Smirnov Test Statistic	0.240684	
Kolmogrov-Smirnov 5% Critical Value	0.357553	
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level
95% Approximate Gamma UCL	79.53774	
95% Adjusted Gamma UCL	95.39862	
Lognormal Statistics		
Minimum of log data	3.511545	
Maximum of log data	4.400603	
Mean of log data	3.94296	
Standard Deviation of log data	0.340937	
Variance of log data	0.116238	
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.973186	
Shapiro-Wilk 5% Critical Value	0.762	
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level
MLE Mean	54.65708	
MLE Standard Deviation	19.18945	
MLE Coefficient of Variation	0.351088	
MLE Skewness	1.09654	
MLE Median	51.57102	
MLE 80% Quantile	68.78951	
MLE 90% Quantile	79.92297	
MLE 95% Quantile	90.35988	
MLE 99% Quantile	113.9749	
MVU Estimate of Median	50.97389	
MVU Estimate of Mean	54.00627	
MVU Estimate of Standard Deviation	18.34153	
MVU Estimate of SE of Mean	8.201167	
95% H-UCL	83.67935	
95% Chebyshev (MVUE) UCL	89.75433	
97.5% Chebyshev (MVUE) UCL	105.2225	
99% Chebyshev (MVUE) UCL	135.6069	
Non-parametric Statistics		
95% CLT UCL	67.77247	
95% Adjusted-CLT UCL	70.77216	
95% Modified-t UCL	72.30614	
95% Jackknife UCL	71.83825	
95% Chebyshev (Mean, Sd) UCL	90.43135	
97.5% Chebyshev (Mean, Sd) UCL	106.1779	
99% Chebyshev (Mean, Sd) UCL	137.109	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	66.05599	
95% Bootstrap-t UCL	89.10751	
95% Hall's Bootstrap UCL	206.1554	
95% Percentile Bootstrap UCL	67.28	
95% BCA Bootstrap UCL	63.98	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	NORMAL	
1st Recommended UCL	71.83825	95% Student's-t UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value	NO	
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Soil stat - cb05.xls		
Variable:	Arsenic		
<b>Raw Statistics</b>			
Number of Observations	10		
Number of Missing Data	0		
Number of Valid Observations	10		
Number of Distinct Observations	9		
Minimum	16.8		
Maximum	86.3		
Mean	30.025		
Standard Deviation	21.61087		
Variance	467.0296		
Coefficient of Variation	0.719762		
Skewness	2.420942		
Too Few Distinct Observations?	NO		
<b>Normal Statistics</b>			
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.616395		
Shapiro-Wilk 5% Critical Value	0.842		
5% Normality Test Result	NOT NORMAL		Data not normal at 5% significance level
95% Student's-t UCL	42.55241		
<b>Gamma Statistics</b>			
k hat	3.537386		
k star (bias corrected)	2.542837		
Theta hat	8.487906		
Theta star	11.80768		
nu hat	70.74772		
nu star	50.85674		
5% Approximate Chi Square Value	35.47727		
Adjusted Level of Significance	0.0267		
Adjusted Chi Square Value	33.25692		
Anderson-Darling Test Statistic	1.429585		
Anderson-Darling 5% Critical Value	0.730681		
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA		Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.405856		
Kolmogrov-Smirnov 5% Critical Value	0.268111		
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA		Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA		Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	43.0409		
95% Adjusted Gamma UCL	45.91446		
<b>Lognormal Statistics</b>			
Minimum of log data	2.821379		
Maximum of log data	4.45783		
Mean of log data	3.254075		
Standard Deviation of log data	0.510774		
Variance of log data	0.26089		
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.741595		
Shapiro-Wilk 5% Critical Value	0.842		
5% Lognormality Test Result	NOT LOGNORMAL		Data not lognormal at 5% significance level
MLE Mean	29.50382		
MLE Standard Deviation	16.10825		
MLE Coefficient of Variation	0.545972		
MLE Skewness	1.800661		
MLE Median	25.89564		
MLE 80% Quantile	39.87218		
MLE 90% Quantile	49.91989		
MLE 95% Quantile	59.99722		
MLE 99% Quantile	84.95616		
MVU Estimate of Median	25.55964		
MVU Estimate of Mean	29.08584		
MVU Estimate of Standard Deviation	15.16389		
MVU Estimate of SE of Mean	4.785282		
95% H-UCL	43.16666		
95% Chebyshev (MVUE) UCL	49.9444		
97.5% Chebyshev (MVUE) UCL	58.96992		
99% Chebyshev (MVUE) UCL	76.69879		
<b>Non-parametric Statistics</b>			
95% CLT UCL	41.26586		
95% Adjusted-CLT UCL	46.85618		
95% Modified-t UCL	43.42439		
95% Jackknife UCL	42.55241		
95% Chebyshev (Mean, Sd) UCL	59.81352		
97.5% Chebyshev (Mean, Sd) UCL	72.70304		
99% Chebyshev (Mean, Sd) UCL	98.02201		
<b>Bootstrap Statistics</b>			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	40.64113		
95% Bootstrap-t UCL	111.0472		
95% Hall's Bootstrap UCL	121.9126		
95% Percentile Bootstrap UCL	41.15		
95% BCA Bootstrap UCL	40.42		
<b>Recommendations</b>			
Human Inspection Recommended?	YES		
Appropriate Distribution	NON-PARAMETRIC		
1st Recommended UCL	59.81352		95% Chebyshev (Mean, Sd) UCL
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	YES		Recommended UCL exceeds the maximum data value
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Soil stat - cb05.xls		
Variable:	Cadmium		
<b>Raw Statistics</b>			
Number of Observations	10		
Number of Missing Data	0		
Number of Valid Observations	10		
Number of Distinct Observations	10		
Minimum	0.11		
Maximum	1.1		
Mean	0.494		
Standard Deviation	0.324695		
Variance	0.105427		
Coefficient of Variation	0.657277		
Skewness	0.933641		
Too Few Distinct Observations?	NO		
<b>Normal Statistics</b>			
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.884484		
Shapiro-Wilk 5% Critical Value	0.842		
5% Normality Test Result	NORMAL		Data are normal at 5% significance level
95% Student's-t UCL	0.682219		
<b>Gamma Statistics</b>			
k hat	2.615978		
k star (bias corrected)	1.897851		
Theta hat	0.18884		
Theta star	0.260294		
nu hat	52.31956		
nu star	37.95702		
5% Approximate Chi Square Value	24.84683		
Adjusted Level of Significance	0.0267		
Adjusted Chi Square Value	23.01786		
Anderson-Darling Test Statistic	0.318028		
Anderson-Darling 5% Critical Value	0.733486		
Anderson-Darling 5% Gamma Test Result	AD GAMMA		Data follow gamma distribution at 5% significance level.
Kolmogrov-Smirnov Test Statistic	0.218095		
Kolmogrov-Smirnov 5% Critical Value	0.268972		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA		Data follow gamma distribution at 5% significance level
5% Gamma Test Result	GAMMA		Data follow gamma distribution at 5% significance level
95% Approximate Gamma UCL	0.754654		
95% Adjusted Gamma UCL	0.814618		
<b>Lognormal Statistics</b>			
Minimum of log data	-2.207275		
Maximum of log data	0.09531		
Mean of log data	-0.908363		
Standard Deviation of log data	0.695056		
Variance of log data	0.483102		
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.958841		
Shapiro-Wilk 5% Critical Value	0.842		
5% Lognormality Test Result	LOGNORMAL		Data are lognormal at 5% significance level
MLE Mean	0.513343		
MLE Standard Deviation	0.404563		
MLE Coefficient of Variation	0.788096		
MLE Skewness	2.853773		
MLE Median	0.403184		
MLE 80% Quantile	0.725393		
MLE 90% Quantile	0.984899		
MLE 95% Quantile	1.264913		
MLE 99% Quantile	2.03061		
MVU Estimate of Median	0.39354		
MVU Estimate of Mean	0.499034		
MVU Estimate of Standard Deviation	0.359837		
MVU Estimate of SE of Mean	0.113046		
95% H-UCL	0.921133		
95% Chebyshev (MVUE) UCL	0.991791		
97.5% Chebyshev (MVUE) UCL	1.205008		
99% Chebyshev (MVUE) UCL	1.623831		
<b>Non-parametric Statistics</b>			
95% CLT UCL	0.662889		
95% Adjusted-CLT UCL	0.695281		
95% Modified-t UCL	0.687272		
95% Jackknife UCL	0.682219		
95% Chebyshev (Mean, Sd) UCL	0.941561		
97.5% Chebyshev (Mean, Sd) UCL	1.135221		
99% Chebyshev (Mean, Sd) UCL	1.515628		
<b>Bootstrap Statistics</b>			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	0.652949		
95% Bootstrap-t UCL	0.750463		
95% Hall's Bootstrap UCL	0.715138		
95% Percentile Bootstrap UCL	0.65		
95% BCA Bootstrap UCL	0.745		
<b>Recommendations</b>			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	0.682219		95% Student's-t UCL
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Soil stat - cb05.xls		
Variable:	Chromium		
Raw Statistics			
Number of Observations	10		
Number of Missing Data	0		
Number of Valid Observations	10		
Number of Distinct Observations	10		
Minimum	13.4		
Maximum	211		
Mean	56.29		
Standard Deviation	67.97231		
Variance	4620.234		
Coefficient of Variation	1.207538		
Skewness	1.88989		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.652519		
Shapiro-Wilk 5% Critical Value	0.842		
5% Normality Test Result	NOT NORMAL		Data not normal at 5% significance level
95% Student's-t UCL	95.69227		
Gamma Statistics			
k hat	1.190116		
k star (bias corrected)	0.899748		
Theta hat	47.2979		
Theta star	62.56195		
nu hat	23.80233		
nu star	17.99496		
5% Approximate Chi Square Value	9.385848		
Adjusted Level of Significance	0.0267		
Adjusted Chi Square Value	8.326263		
Anderson-Darling Test Statistic	1.066463		
Anderson-Darling 5% Critical Value	0.744833		
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA		Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.351936		
Kolmogrov-Smirnov 5% Critical Value	0.27275		
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA		Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA		Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	107.9217		
95% Adjusted Gamma UCL	121.6556		
Lognormal Statistics			
Minimum of log data	2.595255		
Maximum of log data	5.351858		
Mean of log data	3.554827		
Standard Deviation of log data	0.93839		
Variance of log data	0.880576		
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.846555		
Shapiro-Wilk 5% Critical Value	0.842		
5% Lognormality Test Result	LOGNORMAL		Data are lognormal at 5% significance level
MLE Mean	54.33207		
MLE Standard Deviation	64.56807		
MLE Coefficient of Variation	1.188397		
MLE Skewness	5.24355		
MLE Median	34.98176		
MLE 80% Quantile	77.30559		
MLE 90% Quantile	116.8228		
MLE 95% Quantile	163.7725		
MLE 99% Quantile	310.2945		
MVU Estimate of Median	33.46902		
MVU Estimate of Mean	51.30891		
MVU Estimate of Standard Deviation	51.30478		
MVU Estimate of SE of Mean	15.91812		
95% H-UCL	137.9173		
95% Chebyshev (MVUE) UCL	120.6944		
97.5% Chebyshev (MVUE) UCL	150.7175		
99% Chebyshev (MVUE) UCL	209.6922		
Non-parametric Statistics			
95% CLT UCL	91.64569		
95% Adjusted-CLT UCL	105.3718		
95% Modified-t UCL	97.83327		
95% Jackknife UCL	95.69227		
95% Chebyshev (Mean, Sd) UCL	149.9834		
97.5% Chebyshev (Mean, Sd) UCL	190.5245		
99% Chebyshev (Mean, Sd) UCL	270.1599		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	89.85995		
95% Bootstrap-t UCL	294.8188		
95% Hall's Bootstrap UCL	357.3429		
95% Percentile Bootstrap UCL	93.9		
95% BCA Bootstrap UCL	117.49		
Recommendations			
Human Inspection Recommended?	NO		
Appropriate Distribution	LOGNORMAL		
1st Recommended UCL	137.9173		95% H-UCL
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Soil stat - cb05.xls		
Variable:	Copper		
Raw Statistics			
Number of Observations	10		
Number of Missing Data	0		
Number of Valid Observations	10		
Number of Distinct Observations	10		
Minimum	26.5		
Maximum	82.9		
Mean	40.16		
Standard Deviation	17.64314		
Variance	311.2804		
Coefficient of Variation	0.439321		
Skewness	1.949457		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.748936		
Shapiro-Wilk 5% Critical Value	0.842		
5% Normality Test Result	NOT NORMAL		Data not normal at 5% significance level
95% Student's-t UCL	50.3874		
Gamma Statistics			
k hat	7.669301		
k star (bias corrected)	5.435177		
Theta hat	5.236461		
Theta star	7.388903		
nu hat	153.386		
nu star	108.7035		
5% Approximate Chi Square Value	85.63519		
Adjusted Level of Significance	0.0267		
Adjusted Chi Square Value	82.08232		
Anderson-Darling Test Statistic	0.79953		
Anderson-Darling 5% Critical Value	0.727106		
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA		Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.267299		
Kolmogrov-Smirnov 5% Critical Value	0.267003		
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA		Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA		Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	50.97828		
95% Adjusted Gamma UCL	53.18484		
Lognormal Statistics			
Minimum of log data	3.277145		
Maximum of log data	4.417635		
Mean of log data	3.626262		
Standard Deviation of log data	0.360875		
Variance of log data	0.130231		
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.848695		
Shapiro-Wilk 5% Critical Value	0.842		
5% Lognormality Test Result	LOGNORMAL		Data are lognormal at 5% significance level
MLE Mean	40.10005		
MLE Standard Deviation	14.95529		
MLE Coefficient of Variation	0.37295		
MLE Skewness	1.170723		
MLE Median	37.57211		
MLE 80% Quantile	50.96818		
MLE 90% Quantile	59.7391		
MLE 95% Quantile	68.0268		
MLE 99% Quantile	86.97822		
MVU Estimate of Median	37.32811		
MVU Estimate of Mean	39.82749		
MVU Estimate of Standard Deviation	14.52354		
MVU Estimate of SE of Mean	4.59024		
95% H-UCL	51.27312		
95% Chebyshev (MVUE) UCL	59.83589		
97.5% Chebyshev (MVUE) UCL	68.49353		
99% Chebyshev (MVUE) UCL	85.4998		
Non-parametric Statistics			
95% CLT UCL	49.33705		
95% Adjusted-CLT UCL	53.01216		
95% Modified-t UCL	50.96064		
95% Jackknife UCL	50.3874		
95% Chebyshev (Mean, Sd) UCL	64.47939		
97.5% Chebyshev (Mean, Sd) UCL	75.00241		
99% Chebyshev (Mean, Sd) UCL	95.67285		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	48.82113		
95% Bootstrap-t UCL	70.96007		
95% Hall's Bootstrap UCL	100.1974		
95% Percentile Bootstrap UCL	49.35		
95% BCA Bootstrap UCL	47.89		
Recommendations			
Human Inspection Recommended?	YES		Users must select one of the recommended UCLS
Appropriate Distribution	LOGNORMAL		
1st Recommended UCL	50.3874		95% Student's-t UCL
2nd Recommended UCL	50.96064		95% Modified-t UCL
3rd Recommended UCL	51.27312		95% H-UCL
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Soil stat - cb05.xls	
Variable:	Manganese	
<b>Raw Statistics</b>		
Number of Observations	10	
Number of Missing Data	0	
Number of Valid Observations	10	
Number of Distinct Observations	10	
Minimum	128	
Maximum	309	
Mean	193.85	
Standard Deviation	55.34139	
Variance	3062.669	
Coefficient of Variation	0.285486	
Skewness	0.700626	
Too Few Distinct Observations?	NO	
<b>Normal Statistics</b>		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.908659	
Shapiro-Wilk 5% Critical Value	0.842	
5% Normality Test Result	NORMAL	Data are normal at 5% significance level
95% Student's-t UCL	225.9304	
<b>Gamma Statistics</b>		
k hat	14.02319	
k star (bias corrected)	9.882897	
Theta hat	13.82353	
Theta star	19.61469	
nu hat	280.4637	
nu star	197.6579	
5% Approximate Chi Square Value	166.1236	
Adjusted Level of Significance	0.0267	
Adjusted Chi Square Value	161.0988	
Anderson-Darling Test Statistic	0.428157	
Anderson-Darling 5% Critical Value	0.724855	
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.
Kolmogrov-Smirnov Test Statistic	0.19795	
Kolmogrov-Smirnov 5% Critical Value	0.266445	
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level
95% Approximate Gamma UCL	230.6475	
95% Adjusted Gamma UCL	237.8416	
<b>Lognormal Statistics</b>		
Minimum of log data	4.85203	
Maximum of log data	5.733341	
Mean of log data	5.231006	
Standard Deviation of log data	0.283441	
Variance of log data	0.080339	
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.917273	
Shapiro-Wilk 5% Critical Value	0.842	
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level
MLE Mean	194.6446	
MLE Standard Deviation	56.29722	
MLE Coefficient of Variation	0.289231	
MLE Skewness	0.891888	
MLE Median	186.9808	
MLE 80% Quantile	237.5823	
MLE 90% Quantile	269.1391	
MLE 95% Quantile	298.0518	
MLE 99% Quantile	361.5104	
MVU Estimate of Median	186.2309	
MVU Estimate of Mean	193.8414	
MVU Estimate of Standard Deviation	55.30039	
MVU Estimate of SE of Mean	17.48381	
95% H-UCL	234.241	
95% Chebyshev (MVUE) UCL	270.0516	
97.5% Chebyshev (MVUE) UCL	303.0278	
99% Chebyshev (MVUE) UCL	367.8032	
<b>Non-parametric Statistics</b>		
95% CLT UCL	222.6357	
95% Adjusted-CLT UCL	226.7788	
95% Modified-t UCL	226.5766	
95% Jackknife UCL	225.9304	
95% Chebyshev (Mean, Sd) UCL	270.1328	
97.5% Chebyshev (Mean, Sd) UCL	303.1405	
99% Chebyshev (Mean, Sd) UCL	367.9776	
<b>Bootstrap Statistics</b>		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	221.5738	
95% Bootstrap-t UCL	230.7243	
95% Hall's Bootstrap UCL	238.4249	
95% Percentile Bootstrap UCL	220.85	
95% BCA Bootstrap UCL	232.5	
<b>Recommendations</b>		
Human Inspection Recommended?	NO	
Appropriate Distribution	NORMAL	
1st Recommended UCL	225.9304	95% Student's-t UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value	NO	
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Soil stat - cb05.xls		
Variable:	Mercury		
<b>Raw Statistics</b>			
Number of Observations	10		
Number of Missing Data	0		
Number of Valid Observations	10		
Number of Distinct Observations	8		
Minimum	0.07		
Maximum	0.6		
Mean	0.174		
Standard Deviation	0.160083		
Variance	0.025627		
Coefficient of Variation	0.920019		
Skewness	2.517282		
Too Few Distinct Observations?	NO		
<b>Normal Statistics</b>			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.654362		
Shapiro-Wilk 5% Critical Value	0.842		
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level	
95% Student's-t UCL	0.266797		
<b>Gamma Statistics</b>			
k hat	2.253629		
k star (bias corrected)	1.644207		
Theta hat	0.077209		
Theta star	0.105826		
nu hat	45.07257		
nu star	32.88414		
5% Approximate Chi Square Value	20.77229		
Adjusted Level of Significance	0.0267		
Adjusted Chi Square Value	19.11499		
Anderson-Darling Test Statistic	0.827778		
Anderson-Darling 5% Critical Value	0.734718		
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level	
Kolmogrov-Smirnov Test Statistic	0.27484		
Kolmogrov-Smirnov 5% Critical Value	0.269465		
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level	
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level	
95% Approximate Gamma UCL	0.275455		
95% Adjusted Gamma UCL	0.299338		
<b>Lognormal Statistics</b>			
Minimum of log data	-2.65926		
Maximum of log data	-0.510826		
Mean of log data	-1.986675		
Standard Deviation of log data	0.652604		
Variance of log data	0.425892		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.870468		
Shapiro-Wilk 5% Critical Value	0.842		
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level	
MLE Mean	0.169699		
MLE Standard Deviation	0.123654		
MLE Coefficient of Variation	0.728666		
MLE Skewness	2.572888		
MLE Median	0.137151		
MLE 80% Quantile	0.238062		
MLE 90% Quantile	0.317246		
MLE 95% Quantile	0.401262		
MLE 99% Quantile	0.625804		
MVU Estimate of Median	0.134255		
MVU Estimate of Mean	0.16559		
MVU Estimate of Standard Deviation	0.111652		
MVU Estimate of SE of Mean	0.035124		
95% H-UCL	0.289305		
95% Chebyshev (MVUE) UCL	0.318693		
97.5% Chebyshev (MVUE) UCL	0.384941		
99% Chebyshev (MVUE) UCL	0.515071		
<b>Non-parametric Statistics</b>			
95% CLT UCL	0.257267		
95% Adjusted-CLT UCL	0.300326		
95% Modified-t UCL	0.273514		
95% Jackknife UCL	0.266797		
95% Chebyshev (Mean, Sd) UCL	0.39466		
97.5% Chebyshev (Mean, Sd) UCL	0.490139		
99% Chebyshev (Mean, Sd) UCL	0.67769		
<b>Bootstrap Statistics</b>			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	0.253063		
95% Bootstrap-t UCL	0.484581		
95% Hall's Bootstrap UCL	0.59487		
95% Percentile Bootstrap UCL	0.268		
95% BCA Bootstrap UCL	0.249		
<b>Recommendations</b>			
Human Inspection Recommended?	NO		
Appropriate Distribution	LOGNORMAL		
1st Recommended UCL	0.289305	95% H-UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Soil stat - cb05.xls		
Variable:	Thallium		
<b>Raw Statistics</b>			
Number of Observations	10		
Number of Missing Data	0		
Number of Valid Observations	10		
Number of Distinct Observations	10		
Minimum	0.325		
Maximum	1.85		
Mean	0.781		
Standard Deviation	0.627016		
Variance	0.393149		
Coefficient of Variation	0.802837		
Skewness	1.102082		
Too Few Distinct Observations?	NO		
<b>Normal Statistics</b>			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.729448		
Shapiro-Wilk 5% Critical Value	0.842		
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level	
95% Student's-t UCL	1.144469		
<b>Gamma Statistics</b>			
k hat	2.080467		
k star (bias corrected)	1.522993		
Theta hat	0.375397		
Theta star	0.512806		
nu hat	41.60934		
nu star	30.45987		
5% Approximate Chi Square Value	18.85267		
Adjusted Level of Significance	0.0267		
Adjusted Chi Square Value	17.28198		
Anderson-Darling Test Statistic	1.162012		
Anderson-Darling 5% Critical Value	0.735306		
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level	
Kolmogrov-Smirnov Test Statistic	0.334021		
Kolmogrov-Smirnov 5% Critical Value	0.269701		
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level	
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level	
95% Approximate Gamma UCL	1.261845		
95% Adjusted Gamma UCL	1.37653		
<b>Lognormal Statistics</b>			
Minimum of log data	-1.12393		
Maximum of log data	0.615186		
Mean of log data	-0.506359		
Standard Deviation of log data	0.728278		
Variance of log data	0.530388		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.774063		
Shapiro-Wilk 5% Critical Value	0.842		
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level	
MLE Mean	0.785712		
MLE Standard Deviation	0.657182		
MLE Coefficient of Variation	0.836416		
MLE Skewness	3.094399		
MLE Median	0.602686		
MLE 80% Quantile	1.115202		
MLE 90% Quantile	1.536455		
MLE 95% Quantile	1.997023		
MLE 99% Quantile	3.279249		
MVU Estimate of Median	0.586875		
MVU Estimate of Mean	0.761379		
MVU Estimate of Standard Deviation	0.577166		
MVU Estimate of SE of Mean	0.181102		
95% H-UCL	1.470166		
95% Chebyshev (MVUE) UCL	1.550786		
97.5% Chebyshev (MVUE) UCL	1.892363		
99% Chebyshev (MVUE) UCL	2.563325		
<b>Non-parametric Statistics</b>			
95% CLT UCL	1.107141		
95% Adjusted-CLT UCL	1.180978		
95% Modified-t UCL	1.155986		
95% Jackknife UCL	1.144469		
95% Chebyshev (Mean, Sd) UCL	1.645282		
97.5% Chebyshev (Mean, Sd) UCL	2.019257		
99% Chebyshev (Mean, Sd) UCL	2.753859		
<b>Bootstrap Statistics</b>			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	1.096828		
95% Bootstrap-t UCL	1.300768		
95% Hall's Bootstrap UCL	1.065692		
95% Percentile Bootstrap UCL	1.102		
95% BCA Bootstrap UCL	1.031		
<b>Recommendations</b>			
Human Inspection Recommended?	YES		
Appropriate Distribution	NON-PARAMETRIC		
1st Recommended UCL	1.645282	95% Chebyshev (Mean, Sd) UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	YES	Recommended UCL exceeds the maximum data value	
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Soil stat - cb05.xls		
Variable:	Vanadium		
Raw Statistics			
Number of Observations	10		
Number of Missing Data	0		
Number of Valid Observations	10		
Number of Distinct Observations	10		
Minimum	17.2		
Maximum	34.9		
Mean	22.72		
Standard Deviation	5.467439		
Variance	29.89289		
Coefficient of Variation	0.240644		
Skewness	1.366908		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.857495		
Shapiro-Wilk 5% Critical Value	0.842		
5% Normality Test Result	NORMAL	Data are normal at 5% significance level	
95% Student's-t UCL	25.88937		
Gamma Statistics			
k hat	21.73961		
k star (bias corrected)	15.28439		
Theta hat	1.045097		
Theta star	1.486484		
nu hat	434.7921		
nu star	305.6878		
5% Approximate Chi Square Value	266.1774		
Adjusted Level of Significance	0.0267		
Adjusted Chi Square Value	259.7642		
Anderson-Darling Test Statistic	0.528555		
Anderson-Darling 5% Critical Value	0.724541		
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.	
Kolmogrov-Smirnov Test Statistic	0.238854		
Kolmogrov-Smirnov 5% Critical Value	0.266152		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level	
95% Approximate Gamma UCL	26.09247		
95% Adjusted Gamma UCL	26.73666		
Lognormal Statistics			
Minimum of log data	2.844909		
Maximum of log data	3.552487		
Mean of log data	3.10007		
Standard Deviation of log data	0.220713		
Variance of log data	0.048714		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.904085		
Shapiro-Wilk 5% Critical Value	0.842		
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level	
MLE Mean	22.74685		
MLE Standard Deviation	5.082291		
MLE Coefficient of Variation	0.223428		
MLE Skewness	0.681438		
MLE Median	22.1995		
MLE 80% Quantile	26.75101		
MLE 90% Quantile	29.47923		
MLE 95% Quantile	31.91712		
MLE 99% Quantile	37.09373		
MVU Estimate of Median	22.14548		
MVU Estimate of Mean	22.69053		
MVU Estimate of Standard Deviation	5.027936		
MVU Estimate of SE of Mean	1.589847		
95% H-UCL	26.1585		
95% Chebyshev (MVUE) UCL	29.62051		
97.5% Chebyshev (MVUE) UCL	32.61912		
99% Chebyshev (MVUE) UCL	38.50931		
Non-parametric Statistics			
95% CLT UCL	25.56388		
95% Adjusted-CLT UCL	26.36243		
95% Modified-t UCL	26.01393		
95% Jackknife UCL	25.88937		
95% Chebyshev (Mean, Sd) UCL	30.25634		
97.5% Chebyshev (Mean, Sd) UCL	33.51733		
99% Chebyshev (Mean, Sd) UCL	39.9229		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	25.35637		
95% Bootstrap-t UCL	27.61621		
95% Hall's Bootstrap UCL	26.83498		
95% Percentile Bootstrap UCL	25.58		
95% BCA Bootstrap UCL	25.18		
Recommendations			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	25.88937	95% Student's-t UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Soil stat - cb05.xls	
Variable:	Zinc	
Raw Statistics		
Number of Observations	10	
Number of Missing Data	0	
Number of Valid Observations	10	
Number of Distinct Observations	10	
Minimum	60.7	
Maximum	259	
Mean	129.67	
Standard Deviation	62.62208	
Variance	3921.525	
Coefficient of Variation	0.482934	
Skewness	1.171879	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.853121	
Shapiro-Wilk 5% Critical Value	0.842	
5% Normality Test Result	NORMAL	Data are normal at 5% significance level
95% Student's-t UCL	165.9708	
Gamma Statistics		
k hat	5.50119	
k star (bias corrected)	3.9175	
Theta hat	23.57126	
Theta star	33.10019	
nu hat	110.0238	
nu star	78.35	
5% Approximate Chi Square Value	58.95409	
Adjusted Level of Significance	0.0267	
Adjusted Chi Square Value	56.0385	
Anderson-Darling Test Statistic	0.55421	
Anderson-Darling 5% Critical Value	0.72901	
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.
Kolmogrov-Smirnov Test Statistic	0.237145	
Kolmogrov-Smirnov 5% Critical Value	0.26735	
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level
95% Approximate Gamma UCL	172.3315	
95% Adjusted Gamma UCL	181.2976	
Lognormal Statistics		
Minimum of log data	4.105944	
Maximum of log data	5.556828	
Mean of log data	4.771359	
Standard Deviation of log data	0.445451	
Variance of log data	0.198426	
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.930409	
Shapiro-Wilk 5% Critical Value	0.842	
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level
MLE Mean	130.3955	
MLE Standard Deviation	61.08887	
MLE Coefficient of Variation	0.468489	
MLE Skewness	1.508293	
MLE Median	118.0796	
MLE 80% Quantile	172.0465	
MLE 90% Quantile	209.2988	
MLE 95% Quantile	245.7034	
MLE 99% Quantile	332.7785	
MVU Estimate of Median	116.9128	
MVU Estimate of Mean	129.0163	
MVU Estimate of Standard Deviation	58.38183	
MVU Estimate of SE of Mean	18.43921	
95% H-UCL	179.3331	
95% Chebyshev (MVUE) UCL	209.3909	
97.5% Chebyshev (MVUE) UCL	244.1691	
99% Chebyshev (MVUE) UCL	312.4841	
Non-parametric Statistics		
95% CLT UCL	162.2428	
95% Adjusted-CLT UCL	170.0841	
95% Modified-t UCL	167.1939	
95% Jackknife UCL	165.9708	
95% Chebyshev (Mean, Sd) UCL	215.9886	
97.5% Chebyshev (Mean, Sd) UCL	253.3387	
99% Chebyshev (Mean, Sd) UCL	326.7058	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	161.06	
95% Bootstrap-t UCL	180.4067	
95% Hall's Bootstrap UCL	165.9977	
95% Percentile Bootstrap UCL	162.36	
95% BCA Bootstrap UCL	180.94	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	NORMAL	
1st Recommended UCL	165.9708	95% Student's-t UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value	NO	
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Soil stat - da.xls		
Variable:	Arsenic		
<b>Raw Statistics</b>			
Number of Observations	5		
Number of Missing Data	0		
Number of Valid Observations	5		
Number of Distinct Observations	5		
Minimum	21.8		
Maximum	272		
Mean	98.63		
Standard Deviation	101.2825		
Variance	10258.14		
Coefficient of Variation	1.026893		
Skewness	1.803742		
Too Few Distinct Observations?	NO		
<b>Normal Statistics</b>			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.794713		
Shapiro-Wilk 5% Critical Value	0.762		
5% Normality Test Result	NORMAL	Data are normal at 5% significance level	
95% Student's-t UCL	195.1918		
<b>Gamma Statistics</b>			
k hat	1.467996		
k star (bias corrected)	0.720532		
Theta hat	67.18682		
Theta star	136.885		
nu hat	14.67996		
nu star	7.205318		
5% Approximate Chi Square Value	2.283313		
Adjusted Level of Significance	0.0086		
Adjusted Chi Square Value	1.264511		
Anderson-Darling Test Statistic	0.308196		
Anderson-Darling 5% Critical Value	0.686707		
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.	
Kolmogrov-Smirnov Test Statistic	0.241904		
Kolmogrov-Smirnov 5% Critical Value	0.361845		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level	
95% Approximate Gamma UCL	311.241		
95% Adjusted Gamma UCL	562.0043		
<b>Lognormal Statistics</b>			
Minimum of log data	3.08191		
Maximum of log data	5.605802		
Mean of log data	4.213618		
Standard Deviation of log data	0.954432		
Variance of log data	0.910941		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.977445		
Shapiro-Wilk 5% Critical Value	0.762		
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level	
MLE Mean	106.6005		
MLE Standard Deviation	129.9765		
MLE Coefficient of Variation	1.219287		
MLE Skewness	5.470526		
MLE Median	67.60065		
MLE 80% Quantile	151.4284		
MLE 90% Quantile	230.4567		
MLE 95% Quantile	324.9458		
MLE 99% Quantile	622.4272		
MVU Estimate of Median	61.6268		
MVU Estimate of Mean	95.41297		
MVU Estimate of Standard Deviation	88.3885		
MVU Estimate of SE of Mean	39.20733		
95% H-UCL	1008.609		
95% Chebyshev (MVUE) UCL	266.3137		
97.5% Chebyshev (MVUE) UCL	340.2626		
99% Chebyshev (MVUE) UCL	485.5209		
<b>Non-parametric Statistics</b>			
95% CLT UCL	173.1335		
95% Adjusted-CLT UCL	212.1743		
95% Modified-t UCL	201.2814		
95% Jackknife UCL	195.1918		
95% Chebyshev (Mean, Sd) UCL	296.0659		
97.5% Chebyshev (Mean, Sd) UCL	381.4966		
99% Chebyshev (Mean, Sd) UCL	549.3087		
<b>Bootstrap Statistics</b>			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	163.4165		
95% Bootstrap-t UCL	516.8375		
95% Hall's Bootstrap UCL	602.9453		
95% Percentile Bootstrap UCL	171.92		
95% BCA Bootstrap UCL	204		
<b>Recommendations</b>			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	195.1918	95% Student's-t UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Soil stat - da.xls		
Variable:	Cadmium		
Raw Statistics			
Number of Observations	5		
Number of Missing Data	0		
Number of Valid Observations	5		
Number of Distinct Observations	5		
Minimum	0.115		
Maximum	4.6		
Mean	1.352		
Standard Deviation	1.884325		
Variance	3.550683		
Coefficient of Variation	1.393732		
Skewness	1.879907		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.741939		
Shapiro-Wilk 5% Critical Value	0.762		
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level	
95% Student's-t UCL	3.148498		
Gamma Statistics			
k hat	0.736135		
k star (bias corrected)	0.427787		
Theta hat	1.836619		
Theta star	3.160448		
nu hat	7.361352		
nu star	4.277874		
5% Approximate Chi Square Value	0.834132		
Adjusted Level of Significance	0.0086		
Adjusted Chi Square Value	0.355888		
Anderson-Darling Test Statistic	0.385166		
Anderson-Darling 5% Critical Value	0.698955		
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.	
Kolmogrov-Smirnov Test Statistic	0.305136		
Kolmogrov-Smirnov 5% Critical Value	0.366945		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level	
95% Approximate Gamma UCL	6.933781		
95% Adjusted Gamma UCL	16.25141		
Lognormal Statistics			
Minimum of log data	-2.162823		
Maximum of log data	1.526056		
Mean of log data	-0.513696		
Standard Deviation of log data	1.447631		
Variance of log data	2.095636		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.950933		
Shapiro-Wilk 5% Critical Value	0.762		
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level	
MLE Mean	1.70595		
MLE Standard Deviation	4.555434		
MLE Coefficient of Variation	2.67032		
MLE Skewness	27.05198		
MLE Median	0.59828		
MLE 80% Quantile	2.033082		
MLE 90% Quantile	3.843988		
MLE 95% Quantile	6.473117		
MLE 99% Quantile	17.3483		
MVU Estimate of Median	0.481361		
MVU Estimate of Mean	1.261237		
MVU Estimate of Standard Deviation	1.710337		
MVU Estimate of SE of Mean	0.741036		
95% H-UCL	248.7994		
95% Chebyshev (MVUE) UCL	4.491337		
97.5% Chebyshev (MVUE) UCL	5.889003		
99% Chebyshev (MVUE) UCL	8.634449		
Non-parametric Statistics			
95% CLT UCL	2.738112		
95% Adjusted-CLT UCL	3.495123		
95% Modified-t UCL	3.266577		
95% Jackknife UCL	3.148498		
95% Chebyshev (Mean, Sd) UCL	5.025227		
97.5% Chebyshev (Mean, Sd) UCL	6.614635		
99% Chebyshev (Mean, Sd) UCL	9.736719		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	2.580562		
95% Bootstrap-t UCL	20.3014		
95% Hall's Bootstrap UCL	16.42901		
95% Percentile Bootstrap UCL	2.843		
95% BCA Bootstrap UCL	3.109		
Recommendations			
Human Inspection Recommended?	YES		
Appropriate Distribution	GAMMA		
1st Recommended UCL	6.933781	95% Approximate Gamma UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	YES	Recommended UCL exceeds the maximum data value	
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Soil stat - da.xls		
Variable:	Chromium		
Raw Statistics			
Number of Observations	5		
Number of Missing Data	0		
Number of Valid Observations	5		
Number of Distinct Observations	5		
Minimum	32.6		
Maximum	550		
Mean	193.25		
Standard Deviation	207.5264		
Variance	43067.21		
Coefficient of Variation	1.073875		
Skewness	1.834401		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.792603		
Shapiro-Wilk 5% Critical Value	0.762		
5% Normality Test Result	NORMAL	Data are normal at 5% significance level	
95% Student's-t UCL	391.1037		
Gamma Statistics			
k hat	1.301865		
k star (bias corrected)	0.654079		
Theta hat	148.4409		
Theta star	295.4535		
nu hat	13.01865		
nu star	6.540793		
5% Approximate Chi Square Value	1.921635		
Adjusted Level of Significance	0.0086		
Adjusted Chi Square Value	1.01971		
Anderson-Darling Test Statistic	0.283685		
Anderson-Darling 5% Critical Value	0.688352		
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.	
Kolmogrov-Smirnov Test Statistic	0.224252		
Kolmogrov-Smirnov 5% Critical Value	0.362756		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level	
95% Approximate Gamma UCL	657.7774		
95% Adjusted Gamma UCL	1239.576		
Lognormal Statistics			
Minimum of log data	3.484312		
Maximum of log data	6.309918		
Mean of log data	4.833109		
Standard Deviation of log data	1.043479		
Variance of log data	1.088847		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.986232		
Shapiro-Wilk 5% Critical Value	0.762		
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level	
MLE Mean	216.4875		
MLE Standard Deviation	303.9201		
MLE Coefficient of Variation	1.403869		
MLE Skewness	6.97842		
MLE Median	125.6009		
MLE 80% Quantile	303.3383		
MLE 90% Quantile	480.0927		
MLE 95% Quantile	698.9865		
MLE 99% Quantile	1422.598		
MVU Estimate of Median	112.4123		
MVU Estimate of Mean	188.8492		
MVU Estimate of Standard Deviation	190.1986		
MVU Estimate of SE of Mean	84.12292		
95% H-UCL	3085.864		
95% Chebyshev (MVUE) UCL	555.5325		
97.5% Chebyshev (MVUE) UCL	714.1967		
99% Chebyshev (MVUE) UCL	1025.862		
Non-parametric Statistics			
95% CLT UCL	345.9066		
95% Adjusted-CLT UCL	427.2605		
95% Modified-t UCL	403.7933		
95% Jackknife UCL	391.1037		
95% Chebyshev (Mean, Sd) UCL	597.7934		
97.5% Chebyshev (Mean, Sd) UCL	772.8397		
99% Chebyshev (Mean, Sd) UCL	1116.684		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	331.5488		
95% Bootstrap-t UCL	953.8216		
95% Hall's Bootstrap UCL	1237.224		
95% Percentile Bootstrap UCL	353.66		
95% BCA Bootstrap UCL	406.8		
Recommendations			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	391.1037	95% Student's-t UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Soil stat - da.xls		
Variable:	Copper		
Raw Statistics			
Number of Observations	5		
Number of Missing Data	0		
Number of Valid Observations	5		
Number of Distinct Observations	5		
Minimum	41.4		
Maximum	320		
Mean	145.18		
Standard Deviation	108.4424		
Variance	11759.76		
Coefficient of Variation	0.746952		
Skewness	1.290213		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.906639		
Shapiro-Wilk 5% Critical Value	0.762		
5% Normality Test Result	NORMAL		Data are normal at 5% significance level
95% Student's-t UCL	248.568		
Gamma Statistics			
k hat	2.356883		
k star (bias corrected)	1.076086		
Theta hat	61.59832		
Theta star	134.9148		
nu hat	23.56883		
nu star	10.76086		
5% Approximate Chi Square Value	4.421816		
Adjusted Level of Significance	0.0086		
Adjusted Chi Square Value	2.832428		
Anderson-Darling Test Statistic	0.181749		
Anderson-Darling 5% Critical Value	0.6838		
Anderson-Darling 5% Gamma Test Result	AD GAMMA		Data follow gamma distribution at 5% significance level.
Kolmogrov-Smirnov Test Statistic	0.15818		
Kolmogrov-Smirnov 5% Critical Value	0.360095		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA		Data follow gamma distribution at 5% significance level
5% Gamma Test Result	GAMMA		Data follow gamma distribution at 5% significance level
95% Approximate Gamma UCL	353.3078		
95% Adjusted Gamma UCL	551.5628		
Lognormal Statistics			
Minimum of log data	3.723281		
Maximum of log data	5.768321		
Mean of log data	4.751078		
Standard Deviation of log data	0.76853		
Variance of log data	0.590638		
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.999318		
Shapiro-Wilk 5% Critical Value	0.762		
5% Lognormality Test Result	LOGNORMAL		Data are lognormal at 5% significance level
MLE Mean	155.4614		
MLE Standard Deviation	139.4949		
MLE Coefficient of Variation	0.897296		
MLE Skewness	3.414339		
MLE Median	115.709		
MLE 80% Quantile	221.5141		
MLE 90% Quantile	310.6415		
MLE 95% Quantile	409.6529		
MLE 99% Quantile	691.3728		
MVU Estimate of Median	109.008		
MVU Estimate of Mean	145.2855		
MVU Estimate of Standard Deviation	109.4972		
MVU Estimate of SE of Mean	48.78358		
95% H-UCL	704.7725		
95% Chebyshev (MVUE) UCL	357.9282		
97.5% Chebyshev (MVUE) UCL	449.9388		
99% Chebyshev (MVUE) UCL	630.676		
Non-parametric Statistics			
95% CLT UCL	224.9504		
95% Adjusted-CLT UCL	254.8503		
95% Modified-t UCL	253.2318		
95% Jackknife UCL	248.568		
95% Chebyshev (Mean, Sd) UCL	356.5732		
97.5% Chebyshev (Mean, Sd) UCL	448.0432		
99% Chebyshev (Mean, Sd) UCL	627.7184		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	217.5459		
95% Bootstrap-t UCL	362.2259		
95% Hall's Bootstrap UCL	692.3064		
95% Percentile Bootstrap UCL	218.6		
95% BCA Bootstrap UCL	260		
Recommendations			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	248.568		95% Student's-t UCL
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Soil stat - da.xls		
Variable:	Manganese		
<b>Raw Statistics</b>			
Number of Observations	5		
Number of Missing Data	0		
Number of Valid Observations	5		
Number of Distinct Observations	5		
Minimum	58.1		
Maximum	2850		
Mean	791.28		
Standard Deviation	1193.962		
Variance	1425544		
Coefficient of Variation	1.508899		
Skewness	1.884817		
Too Few Distinct Observations?	NO		
<b>Normal Statistics</b>			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.727166		
Shapiro-Wilk 5% Critical Value	0.762		
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level	
95% Student's-t UCL	1929.592		
<b>Gamma Statistics</b>			
k hat	0.583668		
k star (bias corrected)	0.366801		
Theta hat	1355.702		
Theta star	2157.249		
nu hat	5.83668		
nu star	3.668005		
5% Approximate Chi Square Value	0.594851		
Adjusted Level of Significance	0.0086		
Adjusted Chi Square Value	0.235055		
Anderson-Darling Test Statistic	0.448464		
Anderson-Darling 5% Critical Value	0.706706		
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.	
Kolmogrov-Smirnov Test Statistic	0.302524		
Kolmogrov-Smirnov 5% Critical Value	0.369963		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level	
95% Approximate Gamma UCL	4879.24		
95% Adjusted Gamma UCL	12347.81		
<b>Lognormal Statistics</b>			
Minimum of log data	4.062166		
Maximum of log data	7.955074		
Mean of log data	5.610705		
Standard Deviation of log data	1.669963		
Variance of log data	2.788776		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.898671		
Shapiro-Wilk 5% Critical Value	0.762		
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level	
MLE Mean	1102.232		
MLE Standard Deviation	4305.921		
MLE Coefficient of Variation	3.906546		
MLE Skewness	71.33782		
MLE Median	273.3369		
MLE 80% Quantile	1120.829		
MLE 90% Quantile	2336.962		
MLE 95% Quantile	4263.278		
MLE 99% Quantile	13293.61		
MVU Estimate of Median	203.875		
MVU Estimate of Mean	715.2384		
MVU Estimate of Standard Deviation	1098.128		
MVU Estimate of SE of Mean	467.9933		
95% H-UCL	798603.7		
95% Chebyshev (MVUE) UCL	2755.174		
97.5% Chebyshev (MVUE) UCL	3637.856		
99% Chebyshev (MVUE) UCL	5371.713		
<b>Non-parametric Statistics</b>			
95% CLT UCL	1669.559		
95% Adjusted-CLT UCL	2150.476		
95% Modified-t UCL	2004.605		
95% Jackknife UCL	1929.592		
95% Chebyshev (Mean, Sd) UCL	3118.74		
97.5% Chebyshev (Mean, Sd) UCL	4125.833		
99% Chebyshev (Mean, Sd) UCL	6104.073		
<b>Bootstrap Statistics</b>			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	1552.63		
95% Bootstrap-t UCL	19307.21		
95% Hall's Bootstrap UCL	7929.334		
95% Percentile Bootstrap UCL	1736.58		
95% BCA Bootstrap UCL	2291.62		
<b>Recommendations</b>			
Human Inspection Recommended?	YES		
Appropriate Distribution	GAMMA		
1st Recommended UCL	4879.24	95% Approximate Gamma UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	YES	Recommended UCL exceeds the maximum data value	
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Soil stat - da.xls		
Variable:	Mercury		
Raw Statistics			
Number of Observations	5		
Number of Missing Data	0		
Number of Valid Observations	5		
Number of Distinct Observations	5		
Minimum	0.31		
Maximum	3.4		
Mean	1.189		
Standard Deviation	1.27247		
Variance	1.61918		
Coefficient of Variation	1.070202		
Skewness	1.937987		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.756887		
Shapiro-Wilk 5% Critical Value	0.762		
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level	
95% Student's-t UCL	2.402161		
Gamma Statistics			
k hat	1.455329		
k star (bias corrected)	0.715465		
Theta hat	0.816997		
Theta star	1.661856		
nu hat	14.55329		
nu star	7.154651		
5% Approximate Chi Square Value	2.25521		
Adjusted Level of Significance	0.0086		
Adjusted Chi Square Value	1.245195		
Anderson-Darling Test Statistic	0.381117		
Anderson-Darling 5% Critical Value	0.686832		
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.	
Kolmogrov-Smirnov Test Statistic	0.225337		
Kolmogrov-Smirnov 5% Critical Value	0.361915		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level	
95% Approximate Gamma UCL	3.772101		
95% Adjusted Gamma UCL	6.831767		
Lognormal Statistics			
Minimum of log data	-1.171183		
Maximum of log data	1.223775		
Mean of log data	-0.208236		
Standard Deviation of log data	0.932964		
Variance of log data	0.870423		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.946728		
Shapiro-Wilk 5% Critical Value	0.762		
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level	
MLE Mean	1.254798		
MLE Standard Deviation	1.478278		
MLE Coefficient of Variation	1.1781		
MLE Skewness	5.169408		
MLE Median	0.812015		
MLE 80% Quantile	1.78625		
MLE 90% Quantile	2.692911		
MLE 95% Quantile	3.767796		
MLE 99% Quantile	7.112394		
MVU Estimate of Median	0.743357		
MVU Estimate of Mean	1.129517		
MVU Estimate of Standard Deviation	1.024144		
MVU Estimate of SE of Mean	0.454571		
95% H-UCL	10.81546		
95% Chebyshev (MVUE) UCL	3.110944		
97.5% Chebyshev (MVUE) UCL	3.968309		
99% Chebyshev (MVUE) UCL	5.652437		
Non-parametric Statistics			
95% CLT UCL	2.12503		
95% Adjusted-CLT UCL	2.652028		
95% Modified-t UCL	2.484362		
95% Jackknife UCL	2.402161		
95% Chebyshev (Mean, Sd) UCL	3.669501		
97.5% Chebyshev (Mean, Sd) UCL	4.742815		
99% Chebyshev (Mean, Sd) UCL	6.851134		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	2.021773		
95% Bootstrap-t UCL	6.067249		
95% Hall's Bootstrap UCL	6.208976		
95% Percentile Bootstrap UCL	2.242		
95% BCA Bootstrap UCL	2.86		
Recommendations			
Human Inspection Recommended?	YES		
Appropriate Distribution	GAMMA		
1st Recommended UCL	3.772101	95% Approximate Gamma UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	YES	Recommended UCL exceeds the maximum data value	
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Soil stat - da.xls		
Variable:	Thallium		
Raw Statistics			
Number of Observations	5		
Number of Missing Data	0		
Number of Valid Observations	5		
Number of Distinct Observations	4		
Minimum	0.75		
Maximum	3.4		
Mean	1.47		
Standard Deviation	1.136112		
Variance	1.29075		
Coefficient of Variation	0.772865		
Skewness	1.763467		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.748851		
Shapiro-Wilk 5% Critical Value	0.762		
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level	
95% Student's-t UCL	2.553158		
Gamma Statistics			
k hat	2.731423		
k star (bias corrected)	1.225902		
Theta hat	0.538181		
Theta star	1.199117		
nu hat	27.31423		
nu star	12.25902		
5% Approximate Chi Square Value	5.397099		
Adjusted Level of Significance	0.0086		
Adjusted Chi Square Value	3.590428		
Anderson-Darling Test Statistic	0.604203		
Anderson-Darling 5% Critical Value	0.683119		
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.	
Kolmogrov-Smirnov Test Statistic	0.331968		
Kolmogrov-Smirnov 5% Critical Value	0.359702		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level	
95% Approximate Gamma UCL	3.338973		
95% Adjusted Gamma UCL	5.019114		
Lognormal Statistics			
Minimum of log data	-0.287682		
Maximum of log data	1.223775		
Mean of log data	0.191179		
Standard Deviation of log data	0.657213		
Variance of log data	0.431929		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.815982		
Shapiro-Wilk 5% Critical Value	0.762		
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level	
MLE Mean	1.50252		
MLE Standard Deviation	1.104353		
MLE Coefficient of Variation	0.735001		
MLE Skewness	2.602069		
MLE Median	1.210676		
MLE 80% Quantile	2.109655		
MLE 90% Quantile	2.817072		
MLE 95% Quantile	3.569034		
MLE 99% Quantile	5.58373		
MVU Estimate of Median	1.159131		
MVU Estimate of Mean	1.432246		
MVU Estimate of Standard Deviation	0.927898		
MVU Estimate of SE of Mean	0.414084		
95% H-UCL	4.74157		
95% Chebyshev (MVUE) UCL	3.237198		
97.5% Chebyshev (MVUE) UCL	4.018203		
99% Chebyshev (MVUE) UCL	5.552334		
Non-parametric Statistics			
95% CLT UCL	2.305725		
95% Adjusted-CLT UCL	2.733878		
95% Modified-t UCL	2.619941		
95% Jackknife UCL	2.553158		
95% Chebyshev (Mean, Sd) UCL	3.68469		
97.5% Chebyshev (Mean, Sd) UCL	4.642988		
99% Chebyshev (Mean, Sd) UCL	6.525378		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	N/R	Not enough distinct data warning	
95% Bootstrap-t UCL	N/R	Not enough distinct data warning	
95% Hall's Bootstrap UCL	N/R	Not enough distinct data warning	
95% Percentile Bootstrap UCL	N/R	Not enough distinct data warning	
95% BCA Bootstrap UCL	N/R	Not enough distinct data warning	
Recommendations			
Human Inspection Recommended?	NO		
Appropriate Distribution	GAMMA		
1st Recommended UCL	3.338973	95% Approximate Gamma UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Soil stat - da.xls		
Variable:	Vanadium		
Raw Statistics			
Number of Observations	5		
Number of Missing Data	0		
Number of Valid Observations	5		
Number of Distinct Observations	5		
Minimum	14.1		
Maximum	41.9		
Mean	26.66		
Standard Deviation	11.80733		
Variance	139.413		
Coefficient of Variation	0.442886		
Skewness	0.155307		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.929826		
Shapiro-Wilk 5% Critical Value	0.762		
5% Normality Test Result	NORMAL	Data are normal at 5% significance level	
95% Student's-t UCL	37.91699		
Gamma Statistics			
k hat	5.959491		
k star (bias corrected)	2.51713		
Theta hat	4.473536		
Theta star	10.59143		
nu hat	59.59491		
nu star	25.1713		
5% Approximate Chi Square Value	14.74103		
Adjusted Level of Significance	0.0086		
Adjusted Chi Square Value	11.40518		
Anderson-Darling Test Statistic	0.334089		
Anderson-Darling 5% Critical Value	0.680359		
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.	
Kolmogrov-Smirnov Test Statistic	0.249095		
Kolmogrov-Smirnov 5% Critical Value	0.358172		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level	
95% Approximate Gamma UCL	45.52375		
95% Adjusted Gamma UCL	58.83877		
Lognormal Statistics			
Minimum of log data	2.646175		
Maximum of log data	3.735286		
Mean of log data	3.196925		
Standard Deviation of log data	0.474939		
Variance of log data	0.225567		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.909522		
Shapiro-Wilk 5% Critical Value	0.762		
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level	
MLE Mean	27.37714		
MLE Standard Deviation	13.77136		
MLE Coefficient of Variation	0.503024		
MLE Skewness	1.636354		
MLE Median	24.4572		
MLE 80% Quantile	36.53418		
MLE 90% Quantile	45.02516		
MLE 95% Quantile	53.42077		
MLE 99% Quantile	73.82025		
MVU Estimate of Median	23.90966		
MVU Estimate of Mean	26.73127		
MVU Estimate of Standard Deviation	12.60076		
MVU Estimate of SE of Mean	5.631712		
95% H-UCL	54.1018		
95% Chebyshev (MVUE) UCL	51.27933		
97.5% Chebyshev (MVUE) UCL	61.9013		
99% Chebyshev (MVUE) UCL	82.76609		
Non-parametric Statistics			
95% CLT UCL	35.34548		
95% Adjusted-CLT UCL	35.73736		
95% Modified-t UCL	37.97812		
95% Jackknife UCL	37.91699		
95% Chebyshev (Mean, Sd) UCL	49.67672		
97.5% Chebyshev (Mean, Sd) UCL	59.63607		
99% Chebyshev (Mean, Sd) UCL	79.19929		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	34.45849		
95% Bootstrap-t UCL	37.89872		
95% Hall's Bootstrap UCL	32.81605		
95% Percentile Bootstrap UCL	34.64		
95% BCA Bootstrap UCL	37.44		
Recommendations			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	37.91699	95% Student's-t UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Soil stat - da.xls	
Variable:	Zinc	
<b>Raw Statistics</b>		
Number of Observations	5	
Number of Missing Data	0	
Number of Valid Observations	5	
Number of Distinct Observations	5	
Minimum	53.1	
Maximum	843	
Mean	274.54	
Standard Deviation	333.8751	
Variance	111472.6	
Coefficient of Variation	1.216126	
Skewness	1.775018	
Too Few Distinct Observations?	NO	
<b>Normal Statistics</b>		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.766314	
Shapiro-Wilk 5% Critical Value	0.762	
5% Normality Test Result	NORMAL	Data are normal at 5% significance level
95% Student's-t UCL	592.8534	
<b>Gamma Statistics</b>		
k hat	1.010672	
k star (bias corrected)	0.537602	
Theta hat	271.6411	
Theta star	510.6751	
nu hat	10.10672	
nu star	5.37602	
5% Approximate Chi Square Value	1.329326	
Adjusted Level of Significance	0.0086	
Adjusted Chi Square Value	0.640876	
Anderson-Darling Test Statistic	0.413335	
Anderson-Darling 5% Critical Value	0.691234	
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.
Kolmogrov-Smirnov Test Statistic	0.263556	
Kolmogrov-Smirnov 5% Critical Value	0.364352	
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level
95% Approximate Gamma UCL	1110.286	
95% Adjusted Gamma UCL	2302.993	
<b>Lognormal Statistics</b>		
Minimum of log data	3.972177	
Maximum of log data	6.736967	
Mean of log data	5.044685	
Standard Deviation of log data	1.176202	
Variance of log data	1.383451	
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.904768	
Shapiro-Wilk 5% Critical Value	0.762	
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level
MLE Mean	309.9497	
MLE Standard Deviation	535.8315	
MLE Coefficient of Variation	1.728769	
MLE Skewness	10.35298	
MLE Median	155.1954	
MLE 80% Quantile	419.2953	
MLE 90% Quantile	703.5255	
MLE 95% Quantile	1074.421	
MLE 99% Quantile	2393.544	
MVU Estimate of Median	134.6925	
MVU Estimate of Mean	258.4643	
MVU Estimate of Standard Deviation	290.7697	
MVU Estimate of SE of Mean	127.9107	
95% H-UCL	8715.374	
95% Chebyshev (MVUE) UCL	816.014	
97.5% Chebyshev (MVUE) UCL	1057.266	
99% Chebyshev (MVUE) UCL	1531.16	
<b>Non-parametric Statistics</b>		
95% CLT UCL	520.1388	
95% Adjusted-CLT UCL	646.7866	
95% Modified-t UCL	612.6079	
95% Jackknife UCL	592.8534	
95% Chebyshev (Mean, Sd) UCL	925.3824	
97.5% Chebyshev (Mean, Sd) UCL	1207.002	
99% Chebyshev (Mean, Sd) UCL	1760.191	
<b>Bootstrap Statistics</b>		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	496.2363	
95% Bootstrap-t UCL	2307.563	
95% Hall's Bootstrap UCL	2527.484	
95% Percentile Bootstrap UCL	528.04	
95% BCA Bootstrap UCL	685.02	
<b>Recommendations</b>		
Human Inspection Recommended?	NO	
Appropriate Distribution	NORMAL	
1st Recommended UCL	592.8534	95% Student's-t UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value	NO	
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Soil stat - kf-so.xls		
Variable:	Arsenic		
Raw Statistics			
Number of Observations	10		
Number of Missing Data	0		
Number of Valid Observations	10		
Number of Distinct Observations	10		
Minimum	19.9		
Maximum	53.3		
Mean	39.57		
Standard Deviation	10.7859		
Variance	116.3357		
Coefficient of Variation	0.272578		
Skewness	-0.487068		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.954791		
Shapiro-Wilk 5% Critical Value	0.842		
5% Normality Test Result	NORMAL	Data are normal at 5% significance level	
95% Student's-t UCL	45.82238		
Gamma Statistics			
k hat	12.87706		
k star (bias corrected)	9.080605		
Theta hat	3.072907		
Theta star	4.357639		
nu hat	257.5411		
nu star	181.6121		
5% Approximate Chi Square Value	151.4352		
Adjusted Level of Significance	0.0267		
Adjusted Chi Square Value	146.6466		
Anderson-Darling Test Statistic	0.319461		
Anderson-Darling 5% Critical Value	0.724913		
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.	
Kolmogrov-Smirnov Test Statistic	0.151354		
Kolmogrov-Smirnov 5% Critical Value	0.266498		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level	
95% Approximate Gamma UCL	47.45521		
95% Adjusted Gamma UCL	49.00482		
Lognormal Statistics			
Minimum of log data	2.99072		
Maximum of log data	3.975936		
Mean of log data	3.63874		
Standard Deviation of log data	0.309434		
Variance of log data	0.09575		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.909542		
Shapiro-Wilk 5% Critical Value	0.842		
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level	
MLE Mean	39.90953		
MLE Standard Deviation	12.65098		
MLE Coefficient of Variation	0.316991		
MLE Skewness	0.982827		
MLE Median	38.04388		
MLE 80% Quantile	49.41294		
MLE 90% Quantile	56.62007		
MLE 95% Quantile	63.29206		
MLE 99% Quantile	78.13865		
MVU Estimate of Median	37.8621		
MVU Estimate of Mean	39.71227		
MVU Estimate of Standard Deviation	12.38352		
MVU Estimate of SE of Mean	3.914839		
95% H-UCL	48.98684		
95% Chebyshev (MVUE) UCL	56.77666		
97.5% Chebyshev (MVUE) UCL	64.16044		
99% Chebyshev (MVUE) UCL	78.66443		
Non-parametric Statistics			
95% CLT UCL	45.18027		
95% Adjusted-CLT UCL	44.61893		
95% Modified-t UCL	45.73483		
95% Jackknife UCL	45.82238		
95% Chebyshev (Mean, Sd) UCL	54.43734		
97.5% Chebyshev (Mean, Sd) UCL	60.87045		
99% Chebyshev (Mean, Sd) UCL	73.50705		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	44.80592		
95% Bootstrap-t UCL	45.25351		
95% Hall's Bootstrap UCL	44.70306		
95% Percentile Bootstrap UCL	44.66		
95% BCA Bootstrap UCL	46.41		
Recommendations			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	45.82238	95% Student's-t UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Soil stat - kf-so.xls		
Variable:	Cadmium		
Raw Statistics			
Number of Observations	10		
Number of Missing Data	0		
Number of Valid Observations	10		
Number of Distinct Observations	9		
Minimum	0.22		
Maximum	2.1		
Mean	1.0485		
Standard Deviation	0.622674		
Variance	0.387723		
Coefficient of Variation	0.593871		
Skewness	-0.020694		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.932302		
Shapiro-Wilk 5% Critical Value	0.842		
5% Normality Test Result	NORMAL	Data are normal at 5% significance level	
95% Student's-t UCL	1.409452		
Gamma Statistics			
k hat	2.216401		
k star (bias corrected)	1.618147		
Theta hat	0.473064		
Theta star	0.647963		
nu hat	44.32802		
nu star	32.36295		
5% Approximate Chi Square Value	20.35796		
Adjusted Level of Significance	0.0267		
Adjusted Chi Square Value	18.71901		
Anderson-Darling Test Statistic	0.628804		
Anderson-Darling 5% Critical Value	0.734844		
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.	
Kolmogrov-Smirnov Test Statistic	0.266		
Kolmogrov-Smirnov 5% Critical Value	0.269516		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level	
95% Approximate Gamma UCL	1.666795		
95% Adjusted Gamma UCL	1.812732		
Lognormal Statistics			
Minimum of log data	-1.514128		
Maximum of log data	0.741937		
Mean of log data	-0.194877		
Standard Deviation of log data	0.8244		
Variance of log data	0.679635		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.842511		
Shapiro-Wilk 5% Critical Value	0.842		
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level	
MLE Mean	1.155971		
MLE Standard Deviation	1.140351		
MLE Coefficient of Variation	0.986488		
MLE Skewness	3.919472		
MLE Median	0.822936		
MLE 80% Quantile	1.651594		
MLE 90% Quantile	2.373765		
MLE 95% Quantile	3.193959		
MLE 99% Quantile	5.599502		
MVU Estimate of Median	0.795357		
MVU Estimate of Mean	1.108436		
MVU Estimate of Standard Deviation	0.960948		
MVU Estimate of SE of Mean	0.300218		
95% H-UCL	2.464941		
95% Chebyshev (MVUE) UCL	2.417058		
97.5% Chebyshev (MVUE) UCL	2.983299		
99% Chebyshev (MVUE) UCL	4.095571		
Non-parametric Statistics			
95% CLT UCL	1.372383		
95% Adjusted-CLT UCL	1.371006		
95% Modified-t UCL	1.409237		
95% Jackknife UCL	1.409452		
95% Chebyshev (Mean, Sd) UCL	1.906796		
97.5% Chebyshev (Mean, Sd) UCL	2.278182		
99% Chebyshev (Mean, Sd) UCL	3.007697		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	1.354756		
95% Bootstrap-t UCL	1.390774		
95% Hall's Bootstrap UCL	1.361371		
95% Percentile Bootstrap UCL	1.36		
95% BCA Bootstrap UCL	1.44		
Recommendations			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	1.409452	95% Student's-t UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Soil stat - kf-so.xls		
Variable:	Chromium		
Raw Statistics			
Number of Observations	10		
Number of Missing Data	0		
Number of Valid Observations	10		
Number of Distinct Observations	10		
Minimum	48.4		
Maximum	141		
Mean	101.14		
Standard Deviation	31.40429		
Variance	986.2293		
Coefficient of Variation	0.310503		
Skewness	-0.763038		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.90325		
Shapiro-Wilk 5% Critical Value	0.842		
5% Normality Test Result	NORMAL	Data are normal at 5% significance level	
95% Student's-t UCL	119.3445		
Gamma Statistics			
k hat	9.152		
k star (bias corrected)	6.473067		
Theta hat	11.05114		
Theta star	15.62474		
nu hat	183.04		
nu star	129.4613		
5% Approximate Chi Square Value	104.1737		
Adjusted Level of Significance	0.0267		
Adjusted Chi Square Value	100.2353		
Anderson-Darling Test Statistic	0.699191		
Anderson-Darling 5% Critical Value	0.725805		
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.	
Kolmogrov-Smirnov Test Statistic	0.238439		
Kolmogrov-Smirnov 5% Critical Value	0.266766		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level	
95% Approximate Gamma UCL	125.6912		
95% Adjusted Gamma UCL	130.6299		
Lognormal Statistics			
Minimum of log data	3.8795		
Maximum of log data	4.94876		
Mean of log data	4.560879		
Standard Deviation of log data	0.37537		
Variance of log data	0.140903		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.821436		
Shapiro-Wilk 5% Critical Value	0.842		
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level	
MLE Mean	102.6505		
MLE Standard Deviation	39.92994		
MLE Coefficient of Variation	0.388989		
MLE Skewness	1.225826		
MLE Median	95.66754		
MLE 80% Quantile	131.3764		
MLE 90% Quantile	154.9697		
MLE 95% Quantile	177.3921		
MLE 99% Quantile	229.0613		
MVU Estimate of Median	94.99549		
MVU Estimate of Mean	101.8931		
MVU Estimate of Standard Deviation	38.68122		
MVU Estimate of SE of Mean	12.2243		
95% H-UCL	132.8307		
95% Chebyshev (MVUE) UCL	155.1776		
97.5% Chebyshev (MVUE) UCL	178.2338		
99% Chebyshev (MVUE) UCL	223.5233		
Non-parametric Statistics			
95% CLT UCL	117.4749		
95% Adjusted-CLT UCL	114.9144		
95% Modified-t UCL	118.9451		
95% Jackknife UCL	119.3445		
95% Chebyshev (Mean, Sd) UCL	144.4278		
97.5% Chebyshev (Mean, Sd) UCL	163.1585		
99% Chebyshev (Mean, Sd) UCL	199.9513		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	116.5497		
95% Bootstrap-t UCL	117.0514		
95% Hall's Bootstrap UCL	114.1219		
95% Percentile Bootstrap UCL	115.95		
95% BCA Bootstrap UCL	112.65		
Recommendations			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	119.3445	95% Student's-t UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Soil stat - kf-so.xls		
Variable:	Copper		
Raw Statistics			
Number of Observations	10		
Number of Missing Data	0		
Number of Valid Observations	10		
Number of Distinct Observations	10		
Minimum	50.6		
Maximum	146		
Mean	91.14		
Standard Deviation	29.56154		
Variance	873.8849		
Coefficient of Variation	0.324353		
Skewness	0.397471		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.941133		
Shapiro-Wilk 5% Critical Value	0.842		
5% Normality Test Result	NORMAL		Data are normal at 5% significance level
95% Student's-t UCL	108.2763		
Gamma Statistics			
k hat	10.21763		
k star (bias corrected)	7.219008		
Theta hat	8.919876		
Theta star	12.625		
nu hat	204.3526		
nu star	144.3802		
5% Approximate Chi Square Value	117.6063		
Adjusted Level of Significance	0.0267		
Adjusted Chi Square Value	113.4095		
Anderson-Darling Test Statistic	0.343388		
Anderson-Darling 5% Critical Value	0.725049		
Anderson-Darling 5% Gamma Test Result	AD GAMMA		Data follow gamma distribution at 5% significance level.
Kolmogrov-Smirnov Test Statistic	0.158021		
Kolmogrov-Smirnov 5% Critical Value	0.26662		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA		Data follow gamma distribution at 5% significance level
5% Gamma Test Result	GAMMA		Data follow gamma distribution at 5% significance level
95% Approximate Gamma UCL	111.8887		
95% Adjusted Gamma UCL	116.0292		
Lognormal Statistics			
Minimum of log data	3.923952		
Maximum of log data	4.983607		
Mean of log data	4.462664		
Standard Deviation of log data	0.339109		
Variance of log data	0.114995		
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.928299		
Shapiro-Wilk 5% Critical Value	0.842		
5% Lognormality Test Result	LOGNORMAL		Data are lognormal at 5% significance level
MLE Mean	91.85047		
MLE Standard Deviation	32.06463		
MLE Coefficient of Variation	0.349096		
MLE Skewness	1.089831		
MLE Median	86.71825		
MLE 80% Quantile	115.4932		
MLE 90% Quantile	134.0777		
MLE 95% Quantile	151.4869		
MLE 99% Quantile	190.8395		
MVU Estimate of Median	86.22081		
MVU Estimate of Mean	91.30187		
MVU Estimate of Standard Deviation	31.24864		
MVU Estimate of SE of Mean	9.877458		
95% H-UCL	115.3961		
95% Chebyshev (MVUE) UCL	134.3567		
97.5% Chebyshev (MVUE) UCL	152.9866		
99% Chebyshev (MVUE) UCL	189.5813		
Non-parametric Statistics			
95% CLT UCL	106.5164		
95% Adjusted-CLT UCL	107.7719		
95% Modified-t UCL	108.4721		
95% Jackknife UCL	108.2763		
95% Chebyshev (Mean, Sd) UCL	131.8878		
97.5% Chebyshev (Mean, Sd) UCL	149.5194		
99% Chebyshev (Mean, Sd) UCL	184.1532		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	106.119		
95% Bootstrap-t UCL	110.223		
95% Hall's Bootstrap UCL	117.3779		
95% Percentile Bootstrap UCL	105.85		
95% BCA Bootstrap UCL	111.46		
Recommendations			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	108.2763		95% Student's-t UCL
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Soil stat - kf-so.xls		
Variable:	Manganese		
<b>Raw Statistics</b>			
Number of Observations	10		
Number of Missing Data	0		
Number of Valid Observations	10		
Number of Distinct Observations	10		
Minimum	245		
Maximum	1380		
Mean	642.3		
Standard Deviation	316.0949		
Variance	99916.01		
Coefficient of Variation	0.49213		
Skewness	1.370641		
Too Few Distinct Observations?	NO		
<b>Normal Statistics</b>			
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.891781		
Shapiro-Wilk 5% Critical Value	0.842		
5% Normality Test Result	NORMAL		Data are normal at 5% significance level
95% Student's-t UCL	825.5343		
<b>Gamma Statistics</b>			
k hat	5.060958		
k star (bias corrected)	3.609337		
Theta hat	126.9127		
Theta star	177.9551		
nu hat	101.2192		
nu star	72.18674		
5% Approximate Chi Square Value	53.61992		
Adjusted Level of Significance	0.0267		
Adjusted Chi Square Value	50.84803		
Anderson-Darling Test Statistic	0.235006		
Anderson-Darling 5% Critical Value	0.729396		
Anderson-Darling 5% Gamma Test Result	AD GAMMA		Data follow gamma distribution at 5% significance level.
Kolmogrov-Smirnov Test Statistic	0.138801		
Kolmogrov-Smirnov 5% Critical Value	0.26742		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA		Data follow gamma distribution at 5% significance level
5% Gamma Test Result	GAMMA		Data follow gamma distribution at 5% significance level
95% Approximate Gamma UCL	864.7075		
95% Adjusted Gamma UCL	911.8455		
<b>Lognormal Statistics</b>			
Minimum of log data	5.501258		
Maximum of log data	7.229839		
Mean of log data	6.363019		
Standard Deviation of log data	0.478489		
Variance of log data	0.228952		
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.978201		
Shapiro-Wilk 5% Critical Value	0.842		
5% Lognormality Test Result	LOGNORMAL		Data are lognormal at 5% significance level
MLE Mean	650.3397		
MLE Standard Deviation	329.8714		
MLE Coefficient of Variation	0.507229		
MLE Skewness	1.652189		
MLE Median	579.9947		
MLE 80% Quantile	868.9993		
MLE 90% Quantile	1072.639		
MLE 95% Quantile	1274.276		
MLE 99% Quantile	1765.139		
MVU Estimate of Median	573.3861		
MVU Estimate of Mean	642.33		
MVU Estimate of Standard Deviation	312.9526		
MVU Estimate of SE of Mean	98.80393		
95% H-UCL	922.2594		
95% Chebyshev (MVUE) UCL	1073.006		
97.5% Chebyshev (MVUE) UCL	1259.36		
99% Chebyshev (MVUE) UCL	1625.417		
<b>Non-parametric Statistics</b>			
95% CLT UCL	806.7163		
95% Adjusted-CLT UCL	853.01		
95% Modified-t UCL	832.7552		
95% Jackknife UCL	825.5343		
95% Chebyshev (Mean, Sd) UCL	1078.007		
97.5% Chebyshev (Mean, Sd) UCL	1266.537		
99% Chebyshev (Mean, Sd) UCL	1636.87		
<b>Bootstrap Statistics</b>			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	800.2721		
95% Bootstrap-t UCL	904.0353		
95% Hall's Bootstrap UCL	1520.223		
95% Percentile Bootstrap UCL	810.6		
95% BCA Bootstrap UCL	898.7		
<b>Recommendations</b>			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	825.5343		95% Student's-t UCL
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Soil stat - kf-so.xls		
Variable:	Mercury		
Raw Statistics			
Number of Observations	10		
Number of Missing Data	0		
Number of Valid Observations	10		
Number of Distinct Observations	10		
Minimum	0.27		
Maximum	0.84		
Mean	0.586		
Standard Deviation	0.178276		
Variance	0.031782		
Coefficient of Variation	0.304225		
Skewness	-0.687505		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.935506		
Shapiro-Wilk 5% Critical Value	0.842		
5% Normality Test Result	NORMAL	Data are normal at 5% significance level	
95% Student's-t UCL	0.689343		
Gamma Statistics			
k hat	9.671392		
k star (bias corrected)	6.836641		
Theta hat	0.060591		
Theta star	0.085715		
nu hat	193.4278		
nu star	136.7328		
5% Approximate Chi Square Value	110.7106		
Adjusted Level of Significance	0.0267		
Adjusted Chi Square Value	106.6445		
Anderson-Darling Test Statistic	0.574553		
Anderson-Darling 5% Critical Value	0.725349		
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.	
Kolmogrov-Smirnov Test Statistic	0.221165		
Kolmogrov-Smirnov 5% Critical Value	0.266683		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level	
95% Approximate Gamma UCL	0.723738		
95% Adjusted Gamma UCL	0.751332		
Lognormal Statistics			
Minimum of log data	-1.309333		
Maximum of log data	-0.174353		
Mean of log data	-0.587024		
Standard Deviation of log data	0.364029		
Variance of log data	0.132517		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.858255		
Shapiro-Wilk 5% Critical Value	0.842		
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level	
MLE Mean	0.594065		
MLE Standard Deviation	0.223623		
MLE Coefficient of Variation	0.376428		
MLE Skewness	1.182625		
MLE Median	0.555979		
MLE 80% Quantile	0.756222		
MLE 90% Quantile	0.887588		
MLE 95% Quantile	1.011873		
MLE 99% Quantile	1.29655		
MVU Estimate of Median	0.552305		
MVU Estimate of Mean	0.589954		
MVU Estimate of Standard Deviation	0.217052		
MVU Estimate of SE of Mean	0.068599		
95% H-UCL	0.761555		
95% Chebyshev (MVUE) UCL	0.888971		
97.5% Chebyshev (MVUE) UCL	1.018355		
99% Chebyshev (MVUE) UCL	1.272507		
Non-parametric Statistics			
95% CLT UCL	0.67873		
95% Adjusted-CLT UCL	0.665634		
95% Modified-t UCL	0.6873		
95% Jackknife UCL	0.689343		
95% Chebyshev (Mean, Sd) UCL	0.831736		
97.5% Chebyshev (Mean, Sd) UCL	0.938066		
99% Chebyshev (Mean, Sd) UCL	1.146931		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	0.672901		
95% Bootstrap-t UCL	0.670938		
95% Hall's Bootstrap UCL	0.669281		
95% Percentile Bootstrap UCL	0.669		
95% BCA Bootstrap UCL	0.695		
Recommendations			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	0.689343	95% Student's-t UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Soil stat - kf-so.xls		
Variable:	Vanadium		
<b>Raw Statistics</b>			
Number of Observations	10		
Number of Missing Data	0		
Number of Valid Observations	10		
Number of Distinct Observations	10		
Minimum	15.5		
Maximum	38.6		
Mean	25.3		
Standard Deviation	6.521418		
Variance	42.52889		
Coefficient of Variation	0.257764		
Skewness	0.629256		
Too Few Distinct Observations?	NO		
<b>Normal Statistics</b>			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.949053		
Shapiro-Wilk 5% Critical Value	0.842		
5% Normality Test Result	NORMAL	Data are normal at 5% significance level	
95% Student's-t UCL	29.08034		
<b>Gamma Statistics</b>			
k hat	16.9367		
k star (bias corrected)	11.92236		
Theta hat	1.493797		
Theta star	2.122063		
nu hat	338.7341		
nu star	238.4472		
5% Approximate Chi Square Value	203.6924		
Adjusted Level of Significance	0.0267		
Adjusted Chi Square Value	198.1072		
Anderson-Darling Test Statistic	0.283795		
Anderson-Darling 5% Critical Value	0.724706		
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.	
Kolmogrov-Smirnov Test Statistic	0.187022		
Kolmogrov-Smirnov 5% Critical Value	0.266311		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level	
95% Approximate Gamma UCL	29.61678		
95% Adjusted Gamma UCL	30.45177		
<b>Lognormal Statistics</b>			
Minimum of log data	2.74084		
Maximum of log data	3.653252		
Mean of log data	3.200992		
Standard Deviation of log data	0.258868		
Variance of log data	0.067012		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.963218		
Shapiro-Wilk 5% Critical Value	0.842		
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level	
MLE Mean	25.39363		
MLE Standard Deviation	6.685271		
MLE Coefficient of Variation	0.263266		
MLE Skewness	0.808043		
MLE Median	24.55689		
MLE 80% Quantile	30.56133		
MLE 90% Quantile	34.24831		
MLE 95% Quantile	37.59344		
MLE 99% Quantile	44.8408		
MVU Estimate of Median	24.47472		
MVU Estimate of Mean	25.30661		
MVU Estimate of Standard Deviation	6.586692		
MVU Estimate of SE of Mean	2.082586		
95% H-UCL	30.0093		
95% Chebyshev (MVUE) UCL	34.38439		
97.5% Chebyshev (MVUE) UCL	38.31236		
99% Chebyshev (MVUE) UCL	46.02808		
<b>Non-parametric Statistics</b>			
95% CLT UCL	28.6921		
95% Adjusted-CLT UCL	29.13058		
95% Modified-t UCL	29.14874		
95% Jackknife UCL	29.08034		
95% Chebyshev (Mean, Sd) UCL	34.28915		
97.5% Chebyshev (Mean, Sd) UCL	38.17877		
99% Chebyshev (Mean, Sd) UCL	45.81916		
<b>Bootstrap Statistics</b>			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	28.47789		
95% Bootstrap-t UCL	29.79367		
95% Hall's Bootstrap UCL	31.94824		
95% Percentile Bootstrap UCL	28.64		
95% BCA Bootstrap UCL	30.09		
<b>Recommendations</b>			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	29.08034	95% Student's-t UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Soil stat - kf-so.xls	
Variable:	Zinc	
<b>Raw Statistics</b>		
Number of Observations	10	
Number of Missing Data	0	
Number of Valid Observations	10	
Number of Distinct Observations	10	
Minimum	181	
Maximum	478	
Mean	332.9	
Standard Deviation	99.32377	
Variance	9865.211	
Coefficient of Variation	0.298359	
Skewness	0.00977	
Too Few Distinct Observations?	NO	
<b>Normal Statistics</b>		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.958191	
Shapiro-Wilk 5% Critical Value	0.842	
5% Normality Test Result	NORMAL	Data are normal at 5% significance level
95% Student's-t UCL	390.4761	
<b>Gamma Statistics</b>		
k hat	11.71166	
k star (bias corrected)	8.264828	
Theta hat	28.42466	
Theta star	40.27912	
nu hat	234.2332	
nu star	165.2966	
5% Approximate Chi Square Value	136.5632	
Adjusted Level of Significance	0.0267	
Adjusted Chi Square Value	132.0257	
Anderson-Darling Test Statistic	0.254677	
Anderson-Darling 5% Critical Value	0.724973	
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.
Kolmogrov-Smirnov Test Statistic	0.175379	
Kolmogrov-Smirnov 5% Critical Value	0.266551	
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level
95% Approximate Gamma UCL	402.9434	
95% Adjusted Gamma UCL	416.7919	
<b>Lognormal Statistics</b>		
Minimum of log data	5.198497	
Maximum of log data	6.169611	
Mean of log data	5.764543	
Standard Deviation of log data	0.31723	
Variance of log data	0.100635	
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.950602	
Shapiro-Wilk 5% Critical Value	0.842	
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level
MLE Mean	335.2445	
MLE Standard Deviation	109.0822	
MLE Coefficient of Variation	0.325381	
MLE Skewness	1.010592	
MLE Median	318.7932	
MLE 80% Quantile	416.7981	
MLE 90% Quantile	479.2312	
MLE 95% Quantile	537.2084	
MLE 99% Quantile	666.753	
MVU Estimate of Median	317.1924	
MVU Estimate of Mean	333.5002	
MVU Estimate of Standard Deviation	106.657	
MVU Estimate of SE of Mean	33.71677	
95% H-UCL	413.987	
95% Chebyshev (MVUE) UCL	480.4682	
97.5% Chebyshev (MVUE) UCL	544.0614	
99% Chebyshev (MVUE) UCL	668.9778	
<b>Non-parametric Statistics</b>		
95% CLT UCL	384.5631	
95% Adjusted-CLT UCL	384.6668	
95% Modified-t UCL	390.4923	
95% Jackknife UCL	390.4761	
95% Chebyshev (Mean, Sd) UCL	469.8084	
97.5% Chebyshev (Mean, Sd) UCL	529.0487	
99% Chebyshev (Mean, Sd) UCL	645.4149	
<b>Bootstrap Statistics</b>		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	381.6694	
95% Bootstrap-t UCL	393.1891	
95% Hall's Bootstrap UCL	383.6178	
95% Percentile Bootstrap UCL	380.9	
95% BCA Bootstrap UCL	400.2	
<b>Recommendations</b>		
Human Inspection Recommended?	NO	
Appropriate Distribution	NORMAL	
1st Recommended UCL	390.4761	95% Student's-t UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value	NO	
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Soil stat - dp.xls		
Variable:	Arsenic		
Raw Statistics			
Number of Observations	26		
Number of Missing Data	0		
Number of Valid Observations	26		
Number of Distinct Observations	26		
Minimum	6.05		
Maximum	219		
Mean	33.20385		
Standard Deviation	42.0077		
Variance	1764.647		
Coefficient of Variation	1.265146		
Skewness	3.767259		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.552376		
Shapiro-Wilk 5% Critical Value	0.92		
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level	
95% Student's-t UCL	47.27617		
Gamma Statistics			
k hat	1.480106		
k star (bias corrected)	1.334965		
Theta hat	22.43343		
Theta star	24.87244		
nu hat	76.9655		
nu star	69.4182		
5% Approximate Chi Square Value	51.23537		
Adjusted Level of Significance	0.0398		
Adjusted Chi Square Value	50.2033		
Anderson-Darling Test Statistic	1.115165		
Anderson-Darling 5% Critical Value	0.762071		
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level	
Kolmogrov-Smirnov Test Statistic	0.185033		
Kolmogrov-Smirnov 5% Critical Value	0.174334		
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level	
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level	
95% Approximate Gamma UCL	44.9875		
95% Adjusted Gamma UCL	45.91234		
Lognormal Statistics			
Minimum of log data	1.800058		
Maximum of log data	5.389072		
Mean of log data	3.128279		
Standard Deviation of log data	0.790582		
Variance of log data	0.62502		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.955892		
Shapiro-Wilk 5% Critical Value	0.92		
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level	
MLE Mean	31.21157		
MLE Standard Deviation	29.08347		
MLE Coefficient of Variation	0.931817		
MLE Skewness	3.604531		
MLE Median	22.83465		
MLE 80% Quantile	44.53702		
MLE 90% Quantile	63.06568		
MLE 95% Quantile	83.8296		
MLE 99% Quantile	143.6202		
MVU Estimate of Median	22.56171		
MVU Estimate of Mean	30.73845		
MVU Estimate of Standard Deviation	27.11274		
MVU Estimate of SE of Mean	5.218525		
95% H-UCL	44.50463		
95% Chebyshev (MVUE) UCL	53.48547		
97.5% Chebyshev (MVUE) UCL	63.32812		
99% Chebyshev (MVUE) UCL	82.66211		
Non-parametric Statistics			
95% CLT UCL	46.75479		
95% Adjusted-CLT UCL	53.2585		
95% Modified-t UCL	48.29062		
95% Jackknife UCL	47.27617		
95% Chebyshev (Mean, Sd) UCL	69.11415		
97.5% Chebyshev (Mean, Sd) UCL	84.65256		
99% Chebyshev (Mean, Sd) UCL	115.1748		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	46.37146		
95% Bootstrap-t UCL	67.28979		
95% Hall's Bootstrap UCL	98.16052		
95% Percentile Bootstrap UCL	48.06346		
95% BCA Bootstrap UCL	45.44808		
Recommendations			
Human Inspection Recommended?	NO		
Appropriate Distribution	LOGNORMAL		
1st Recommended UCL	44.50463	95% H-UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Soil stat - dp.xls		
Variable:	Cadmium		
<b>Raw Statistics</b>			
Number of Observations	26		
Number of Missing Data	0		
Number of Valid Observations	26		
Number of Distinct Observations	9		
Minimum	0.05		
Maximum	0.6475		
Mean	0.090481		
Standard Deviation	0.115287		
Variance	0.013291		
Coefficient of Variation	1.274156		
Skewness	4.875533		
Too Few Distinct Observations?	NO		
<b>Normal Statistics</b>			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.306716		
Shapiro-Wilk 5% Critical Value	0.92		
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level	
95% Student's-t UCL	0.129101		
<b>Gamma Statistics</b>			
k hat	2.379905		
k star (bias corrected)	2.130941		
Theta hat	0.038019		
Theta star	0.04246		
nu hat	123.755		
nu star	110.8089		
5% Approximate Chi Square Value	87.50631		
Adjusted Level of Significance	0.0398		
Adjusted Chi Square Value	86.13904		
Anderson-Darling Test Statistic	5.553672		
Anderson-Darling 5% Critical Value	0.754732		
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level	
Kolmogrov-Smirnov Test Statistic	0.408474		
Kolmogrov-Smirnov 5% Critical Value	0.17301		
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level	
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level	
95% Approximate Gamma UCL	0.114575		
95% Adjusted Gamma UCL	0.116394		
<b>Lognormal Statistics</b>			
Minimum of log data	-2.995732		
Maximum of log data	-0.434636		
Mean of log data	-2.627182		
Standard Deviation of log data	0.50048		
Variance of log data	0.250481		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.52775		
Shapiro-Wilk 5% Critical Value	0.92		
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level	
MLE Mean	0.081926		
MLE Standard Deviation	0.043709		
MLE Coefficient of Variation	0.533519		
MLE Skewness	1.75242		
MLE Median	0.072282		
MLE 80% Quantile	0.11033		
MLE 90% Quantile	0.137509		
MLE 95% Quantile	0.164657		
MLE 99% Quantile	0.231526		
MVU Estimate of Median	0.071934		
MVU Estimate of Mean	0.081489		
MVU Estimate of Standard Deviation	0.042631		
MVU Estimate of SE of Mean	0.008332		
95% H-UCL	0.099673		
95% Chebyshev (MVUE) UCL	0.117809		
97.5% Chebyshev (MVUE) UCL	0.133524		
99% Chebyshev (MVUE) UCL	0.164395		
<b>Non-parametric Statistics</b>			
95% CLT UCL	0.12767		
95% Adjusted-CLT UCL	0.15077		
95% Modified-t UCL	0.132704		
95% Jackknife UCL	0.129101		
95% Chebyshev (Mean, Sd) UCL	0.189034		
97.5% Chebyshev (Mean, Sd) UCL	0.231677		
99% Chebyshev (Mean, Sd) UCL	0.315443		
<b>Bootstrap Statistics</b>			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	0.125807		
95% Bootstrap-t UCL	0.320925		
95% Hall's Bootstrap UCL	0.270605		
95% Percentile Bootstrap UCL	0.134519		
95% BCA Bootstrap UCL	0.132212		
<b>Recommendations</b>			
Human Inspection Recommended?	NO		
Appropriate Distribution	NON-PARAMETRIC		
1st Recommended UCL	0.189034	95% Chebyshev (Mean, Sd) UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Soil stat - dp.xls		
Variable:	Chromium		
Raw Statistics			
Number of Observations	26		
Number of Missing Data	0		
Number of Valid Observations	26		
Number of Distinct Observations	26		
Minimum	24.4		
Maximum	316		
Mean	109.7038		
Standard Deviation	76.26076		
Variance	5815.703		
Coefficient of Variation	0.695151		
Skewness	1.042874		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.899627		
Shapiro-Wilk 5% Critical Value	0.92		
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level	
95% Student's-t UCL	135.2507		
Gamma Statistics			
k hat	2.187336		
k star (bias corrected)	1.960592		
Theta hat	50.15408		
Theta star	55.95444		
nu hat	113.7415		
nu star	101.9508		
5% Approximate Chi Square Value	79.64964		
Adjusted Level of Significance	0.0398		
Adjusted Chi Square Value	78.348		
Anderson-Darling Test Statistic	0.349187		
Anderson-Darling 5% Critical Value	0.756034		
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.	
Kolmogrov-Smirnov Test Statistic	0.134121		
Kolmogrov-Smirnov 5% Critical Value	0.173203		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level	
95% Approximate Gamma UCL	140.4199		
95% Adjusted Gamma UCL	142.7528		
Lognormal Statistics			
Minimum of log data	3.194583		
Maximum of log data	5.755742		
Mean of log data	4.452112		
Standard Deviation of log data	0.741496		
Variance of log data	0.549817		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.956716		
Shapiro-Wilk 5% Critical Value	0.92		
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level	
MLE Mean	112.9585		
MLE Standard Deviation	96.70566		
MLE Coefficient of Variation	0.856117		
MLE Skewness	3.195829		
MLE Median	85.80799		
MLE 80% Quantile	160.5614		
MLE 90% Quantile	222.5018		
MLE 95% Quantile	290.5785		
MLE 99% Quantile	481.4646		
MVU Estimate of Median	84.90513		
MVU Estimate of Mean	111.4884		
MVU Estimate of Standard Deviation	91.04267		
MVU Estimate of SE of Mean	17.59199		
95% H-UCL	156.3081		
95% Chebyshev (MVUE) UCL	188.1701		
97.5% Chebyshev (MVUE) UCL	221.3503		
99% Chebyshev (MVUE) UCL	286.5264		
Non-parametric Statistics			
95% CLT UCL	134.3042		
95% Adjusted-CLT UCL	137.5727		
95% Modified-t UCL	135.7605		
95% Jackknife UCL	135.2507		
95% Chebyshev (Mean, Sd) UCL	174.8954		
97.5% Chebyshev (Mean, Sd) UCL	203.1038		
99% Chebyshev (Mean, Sd) UCL	258.5138		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	133.7529		
95% Bootstrap-t UCL	138.9436		
95% Hall's Bootstrap UCL	141.5008		
95% Percentile Bootstrap UCL	134.9346		
95% BCA Bootstrap UCL	130.4808		
Recommendations			
Human Inspection Recommended?	NO		
Appropriate Distribution	GAMMA		
1st Recommended UCL	140.4199	95% Approximate Gamma UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Soil stat - dp.xls		
Variable:	Copper		
Raw Statistics			
Number of Observations	26		
Number of Missing Data	0		
Number of Valid Observations	26		
Number of Distinct Observations	26		
Minimum	20.8		
Maximum	298.5		
Mean	80.37692		
Standard Deviation	58.21595		
Variance	3389.097		
Coefficient of Variation	0.724287		
Skewness	2.16901		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.803486		
Shapiro-Wilk 5% Critical Value	0.92		
5% Normality Test Result	NOT NORMAL		Data not normal at 5% significance level
95% Student's-t UCL	99.87891		
Gamma Statistics			
k hat	2.512006		
k star (bias corrected)	2.2478		
Theta hat	31.99711		
Theta star	35.75804		
nu hat	130.6243		
nu star	116.8856		
5% Approximate Chi Square Value	92.91903		
Adjusted Level of Significance	0.0398		
Adjusted Chi Square Value	91.50825		
Anderson-Darling Test Statistic	0.339908		
Anderson-Darling 5% Critical Value	0.753839		
Anderson-Darling 5% Gamma Test Result	AD GAMMA		Data follow gamma distribution at 5% significance level.
Kolmogrov-Smirnov Test Statistic	0.093306		
Kolmogrov-Smirnov 5% Critical Value	0.172878		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA		Data follow gamma distribution at 5% significance level
5% Gamma Test Result	GAMMA		Data follow gamma distribution at 5% significance level
95% Approximate Gamma UCL	101.1085		
95% Adjusted Gamma UCL	102.6673		
Lognormal Statistics			
Minimum of log data	3.034953		
Maximum of log data	5.69877		
Mean of log data	4.174672		
Standard Deviation of log data	0.663977		
Variance of log data	0.440865		
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.965842		
Shapiro-Wilk 5% Critical Value	0.92		
5% Lognormality Test Result	LOGNORMAL		Data are lognormal at 5% significance level
MLE Mean	81.05314		
MLE Standard Deviation	60.33161		
MLE Coefficient of Variation	0.744346		
MLE Skewness	2.645445		
MLE Median	65.01853		
MLE 80% Quantile	113.9469		
MLE 90% Quantile	152.6096		
MLE 95% Quantile	193.817		
MLE 99% Quantile	304.6254		
MVU Estimate of Median	64.46945		
MVU Estimate of Mean	80.23779		
MVU Estimate of Standard Deviation	57.57451		
MVU Estimate of SE of Mean	11.18041		
95% H-UCL	107.2606		
95% Chebyshev (MVUE) UCL	128.9721		
97.5% Chebyshev (MVUE) UCL	150.0594		
99% Chebyshev (MVUE) UCL	191.4815		
Non-parametric Statistics			
95% CLT UCL	99.15636		
95% Adjusted-CLT UCL	104.3457		
95% Modified-t UCL	100.6883		
95% Jackknife UCL	99.87891		
95% Chebyshev (Mean, Sd) UCL	130.1429		
97.5% Chebyshev (Mean, Sd) UCL	151.6766		
99% Chebyshev (Mean, Sd) UCL	193.9755		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	99.28679		
95% Bootstrap-t UCL	108.2643		
95% Hall's Bootstrap UCL	125.6853		
95% Percentile Bootstrap UCL	100.9558		
95% BCA Bootstrap UCL	96.29231		
Recommendations			
Human Inspection Recommended?	NO		
Appropriate Distribution	GAMMA		
1st Recommended UCL	101.1085		95% Approximate Gamma UCL
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Soil stat - dp.xls		
Variable:	Manganese		
<b>Raw Statistics</b>			
Number of Observations	26		
Number of Missing Data	0		
Number of Valid Observations	26		
Number of Distinct Observations	24		
Minimum	84.8		
Maximum	818		
Mean	264.1769		
Standard Deviation	178.553		
Variance	31881.16		
Coefficient of Variation	0.675884		
Skewness	1.411437		
Too Few Distinct Observations?	NO		
<b>Normal Statistics</b>			
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.84967		
Shapiro-Wilk 5% Critical Value	0.92		
5% Normality Test Result	NOT NORMAL		Data not normal at 5% significance level
95% Student's-t UCL	323.9911		
<b>Gamma Statistics</b>			
k hat	2.707181		
k star (bias corrected)	2.420455		
Theta hat	97.58378		
Theta star	109.1435		
nu hat	140.7734		
nu star	125.8636		
5% Approximate Chi Square Value	100.9471		
Adjusted Level of Significance	0.0398		
Adjusted Chi Square Value	99.47404		
Anderson-Darling Test Statistic	0.640066		
Anderson-Darling 5% Critical Value	0.752519		
Anderson-Darling 5% Gamma Test Result	AD GAMMA		Data follow gamma distribution at 5% significance level.
Kolmogrov-Smirnov Test Statistic	0.149592		
Kolmogrov-Smirnov 5% Critical Value	0.172683		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA		Data follow gamma distribution at 5% significance level
5% Gamma Test Result	GAMMA		Data follow gamma distribution at 5% significance level
95% Approximate Gamma UCL	329.3831		
95% Adjusted Gamma UCL	334.2608		
<b>Lognormal Statistics</b>			
Minimum of log data	4.440296		
Maximum of log data	6.706862		
Mean of log data	5.380701		
Standard Deviation of log data	0.629995		
Variance of log data	0.396894		
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.952326		
Shapiro-Wilk 5% Critical Value	0.92		
5% Lognormality Test Result	LOGNORMAL		Data are lognormal at 5% significance level
MLE Mean	264.8457		
MLE Standard Deviation	184.8612		
MLE Coefficient of Variation	0.697996		
MLE Skewness	2.434049		
MLE Median	217.1744		
MLE 80% Quantile	369.8311		
MLE 90% Quantile	487.9653		
MLE 95% Quantile	612.1899		
MLE 99% Quantile	940.1779		
MVU Estimate of Median	215.5226		
MVU Estimate of Mean	262.4839		
MVU Estimate of Standard Deviation	177.3421		
MVU Estimate of SE of Mean	34.49869		
95% H-UCL	344.0337		
95% Chebyshev (MVUE) UCL	412.8602		
97.5% Chebyshev (MVUE) UCL	477.9281		
99% Chebyshev (MVUE) UCL	605.7415		
<b>Non-parametric Statistics</b>			
95% CLT UCL	321.775		
95% Adjusted-CLT UCL	332.132		
95% Modified-t UCL	325.6066		
95% Jackknife UCL	323.9911		
95% Chebyshev (Mean, Sd) UCL	416.813		
97.5% Chebyshev (Mean, Sd) UCL	482.8587		
99% Chebyshev (Mean, Sd) UCL	612.5928		
<b>Bootstrap Statistics</b>			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	321.5847		
95% Bootstrap-t UCL	340.7962		
95% Hall's Bootstrap UCL	336.6652		
95% Percentile Bootstrap UCL	325.4		
95% BCA Bootstrap UCL	309.3385		
<b>Recommendations</b>			
Human Inspection Recommended?	NO		
Appropriate Distribution	GAMMA		
1st Recommended UCL	329.3831		95% Approximate Gamma UCL
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Soil stat - dp.xls		
Variable:	Mercury		
Raw Statistics			
Number of Observations	26		
Number of Missing Data	0		
Number of Valid Observations	26		
Number of Distinct Observations	20		
Minimum	0.065		
Maximum	2.35		
Mean	0.765577		
Standard Deviation	0.567576		
Variance	0.322143		
Coefficient of Variation	0.74137		
Skewness	0.84924		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.924958		
Shapiro-Wilk 5% Critical Value	0.92		
5% Normality Test Result	NORMAL	Data are normal at 5% significance level	
95% Student's-t UCL	0.955711		
Gamma Statistics			
k hat	1.475717		
k star (bias corrected)	1.331083		
Theta hat	0.518783		
Theta star	0.575153		
nu hat	76.73727		
nu star	69.21631		
5% Approximate Chi Square Value	51.06178		
Adjusted Level of Significance	0.0398		
Adjusted Chi Square Value	50.03156		
Anderson-Darling Test Statistic	0.462214		
Anderson-Darling 5% Critical Value	0.762175		
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.	
Kolmogrov-Smirnov Test Statistic	0.112031		
Kolmogrov-Smirnov 5% Critical Value	0.174352		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level	
95% Approximate Gamma UCL	1.03777		
95% Adjusted Gamma UCL	1.05914		
Lognormal Statistics			
Minimum of log data	-2.733368		
Maximum of log data	0.854415		
Mean of log data	-0.642727		
Standard Deviation of log data	1.016904		
Variance of log data	1.034093		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.905364		
Shapiro-Wilk 5% Critical Value	0.92		
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level	
MLE Mean	0.881896		
MLE Standard Deviation	1.187307		
MLE Coefficient of Variation	1.346311		
MLE Skewness	6.479196		
MLE Median	0.525856		
MLE 80% Quantile	1.241793		
MLE 90% Quantile	1.942535		
MLE 95% Quantile	2.801288		
MLE 99% Quantile	5.599015		
MVU Estimate of Median	0.515495		
MVU Estimate of Mean	0.856992		
MVU Estimate of Standard Deviation	1.04252		
MVU Estimate of SE of Mean	0.195323		
95% H-UCL	1.47079		
95% Chebyshev (MVUE) UCL	1.708387		
97.5% Chebyshev (MVUE) UCL	2.076786		
99% Chebyshev (MVUE) UCL	2.800435		
Non-parametric Statistics			
95% CLT UCL	0.948667		
95% Adjusted-CLT UCL	0.968476		
95% Modified-t UCL	0.958801		
95% Jackknife UCL	0.955711		
95% Chebyshev (Mean, Sd) UCL	1.25077		
97.5% Chebyshev (Mean, Sd) UCL	1.460713		
99% Chebyshev (Mean, Sd) UCL	1.873106		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	0.944527		
95% Bootstrap-t UCL	0.981342		
95% Hall's Bootstrap UCL	0.978564		
95% Percentile Bootstrap UCL	0.944615		
95% BCA Bootstrap UCL	0.915577		
Recommendations			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	0.955711	95% Student's-t UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Soil stat - dp.xls	
Variable:	Thallium	
<b>Raw Statistics</b>		
Number of Observations	26	
Number of Missing Data	0	
Number of Valid Observations	26	
Number of Distinct Observations	17	
Minimum	0.8	
Maximum	3.6	
Mean	1.568269	
Standard Deviation	0.772385	
Variance	0.596578	
Coefficient of Variation	0.492508	
Skewness	1.086953	
Too Few Distinct Observations?	NO	
<b>Normal Statistics</b>		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.829642	
Shapiro-Wilk 5% Critical Value	0.92	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	1.827013	
<b>Gamma Statistics</b>		
k hat	5.032734	
k star (bias corrected)	4.477675	
Theta hat	0.311614	
Theta star	0.350242	
nu hat	261.7022	
nu star	232.8391	
5% Approximate Chi Square Value	198.5098	
Adjusted Level of Significance	0.0398	
Adjusted Chi Square Value	196.4191	
Anderson-Darling Test Statistic	1.587983	
Anderson-Darling 5% Critical Value	0.746316	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.27154	
Kolmogrov-Smirnov 5% Critical Value	0.171558	
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	1.839478	
95% Adjusted Gamma UCL	1.859058	
<b>Lognormal Statistics</b>		
Minimum of log data	-0.223144	
Maximum of log data	1.280934	
Mean of log data	0.347346	
Standard Deviation of log data	0.447936	
Variance of log data	0.200647	
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.875016	
Shapiro-Wilk 5% Critical Value	0.92	
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level
MLE Mean	1.564661	
MLE Standard Deviation	0.73754	
MLE Coefficient of Variation	0.471374	
MLE Skewness	1.518858	
MLE Median	1.415306	
MLE 80% Quantile	2.066491	
MLE 90% Quantile	2.516689	
MLE 95% Quantile	2.957077	
MLE 99% Quantile	4.011823	
MVU Estimate of Median	1.409855	
MVU Estimate of Mean	1.558103	
MVU Estimate of Standard Deviation	0.72318	
MVU Estimate of SE of Mean	0.141514	
95% H-UCL	1.857758	
95% Chebyshev (MVUE) UCL	2.174947	
97.5% Chebyshev (MVUE) UCL	2.441857	
99% Chebyshev (MVUE) UCL	2.966148	
<b>Non-parametric Statistics</b>		
95% CLT UCL	1.817427	
95% Adjusted-CLT UCL	1.851929	
95% Modified-t UCL	1.832395	
95% Jackknife UCL	1.827013	
95% Chebyshev (Mean, Sd) UCL	2.228542	
97.5% Chebyshev (Mean, Sd) UCL	2.514243	
99% Chebyshev (Mean, Sd) UCL	3.075447	
<b>Bootstrap Statistics</b>		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	1.819861	
95% Bootstrap-t UCL	1.869301	
95% Hall's Bootstrap UCL	1.847246	
95% Percentile Bootstrap UCL	1.827885	
95% BCA Bootstrap UCL	1.948077	
<b>Recommendations</b>		
Human Inspection Recommended?	YES	Users must select one of the recommended UCLS
Appropriate Distribution	NON-PARAMETRIC	
1st Recommended UCL	1.827013	95% Student's-t UCL
2nd Recommended UCL	1.832395	95% Modified-t UCL
3rd Recommended UCL		
Recommended UCL > Max Data Value	NO	
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Soil stat - dp.xls		
Variable:	Vanadium		
Raw Statistics			
Number of Observations	26		
Number of Missing Data	0		
Number of Valid Observations	26		
Number of Distinct Observations	26		
Minimum	15.6		
Maximum	58.1		
Mean	27.80769		
Standard Deviation	10.22584		
Variance	104.5677		
Coefficient of Variation	0.367734		
Skewness	1.102656		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.9102		
Shapiro-Wilk 5% Critical Value	0.92		
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level	
95% Student's-t UCL	31.23329		
Gamma Statistics			
k hat	8.536472		
k star (bias corrected)	7.577136		
Theta hat	3.257516		
Theta star	3.669948		
nu hat	443.8966		
nu star	394.0111		
5% Approximate Chi Square Value	348.9926		
Adjusted Level of Significance	0.0398		
Adjusted Chi Square Value	346.1998		
Anderson-Darling Test Statistic	0.350561		
Anderson-Darling 5% Critical Value	0.744774		
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.	
Kolmogrov-Smirnov Test Statistic	0.108629		
Kolmogrov-Smirnov 5% Critical Value	0.171312		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level	
95% Approximate Gamma UCL	31.39476		
95% Adjusted Gamma UCL	31.64802		
Lognormal Statistics			
Minimum of log data	2.747271		
Maximum of log data	4.062166		
Mean of log data	3.265598		
Standard Deviation of log data	0.347851		
Variance of log data	0.121		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.961704		
Shapiro-Wilk 5% Critical Value	0.92		
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level	
MLE Mean	27.82955		
MLE Standard Deviation	9.980877		
MLE Coefficient of Variation	0.358643		
MLE Skewness	1.12206		
MLE Median	26.19578		
MLE 80% Quantile	35.14675		
MLE 90% Quantile	40.95961		
MLE 95% Quantile	46.42381		
MLE 99% Quantile	58.83276		
MVU Estimate of Median	26.13489		
MVU Estimate of Mean	27.76141		
MVU Estimate of Standard Deviation	9.866457		
MVU Estimate of SE of Mean	1.933371		
95% H-UCL	31.63869		
95% Chebyshev (MVUE) UCL	36.18878		
97.5% Chebyshev (MVUE) UCL	39.83531		
99% Chebyshev (MVUE) UCL	46.99821		
Non-parametric Statistics			
95% CLT UCL	31.10637		
95% Adjusted-CLT UCL	31.56976		
95% Modified-t UCL	31.30556		
95% Jackknife UCL	31.23329		
95% Chebyshev (Mean, Sd) UCL	36.54925		
97.5% Chebyshev (Mean, Sd) UCL	40.33173		
99% Chebyshev (Mean, Sd) UCL	47.76168		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	31.02086		
95% Bootstrap-t UCL	31.8041		
95% Hall's Bootstrap UCL	31.92085		
95% Percentile Bootstrap UCL	31.06154		
95% BCA Bootstrap UCL	30.46154		
Recommendations			
Human Inspection Recommended?	NO		
Appropriate Distribution	GAMMA		
1st Recommended UCL	31.39476	95% Approximate Gamma UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\June 2004-revised\Soil stat - dp.xls	
Variable:	Zinc	
Raw Statistics		
Number of Observations	26	
Number of Missing Data	0	
Number of Valid Observations	26	
Number of Distinct Observations	26	
Minimum	55.8	
Maximum	44800	
Mean	1923.894	
Standard Deviation	8745.708	
Variance	76487402	
Coefficient of Variation	4.545836	
Skewness	5.097764	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.211325	
Shapiro-Wilk 5% Critical Value	0.92	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	4853.653	
Gamma Statistics		
k hat	0.318394	
k star (bias corrected)	0.307297	
Theta hat	6042.498	
Theta star	6260.697	
nu hat	16.55648	
nu star	15.97945	
5% Approximate Chi Square Value	7.946424	
Adjusted Level of Significance	0.0398	
Adjusted Chi Square Value	7.573087	
Anderson-Darling Test Statistic	7.204746	
Anderson-Darling 5% Critical Value	0.847639	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.473829	
Kolmogrov-Smirnov 5% Critical Value	0.185345	
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	3868.756	
95% Adjusted Gamma UCL	4059.477	
Lognormal Statistics		
Minimum of log data	4.021774	
Maximum of log data	10.70996	
Mean of log data	5.417281	
Standard Deviation of log data	1.205385	
Variance of log data	1.452954	
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.633202	
Shapiro-Wilk 5% Critical Value	0.92	
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level
MLE Mean	465.8005	
MLE Standard Deviation	843.0507	
MLE Coefficient of Variation	1.809896	
MLE Skewness	11.35841	
MLE Median	225.2657	
MLE 80% Quantile	623.8009	
MLE 90% Quantile	1060.187	
MLE 95% Quantile	1636.213	
MLE 99% Quantile	3718.244	
MVU Estimate of Median	219.0523	
MVU Estimate of Mean	445.3293	
MVU Estimate of Standard Deviation	688.6087	
MVU Estimate of SE of Mean	124.531	
95% H-UCL	907.5647	
95% Chebyshev (MVUE) UCL	988.1472	
97.5% Chebyshev (MVUE) UCL	1223.025	
99% Chebyshev (MVUE) UCL	1684.397	
Non-parametric Statistics		
95% CLT UCL	4745.105	
95% Adjusted-CLT UCL	6577.342	
95% Modified-t UCL	5139.445	
95% Jackknife UCL	4853.653	
95% Chebyshev (Mean, Sd) UCL	9400.166	
97.5% Chebyshev (Mean, Sd) UCL	12635.15	
99% Chebyshev (Mean, Sd) UCL	18989.66	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	4702.783	
95% Bootstrap-t UCL	173546.3	
95% Hall's Bootstrap UCL	58034.18	
95% Percentile Bootstrap UCL	5358.658	
95% BCA Bootstrap UCL	7073.762	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	NON-PARAMETRIC	
1st Recommended UCL	18989.66	99% Chebyshev (Mean, Sd) UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Data File	J:\NE\WELLSG&H\OU3-supplemental\HHRA\Statistics\HH - June 2004\Fish stat - reach3.xls		
Variable:	4,4'-DDD		
Raw Statistics			
Number of Observations	9		
Number of Missing Data	0		
Number of Valid Observations	9		
Number of Distinct Observations	8		
Minimum	0.0013		
Maximum	0.0098		
Mean	0.004756		
Standard Deviation	0.003108		
Variance	9.66E-06		
Coefficient of Variation	0.653488		
Skewness	0.589538		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.898842		
Shapiro-Wilk 5% Critical Value	0.829		
5% Normality Test Result	NORMAL		Data are normal at 5% significance level
95% Student's-t UCL	0.006682		
Gamma Statistics			
k hat	2.501019		
k star (bias corrected)	1.74142		
Theta hat	0.001901		
Theta star	0.002731		
nu hat	45.01835		
nu star	31.34557		
5% Approximate Chi Square Value	19.55172		
Adjusted Level of Significance	0.02308		
Adjusted Chi Square Value	17.61369		
Anderson-Darling Test Statistic	0.359556		
Anderson-Darling 5% Critical Value	0.728282		
Anderson-Darling 5% Gamma Test Result	AD GAMMA		Data follow gamma distribution at 5% significance level.
Kolmogrov-Smirnov Test Statistic	0.21749		
Kolmogrov-Smirnov 5% Critical Value	0.281909		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA		Data follow gamma distribution at 5% significance level
5% Gamma Test Result	GAMMA		Data follow gamma distribution at 5% significance level
95% Approximate Gamma UCL	0.007624		
95% Adjusted Gamma UCL	0.008463		
Lognormal Statistics			
Minimum of log data	-6.645391		
Maximum of log data	-4.625373		
Mean of log data	-5.561484		
Standard Deviation of log data	0.715906		
Variance of log data	0.512521		
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.930208		
Shapiro-Wilk 5% Critical Value	0.829		
5% Lognormality Test Result	LOGNORMAL		Data are lognormal at 5% significance level
MLE Mean	0.004966		
MLE Standard Deviation	0.004063		
MLE Coefficient of Variation	0.818226		
MLE Skewness	3.002476		
MLE Median	0.003843		
MLE 80% Quantile	0.007037		
MLE 90% Quantile	0.009643		
MLE 95% Quantile	0.012478		
MLE 99% Quantile	0.020317		
MVU Estimate of Median	0.003735		
MVU Estimate of Mean	0.004802		
MVU Estimate of Standard Deviation	0.003547		
MVU Estimate of SE of Mean	0.001175		
95% H-UCL	0.009803		
95% Chebyshev (MVUE) UCL	0.009922		
97.5% Chebyshev (MVUE) UCL	0.012138		
99% Chebyshev (MVUE) UCL	0.016489		
Non-parametric Statistics			
95% CLT UCL	0.006459		
95% Adjusted-CLT UCL	0.006677		
95% Modified-t UCL	0.006716		
95% Jackknife UCL	0.006682		
95% Chebyshev (Mean, Sd) UCL	0.009271		
97.5% Chebyshev (Mean, Sd) UCL	0.011225		
99% Chebyshev (Mean, Sd) UCL	0.015063		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	0.006348		
95% Bootstrap-t UCL	0.007132		
95% Hall's Bootstrap UCL	0.00677		
95% Percentile Bootstrap UCL	0.006389		
95% BCA Bootstrap UCL	0.006122		
Recommendations			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	0.006682		95% Student's-t UCL
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-supplemental\HHRA\Statistics\HH - June 2004\Fish stat - reach3.xls		
Variable:	4,4'-DDE		
Raw Statistics			
Number of Observations	9		
Number of Missing Data	0		
Number of Valid Observations	9		
Number of Distinct Observations	8		
Minimum	0.0038		
Maximum	0.026		
Mean	0.010178		
Standard Deviation	0.007215		
Variance	5.21E-05		
Coefficient of Variation	0.708902		
Skewness	1.530278		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.808594		
Shapiro-Wilk 5% Critical Value	0.829		
5% Normality Test Result	NOT NORMAL		Data not normal at 5% significance level
95% Student's-t UCL	0.01465		
Gamma Statistics			
k hat	2.800295		
k star (bias corrected)	1.940938		
Theta hat	0.003635		
Theta star	0.005244		
nu hat	50.40531		
nu star	34.93688		
5% Approximate Chi Square Value	22.41227		
Adjusted Level of Significance	0.02308		
Adjusted Chi Square Value	20.32161		
Anderson-Darling Test Statistic	0.515587		
Anderson-Darling 5% Critical Value	0.727393		
Anderson-Darling 5% Gamma Test Result	AD GAMMA		Data follow gamma distribution at 5% significance level.
Kolmogrov-Smirnov Test Statistic	0.277327		
Kolmogrov-Smirnov 5% Critical Value	0.281568		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA		Data follow gamma distribution at 5% significance level
5% Gamma Test Result	GAMMA		Data follow gamma distribution at 5% significance level
95% Approximate Gamma UCL	0.015865		
95% Adjusted Gamma UCL	0.017498		
Lognormal Statistics			
Minimum of log data	-5.572754		
Maximum of log data	-3.649659		
Mean of log data	-4.7766		
Standard Deviation of log data	0.6297		
Variance of log data	0.396522		
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.925979		
Shapiro-Wilk 5% Critical Value	0.829		
5% Lognormality Test Result	LOGNORMAL		Data are lognormal at 5% significance level
MLE Mean	0.010272		
MLE Standard Deviation	0.007166		
MLE Coefficient of Variation	0.6976		
MLE Skewness	2.432284		
MLE Median	0.008425		
MLE 80% Quantile	0.014343		
MLE 90% Quantile	0.018922		
MLE 95% Quantile	0.023736		
MLE 99% Quantile	0.036446		
MVU Estimate of Median	0.008241		
MVU Estimate of Mean	0.010018		
MVU Estimate of Standard Deviation	0.006466		
MVU Estimate of SE of Mean	0.002146		
95% H-UCL	0.018014		
95% Chebyshev (MVUE) UCL	0.019374		
97.5% Chebyshev (MVUE) UCL	0.023422		
99% Chebyshev (MVUE) UCL	0.031374		
Non-parametric Statistics			
95% CLT UCL	0.014134		
95% Adjusted-CLT UCL	0.015445		
95% Modified-t UCL	0.014854		
95% Jackknife UCL	0.01465		
95% Chebyshev (Mean, Sd) UCL	0.020661		
97.5% Chebyshev (Mean, Sd) UCL	0.025197		
99% Chebyshev (Mean, Sd) UCL	0.034107		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	0.013836		
95% Bootstrap-t UCL	0.017422		
95% Hall's Bootstrap UCL	0.015181		
95% Percentile Bootstrap UCL	0.014244		
95% BCA Bootstrap UCL	0.013533		
Recommendations			
Human Inspection Recommended?	NO		
Appropriate Distribution	GAMMA		
1st Recommended UCL	0.015865		95% Approximate Gamma UCL
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File		J:\NE\WELLSG&H\OU3-supplemental\HHRA\Statistics\HH - June 2004\Fish stat - reach3.xls	
Variable:		4,4'-DDT	
Raw Statistics			
Number of Observations		8	
Number of Missing Data		0	
Number of Valid Observations		8	
Number of Distinct Observations		7	
Minimum		0.00049	
Maximum		0.0046	
Mean		0.001791	
Standard Deviation		0.001527	
Variance		2.33E-06	
Coefficient of Variation		0.852346	
Skewness		0.960139	
Too Few Distinct Observations?		NO	
Normal Statistics			
Lilliefors Test Statistic		N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value		N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic		0.856548	
Shapiro-Wilk 5% Critical Value		0.818	
5% Normality Test Result		NORMAL	Data are normal at 5% significance level
95% Student's-t UCL		0.002814	
Gamma Statistics			
k hat		1.57394	
k star (bias corrected)		1.067046	
Theta hat		0.001138	
Theta star		0.001679	
nu hat		25.18303	
nu star		17.07273	
5% Approximate Chi Square Value		8.722888	
Adjusted Level of Significance		0.01946	
Adjusted Chi Square Value		7.264836	
Anderson-Darling Test Statistic		0.48427	
Anderson-Darling 5% Critical Value		0.727762	
Anderson-Darling 5% Gamma Test Result		AD GAMMA	Data follow gamma distribution at 5% significance level.
Kolmogrov-Smirnov Test Statistic		0.224634	
Kolmogrov-Smirnov 5% Critical Value		0.298687	
Kolmogrov-Smirnov 5% Gamma Test Result		KS GAMMA	Data follow gamma distribution at 5% significance level
5% Gamma Test Result		GAMMA	Data follow gamma distribution at 5% significance level
95% Approximate Gamma UCL		0.003506	
95% Adjusted Gamma UCL		0.00421	
Lognormal Statistics			
Minimum of log data		-7.621105	
Maximum of log data		-5.381699	
Mean of log data		-6.674989	
Standard Deviation of log data		0.915709	
Variance of log data		0.838522	
Lilliefors Test Statistic		N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value		N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic		0.872247	
Shapiro-Wilk 5% Critical Value		0.818	
5% Lognormality Test Result		LOGNORMAL	Data are lognormal at 5% significance level
MLE Mean		0.001919	
MLE Standard Deviation		0.002199	
MLE Coefficient of Variation		1.145839	
MLE Skewness		4.941941	
MLE Median		0.001262	
MLE 80% Quantile		0.002736	
MLE 90% Quantile		0.004094	
MLE 95% Quantile		0.005692	
MLE 99% Quantile		0.01062	
MVU Estimate of Median		0.001197	
MVU Estimate of Mean		0.001797	
MVU Estimate of Standard Deviation		0.001703	
MVU Estimate of SE of Mean		0.000594	
95% H-UCL		0.005986	
95% Chebyshev (MVUE) UCL		0.004384	
97.5% Chebyshev (MVUE) UCL		0.005504	
99% Chebyshev (MVUE) UCL		0.007703	
Non-parametric Statistics			
95% CLT UCL		0.002679	
95% Adjusted-CLT UCL		0.002875	
95% Modified-t UCL		0.002844	
95% Jackknife UCL		0.002814	
95% Chebyshev (Mean, Sd) UCL		0.004144	
97.5% Chebyshev (Mean, Sd) UCL		0.005162	
99% Chebyshev (Mean, Sd) UCL		0.007162	
Bootstrap Statistics			
Number of Bootstrap Runs		2000	
95% Standard Bootstrap UCL		0.002608	
95% Bootstrap-t UCL		0.003436	
95% Hall's Bootstrap UCL		0.002852	
95% Percentile Bootstrap UCL		0.002666	
95% BCA Bootstrap UCL		0.0025	
Recommendations			
Human Inspection Recommended?		NO	
Appropriate Distribution		NORMAL	
1st Recommended UCL		0.002814	95% Student's-t UCL
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value		NO	
Recommendation Warning!		NONE	
Alternative UCL		NONE	

Data File	J:\NE\WELLSG&H\OU3-supplemental\HHRA\Statistics\HH - June 2004\Fish stat - reach3.xls		
Variable:	Aldrin		
Raw Statistics			
Number of Observations	8		
Number of Missing Data	0		
Number of Valid Observations	8		
Number of Distinct Observations	5		
Minimum	0.00026		
Maximum	0.0013		
Mean	0.000464		
Standard Deviation	0.000353		
Variance	1.24E-07		
Coefficient of Variation	0.760542		
Skewness	2.400373		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.642075		
Shapiro-Wilk 5% Critical Value	0.818		
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level	
95% Student's-t UCL	0.0007		
Gamma Statistics			
k hat	3.167836		
k star (bias corrected)	2.063231		
Theta hat	0.000146		
Theta star	0.000225		
nu hat	50.68538		
nu star	33.0117		
5% Approximate Chi Square Value	20.87383		
Adjusted Level of Significance	0.01946		
Adjusted Chi Square Value	18.47187		
Anderson-Darling Test Statistic	0.947291		
Anderson-Darling 5% Critical Value	0.720983		
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level	
Kolmogrov-Smirnov Test Statistic	0.29079		
Kolmogrov-Smirnov 5% Critical Value	0.296137		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	APPROX GAMMA	Data follow approximate gamma distribution at 5% significance level	
95% Approximate Gamma UCL	0.000733		
95% Adjusted Gamma UCL	0.000829		
Lognormal Statistics			
Minimum of log data	-8.254829		
Maximum of log data	-6.645391		
Mean of log data	-7.842226		
Standard Deviation of log data	0.55519		
Variance of log data	0.308236		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.77928		
Shapiro-Wilk 5% Critical Value	0.818		
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level	
MLE Mean	0.000458		
MLE Standard Deviation	0.000275		
MLE Coefficient of Variation	0.600852		
MLE Skewness	2.019476		
MLE Median	0.000393		
MLE 80% Quantile	0.000628		
MLE 90% Quantile	0.000802		
MLE 95% Quantile	0.000979		
MLE 99% Quantile	0.001429		
MVU Estimate of Median	0.000385		
MVU Estimate of Mean	0.000449		
MVU Estimate of Standard Deviation	0.000253		
MVU Estimate of SE of Mean	8.91E-05		
95% H-UCL	0.000772		
95% Chebyshev (MVUE) UCL	0.000837		
97.5% Chebyshev (MVUE) UCL	0.001005		
99% Chebyshev (MVUE) UCL	0.001335		
Non-parametric Statistics			
95% CLT UCL	0.000669		
95% Adjusted-CLT UCL	0.000782		
95% Modified-t UCL	0.000718		
95% Jackknife UCL	0.0007		
95% Chebyshev (Mean, Sd) UCL	0.001007		
97.5% Chebyshev (Mean, Sd) UCL	0.001242		
99% Chebyshev (Mean, Sd) UCL	0.001704		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	0.000653		
95% Bootstrap-t UCL	0.001136		
95% Hall's Bootstrap UCL	0.001329		
95% Percentile Bootstrap UCL	0.00068		
95% BCA Bootstrap UCL	0.00065		
Recommendations			
Human Inspection Recommended?	NO		
Appropriate Distribution	GAMMA		
1st Recommended UCL	0.000733	95% Approximate Gamma UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File		J:\NE\WELLSG&H\OU3-supplemental\HHRA\Statistics\HH - June 2004\Fish stat - reach3.xls	
Variable:		alpha-Chlordane	
Raw Statistics			
Number of Observations		9	
Number of Missing Data		0	
Number of Valid Observations		9	
Number of Distinct Observations		9	
Minimum		0.0013	
Maximum		0.0089	
Mean		0.004156	
Standard Deviation		0.002598	
Variance		6.75E-06	
Coefficient of Variation		0.625218	
Skewness		0.840928	
Too Few Distinct Observations?		NO	
Normal Statistics			
Lilliefors Test Statistic		N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value		N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic		0.897607	
Shapiro-Wilk 5% Critical Value		0.829	
5% Normality Test Result		NORMAL	Data are normal at 5% significance level
95% Student's-t UCL		0.005766	
Gamma Statistics			
k hat		2.916594	
k star (bias corrected)		2.01847	
Theta hat		0.001425	
Theta star		0.002059	
nu hat		52.49868	
nu star		36.33246	
5% Approximate Chi Square Value		23.5342	
Adjusted Level of Significance		0.02308	
Adjusted Chi Square Value		21.38631	
Anderson-Darling Test Statistic		0.315296	
Anderson-Darling 5% Critical Value		0.727048	
Anderson-Darling 5% Gamma Test Result		AD GAMMA	Data follow gamma distribution at 5% significance level.
Kolmogrov-Smirnov Test Statistic		0.169046	
Kolmogrov-Smirnov 5% Critical Value		0.281435	
Kolmogrov-Smirnov 5% Gamma Test Result		KS GAMMA	Data follow gamma distribution at 5% significance level
5% Gamma Test Result		GAMMA	Data follow gamma distribution at 5% significance level
95% Approximate Gamma UCL		0.006415	
95% Adjusted Gamma UCL		0.00706	
Lognormal Statistics			
Minimum of log data		-6.645391	
Maximum of log data		-4.721704	
Mean of log data		-5.664429	
Standard Deviation of log data		0.651106	
Variance of log data		0.423939	
Lilliefors Test Statistic		N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value		N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic		0.948943	
Shapiro-Wilk 5% Critical Value		0.829	
5% Lognormality Test Result		LOGNORMAL	Data are lognormal at 5% significance level
MLE Mean		0.004286	
MLE Standard Deviation		0.003114	
MLE Coefficient of Variation		0.726614	
MLE Skewness		2.563471	
MLE Median		0.003467	
MLE 80% Quantile		0.006011	
MLE 90% Quantile		0.008004	
MLE 95% Quantile		0.010119	
MLE 99% Quantile		0.015765	
MVU Estimate of Median		0.003386	
MVU Estimate of Mean		0.004172	
MVU Estimate of Standard Deviation		0.002788	
MVU Estimate of SE of Mean		0.000925	
95% H-UCL		0.007731	
95% Chebyshev (MVUE) UCL		0.008204	
97.5% Chebyshev (MVUE) UCL		0.009949	
99% Chebyshev (MVUE) UCL		0.013377	
Non-parametric Statistics			
95% CLT UCL		0.00558	
95% Adjusted-CLT UCL		0.005839	
95% Modified-t UCL		0.005806	
95% Jackknife UCL		0.005766	
95% Chebyshev (Mean, Sd) UCL		0.007931	
97.5% Chebyshev (Mean, Sd) UCL		0.009564	
99% Chebyshev (Mean, Sd) UCL		0.012773	
Bootstrap Statistics			
Number of Bootstrap Runs		2000	
95% Standard Bootstrap UCL		0.005525	
95% Bootstrap-t UCL		0.006388	
95% Hall's Bootstrap UCL		0.006819	
95% Percentile Bootstrap UCL		0.005567	
95% BCA Bootstrap UCL		0.006211	
Recommendations			
Human Inspection Recommended?		NO	
Appropriate Distribution		NORMAL	
1st Recommended UCL		0.005766	95% Student's-t UCL
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value		NO	
Recommendation Warning!		NONE	
Alternative UCL		NONE	

Data File		J:\NE\WELLSG&H\OU3-supplemental\HHRA\Statistics\HH - June 2004\Fish stat - reach3.xls	
Variable:		Aroclor-1254	
Raw Statistics			
Number of Observations		9	
Number of Missing Data		0	
Number of Valid Observations		9	
Number of Distinct Observations		8	
Minimum		0.00495	
Maximum		0.036	
Mean		0.015839	
Standard Deviation		0.009765	
Variance		9.54E-05	
Coefficient of Variation		0.616515	
Skewness		0.980276	
Too Few Distinct Observations?		NO	
Normal Statistics			
Lilliefors Test Statistic		N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value		N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic		0.915056	
Shapiro-Wilk 5% Critical Value		0.829	
5% Normality Test Result		NORMAL	Data are normal at 5% significance level
95% Student's-t UCL		0.021892	
Gamma Statistics			
k hat		2.888128	
k star (bias corrected)		1.999493	
Theta hat		0.005484	
Theta star		0.007921	
nu hat		51.9863	
nu star		35.99087	
5% Approximate Chi Square Value		23.25909	
Adjusted Level of Significance		0.02308	
Adjusted Chi Square Value		21.12511	
Anderson-Darling Test Statistic		0.262272	
Anderson-Darling 5% Critical Value		0.727132	
Anderson-Darling 5% Gamma Test Result		AD GAMMA	Data follow gamma distribution at 5% significance level.
Kolmogrov-Smirnov Test Statistic		0.146458	
Kolmogrov-Smirnov 5% Critical Value		0.281468	
Kolmogrov-Smirnov 5% Gamma Test Result		KS GAMMA	Data follow gamma distribution at 5% significance level
5% Gamma Test Result		GAMMA	Data follow gamma distribution at 5% significance level
95% Approximate Gamma UCL		0.024509	
95% Adjusted Gamma UCL		0.026985	
Lognormal Statistics			
Minimum of log data		-5.308368	
Maximum of log data		-3.324236	
Mean of log data		-4.328286	
Standard Deviation of log data		0.668878	
Variance of log data		0.447398	
Lilliefors Test Statistic		N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value		N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic		0.935517	
Shapiro-Wilk 5% Critical Value		0.829	
5% Lognormality Test Result		LOGNORMAL	Data are lognormal at 5% significance level
MLE Mean		0.016497	
MLE Standard Deviation		0.012392	
MLE Coefficient of Variation		0.751156	
MLE Skewness		2.677299	
MLE Median		0.01319	
MLE 80% Quantile		0.023212	
MLE 90% Quantile		0.031155	
MLE 95% Quantile		0.039637	
MLE 99% Quantile		0.062507	
MVU Estimate of Median		0.012866	
MVU Estimate of Mean		0.016031	
MVU Estimate of Standard Deviation		0.011022	
MVU Estimate of SE of Mean		0.003655	
95% H-UCL		0.030481	
95% Chebyshev (MVUE) UCL		0.031964	
97.5% Chebyshev (MVUE) UCL		0.038858	
99% Chebyshev (MVUE) UCL		0.0524	
Non-parametric Statistics			
95% CLT UCL		0.021193	
95% Adjusted-CLT UCL		0.022329	
95% Modified-t UCL		0.022069	
95% Jackknife UCL		0.021892	
95% Chebyshev (Mean, Sd) UCL		0.030027	
97.5% Chebyshev (Mean, Sd) UCL		0.036166	
99% Chebyshev (Mean, Sd) UCL		0.048225	
Bootstrap Statistics			
Number of Bootstrap Runs		2000	
95% Standard Bootstrap UCL		0.021015	
95% Bootstrap-t UCL		0.0234	
95% Hall's Bootstrap UCL		0.025216	
95% Percentile Bootstrap UCL		0.021067	
95% BCA Bootstrap UCL		0.020111	
Recommendations			
Human Inspection Recommended?		NO	
Appropriate Distribution		NORMAL	
1st Recommended UCL		0.021892	95% Student's-t UCL
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value		NO	
Recommendation Warning!		NONE	
Alternative UCL		NONE	

Data File		J:\NE\WELLSG&H\OU3-supplemental\HHRA\Statistics\HH - June 2004\Fish stat - reach3.xls	
Variable:		Aroclor-1260	
Raw Statistics			
Number of Observations		9	
Number of Missing Data		0	
Number of Valid Observations		9	
Number of Distinct Observations		8	
Minimum		0.014	
Maximum		0.11	
Mean		0.039778	
Standard Deviation		0.030091	
Variance		0.000905	
Coefficient of Variation		0.756468	
Skewness		1.876324	
Too Few Distinct Observations?		NO	
Normal Statistics			
Lilliefors Test Statistic		N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value		N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic		0.793352	
Shapiro-Wilk 5% Critical Value		0.829	
5% Normality Test Result		NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL		0.058429	
Gamma Statistics			
k hat		2.654098	
k star (bias corrected)		1.843473	
Theta hat		0.014987	
Theta star		0.021578	
nu hat		47.77377	
nu star		33.18251	
5% Approximate Chi Square Value		21.00988	
Adjusted Level of Significance		0.02308	
Adjusted Chi Square Value		18.99277	
Anderson-Darling Test Statistic		0.381784	
Anderson-Darling 5% Critical Value		0.727827	
Anderson-Darling 5% Gamma Test Result		AD GAMMA	Data follow gamma distribution at 5% significance level.
Kolmogrov-Smirnov Test Statistic		0.165119	
Kolmogrov-Smirnov 5% Critical Value		0.281734	
Kolmogrov-Smirnov 5% Gamma Test Result		KS GAMMA	Data follow gamma distribution at 5% significance level
5% Gamma Test Result		GAMMA	Data follow gamma distribution at 5% significance level
95% Approximate Gamma UCL		0.062824	
95% Adjusted Gamma UCL		0.069496	
Lognormal Statistics			
Minimum of log data		-4.268698	
Maximum of log data		-2.207275	
Mean of log data		-3.424507	
Standard Deviation of log data		0.640308	
Variance of log data		0.409994	
Lilliefors Test Statistic		N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value		N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic		0.956772	
Shapiro-Wilk 5% Critical Value		0.829	
5% Lognormality Test Result		LOGNORMAL	Data are lognormal at 5% significance level
MLE Mean		0.039975	
MLE Standard Deviation		0.028458	
MLE Coefficient of Variation		0.711905	
MLE Skewness		2.496516	
MLE Median		0.032565	
MLE 80% Quantile		0.055942	
MLE 90% Quantile		0.074147	
MLE 95% Quantile		0.093369	
MLE 99% Quantile		0.144403	
MVU Estimate of Median		0.03183	
MVU Estimate of Mean		0.03895	
MVU Estimate of Standard Deviation		0.025582	
MVU Estimate of SE of Mean		0.00849	
95% H-UCL		0.071082	
95% Chebyshev (MVUE) UCL		0.075956	
97.5% Chebyshev (MVUE) UCL		0.091969	
99% Chebyshev (MVUE) UCL		0.123423	
Non-parametric Statistics			
95% CLT UCL		0.056276	
95% Adjusted-CLT UCL		0.062979	
95% Modified-t UCL		0.059475	
95% Jackknife UCL		0.058429	
95% Chebyshev (Mean, Sd) UCL		0.083498	
97.5% Chebyshev (Mean, Sd) UCL		0.102416	
99% Chebyshev (Mean, Sd) UCL		0.139577	
Bootstrap Statistics			
Number of Bootstrap Runs		2000	
95% Standard Bootstrap UCL		0.055462	
95% Bootstrap-t UCL		0.079074	
95% Hall's Bootstrap UCL		0.129808	
95% Percentile Bootstrap UCL		0.057	
95% BCA Bootstrap UCL		0.054222	
Recommendations			
Human Inspection Recommended?		NO	
Appropriate Distribution		GAMMA	
1st Recommended UCL		0.062824	95% Approximate Gamma UCL
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value		NO	
Recommendation Warning!		NONE	
Alternative UCL		NONE	

Data File		J:\NE\WELLSG&H\OU3-supplemental\HHRA\Statistics\HH - June 2004\Fish stat - reach3.xls	
Variable:		delta-BHC	
Raw Statistics			
Number of Observations		8	
Number of Missing Data		0	
Number of Valid Observations		8	
Number of Distinct Observations		6	
Minimum		0.00026	
Maximum		0.0013	
Mean		0.00054	
Standard Deviation		0.000332	
Variance		1.1E-07	
Coefficient of Variation		0.614987	
Skewness		2.024029	
Too Few Distinct Observations?		NO	
Normal Statistics			
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.759086		
Shapiro-Wilk 5% Critical Value	0.818		
5% Normality Test Result	NOT NORMAL		Data not normal at 5% significance level
95% Student's-t UCL	0.000762		
Gamma Statistics			
k hat	4.024653		
k star (bias corrected)	2.598742		
Theta hat	0.000134		
Theta star	0.000208		
nu hat	64.39445		
nu star	41.57986		
5% Approximate Chi Square Value	27.79748		
Adjusted Level of Significance	0.01946		
Adjusted Chi Square Value	24.98162		
Anderson-Darling Test Statistic	0.508309		
Anderson-Darling 5% Critical Value	0.718582		
Anderson-Darling 5% Gamma Test Result	AD GAMMA		Data follow gamma distribution at 5% significance level.
Kolmogrov-Smirnov Test Statistic	0.252847		
Kolmogrov-Smirnov 5% Critical Value	0.295328		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA		Data follow gamma distribution at 5% significance level
5% Gamma Test Result	GAMMA		Data follow gamma distribution at 5% significance level
95% Approximate Gamma UCL	0.000808		
95% Adjusted Gamma UCL	0.000899		
Lognormal Statistics			
Minimum of log data	-8.254829		
Maximum of log data	-6.645391		
Mean of log data	-7.65329		
Standard Deviation of log data	0.519488		
Variance of log data	0.269868		
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.901383		
Shapiro-Wilk 5% Critical Value	0.818		
5% Lognormality Test Result	LOGNORMAL		Data are lognormal at 5% significance level
MLE Mean	0.000543		
MLE Standard Deviation	0.000302		
MLE Coefficient of Variation	0.556589		
MLE Skewness	1.842192		
MLE Median	0.000474		
MLE 80% Quantile	0.000736		
MLE 90% Quantile	0.000925		
MLE 95% Quantile	0.001115		
MLE 99% Quantile	0.001589		
MVU Estimate of Median	0.000467		
MVU Estimate of Mean	0.000533		
MVU Estimate of Standard Deviation	0.00028		
MVU Estimate of SE of Mean	9.9E-05		
95% H-UCL	0.000873		
95% Chebyshev (MVUE) UCL	0.000965		
97.5% Chebyshev (MVUE) UCL	0.001151		
99% Chebyshev (MVUE) UCL	0.001518		
Non-parametric Statistics			
95% CLT UCL	0.000733		
95% Adjusted-CLT UCL	0.000823		
95% Modified-t UCL	0.000776		
95% Jackknife UCL	0.000762		
95% Chebyshev (Mean, Sd) UCL	0.001052		
97.5% Chebyshev (Mean, Sd) UCL	0.001273		
99% Chebyshev (Mean, Sd) UCL	0.001708		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	0.000716		
95% Bootstrap-t UCL	0.000954		
95% Hall's Bootstrap UCL	0.001562		
95% Percentile Bootstrap UCL	0.000745		
95% BCA Bootstrap UCL	0.000693		
Recommendations			
Human Inspection Recommended?	NO		
Appropriate Distribution	GAMMA		
1st Recommended UCL	0.000808		95% Approximate Gamma UCL
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-supplemental\HHRA\Statistics\HH - June 2004\Fish stat - reach3.xls		
Variable:	Dieldrin		
Raw Statistics			
Number of Observations	9		
Number of Missing Data	0		
Number of Valid Observations	9		
Number of Distinct Observations	8		
Minimum	0.00077		
Maximum	0.0029		
Mean	0.001763		
Standard Deviation	0.000736		
Variance	5.42E-07		
Coefficient of Variation	0.417643		
Skewness	0.288902		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.949773		
Shapiro-Wilk 5% Critical Value	0.829		
5% Normality Test Result	NORMAL		Data are normal at 5% significance level
95% Student's-t UCL	0.00222		
Gamma Statistics			
k hat	6.077741		
k star (bias corrected)	4.125902		
Theta hat	0.00029		
Theta star	0.000427		
nu hat	109.3993		
nu star	74.26623		
5% Approximate Chi Square Value	55.41583		
Adjusted Level of Significance	0.02308		
Adjusted Chi Square Value	51.99583		
Anderson-Darling Test Statistic	0.229884		
Anderson-Darling 5% Critical Value	0.722542		
Anderson-Darling 5% Gamma Test Result	AD GAMMA		Data follow gamma distribution at 5% significance level.
Kolmogrov-Smirnov Test Statistic	0.162253		
Kolmogrov-Smirnov 5% Critical Value	0.279728		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA		Data follow gamma distribution at 5% significance level
5% Gamma Test Result	GAMMA		Data follow gamma distribution at 5% significance level
95% Approximate Gamma UCL	0.002363		
95% Adjusted Gamma UCL	0.002519		
Lognormal Statistics			
Minimum of log data	-7.16912		
Maximum of log data	-5.843045		
Mean of log data	-6.425067		
Standard Deviation of log data	0.448004		
Variance of log data	0.200708		
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.955393		
Shapiro-Wilk 5% Critical Value	0.829		
5% Lognormality Test Result	LOGNORMAL		Data are lognormal at 5% significance level
MLE Mean	0.001791		
MLE Standard Deviation	0.000845		
MLE Coefficient of Variation	0.471453		
MLE Skewness	1.519146		
MLE Median	0.00162		
MLE 80% Quantile	0.002366		
MLE 90% Quantile	0.002882		
MLE 95% Quantile	0.003386		
MLE 99% Quantile	0.004594		
MVU Estimate of Median	0.001602		
MVU Estimate of Mean	0.00177		
MVU Estimate of Standard Deviation	0.000803		
MVU Estimate of SE of Mean	0.000267		
95% H-UCL	0.002547		
95% Chebyshev (MVUE) UCL	0.002936		
97.5% Chebyshev (MVUE) UCL	0.003441		
99% Chebyshev (MVUE) UCL	0.004432		
Non-parametric Statistics			
95% CLT UCL	0.002167		
95% Adjusted-CLT UCL	0.002192		
95% Modified-t UCL	0.002224		
95% Jackknife UCL	0.00222		
95% Chebyshev (Mean, Sd) UCL	0.002833		
97.5% Chebyshev (Mean, Sd) UCL	0.003296		
99% Chebyshev (Mean, Sd) UCL	0.004206		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	0.002136		
95% Bootstrap-t UCL	0.0023		
95% Hall's Bootstrap UCL	0.002223		
95% Percentile Bootstrap UCL	0.002163		
95% BCA Bootstrap UCL	0.002063		
Recommendations			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	0.00222		95% Student's-t UCL
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-supplemental\HHRA\Statistics\HH - June 2004\Fish stat - reach3.xls		
Variable:	Heptachlor epoxide		
Raw Statistics			
Number of Observations	9		
Number of Missing Data	0		
Number of Valid Observations	9		
Number of Distinct Observations	7		
Minimum	0.00026		
Maximum	0.0017		
Mean	0.000542		
Standard Deviation	0.00045		
Variance	2.03E-07		
Coefficient of Variation	0.830572		
Skewness	2.603672		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.627695		
Shapiro-Wilk 5% Critical Value	0.829		
5% Normality Test Result	NOT NORMAL		Data not normal at 5% significance level
95% Student's-t UCL	0.000821		
Gamma Statistics			
k hat	2.777785		
k star (bias corrected)	1.925931		
Theta hat	0.000195		
Theta star	0.000282		
nu hat	50.00013		
nu star	34.66675		
5% Approximate Chi Square Value	22.19575		
Adjusted Level of Significance	0.02308		
Adjusted Chi Square Value	20.11629		
Anderson-Darling Test Statistic	0.878155		
Anderson-Darling 5% Critical Value	0.72746		
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA		Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.265701		
Kolmogrov-Smirnov 5% Critical Value	0.281593		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA		Data follow gamma distribution at 5% significance level
5% Gamma Test Result	APPROX GAMMA		Data follow approximate gamma distribution at 5% significance level
95% Approximate Gamma UCL	0.000847		
95% Adjusted Gamma UCL	0.000934		
Lognormal Statistics			
Minimum of log data	-8.254829		
Maximum of log data	-6.377127		
Mean of log data	-7.710502		
Standard Deviation of log data	0.587375		
Variance of log data	0.345009		
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.828379		
Shapiro-Wilk 5% Critical Value	0.829		
5% Lognormality Test Result	NOT LOGNORMAL		Data not lognormal at 5% significance level
MLE Mean	0.000532		
MLE Standard Deviation	0.000342		
MLE Coefficient of Variation	0.641875		
MLE Skewness	2.190079		
MLE Median	0.000448		
MLE 80% Quantile	0.000736		
MLE 90% Quantile	0.000953		
MLE 95% Quantile	0.001178		
MLE 99% Quantile	0.001757		
MVU Estimate of Median	0.00044		
MVU Estimate of Mean	0.000521		
MVU Estimate of Standard Deviation	0.000313		
MVU Estimate of SE of Mean	0.000104		
95% H-UCL	0.000885		
95% Chebyshev (MVUE) UCL	0.000974		
97.5% Chebyshev (MVUE) UCL	0.00117		
99% Chebyshev (MVUE) UCL	0.001555		
Non-parametric Statistics			
95% CLT UCL	0.000789		
95% Adjusted-CLT UCL	0.000928		
95% Modified-t UCL	0.000843		
95% Jackknife UCL	0.000821		
95% Chebyshev (Mean, Sd) UCL	0.001197		
97.5% Chebyshev (Mean, Sd) UCL	0.00148		
99% Chebyshev (Mean, Sd) UCL	0.002036		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	0.000771		
95% Bootstrap-t UCL	0.001252		
95% Hall's Bootstrap UCL	0.001775		
95% Percentile Bootstrap UCL	0.000822		
95% BCA Bootstrap UCL	0.00076		
Recommendations			
Human Inspection Recommended?	NO		
Appropriate Distribution	GAMMA		
1st Recommended UCL	0.000847		95% Approximate Gamma UCL
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-supplemental\HHRA\Statistics\HH - June 2004\Fish stat - reach3.xls		
Variable:	Antimony		
Raw Statistics			
Number of Observations	9		
Number of Missing Data	0		
Number of Valid Observations	9		
Number of Distinct Observations	7		
Minimum	0.041		
Maximum	0.16		
Mean	0.070056		
Standard Deviation	0.040137		
Variance	0.001611		
Coefficient of Variation	0.572929		
Skewness	1.692695		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.739126		
Shapiro-Wilk 5% Critical Value	0.829		
5% Normality Test Result	NOT NORMAL		Data not normal at 5% significance level
95% Student's-t UCL	0.094934		
Gamma Statistics			
k hat	4.523409		
k star (bias corrected)	3.08968		
Theta hat	0.015487		
Theta star	0.022674		
nu hat	81.42137		
nu star	55.61424		
5% Approximate Chi Square Value	39.47286		
Adjusted Level of Significance	0.02308		
Adjusted Chi Square Value	36.62344		
Anderson-Darling Test Statistic	0.98371		
Anderson-Darling 5% Critical Value	0.723808		
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA		Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.364329		
Kolmogrov-Smirnov 5% Critical Value	0.280121		
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA		Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA		Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	0.098703		
95% Adjusted Gamma UCL	0.106382		
Lognormal Statistics			
Minimum of log data	-3.194183		
Maximum of log data	-1.832581		
Mean of log data	-2.773056		
Standard Deviation of log data	0.477807		
Variance of log data	0.228299		
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.802658		
Shapiro-Wilk 5% Critical Value	0.829		
5% Lognormality Test Result	NOT LOGNORMAL		Data not lognormal at 5% significance level
MLE Mean	0.070025		
MLE Standard Deviation	0.035462		
MLE Coefficient of Variation	0.50642		
MLE Skewness	1.649138		
MLE Median	0.062471		
MLE 80% Quantile	0.093545		
MLE 90% Quantile	0.115432		
MLE 95% Quantile	0.137097		
MLE 99% Quantile	0.18982		
MVU Estimate of Median	0.061682		
MVU Estimate of Mean	0.069073		
MVU Estimate of Standard Deviation	0.033489		
MVU Estimate of SE of Mean	0.011147		
95% H-UCL	0.102699		
95% Chebyshev (MVUE) UCL	0.11766		
97.5% Chebyshev (MVUE) UCL	0.138683		
99% Chebyshev (MVUE) UCL	0.17998		
Non-parametric Statistics			
95% CLT UCL	0.092062		
95% Adjusted-CLT UCL	0.100128		
95% Modified-t UCL	0.096192		
95% Jackknife UCL	0.094934		
95% Chebyshev (Mean, Sd) UCL	0.128373		
97.5% Chebyshev (Mean, Sd) UCL	0.153607		
99% Chebyshev (Mean, Sd) UCL	0.203174		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	0.091365		
95% Bootstrap-t UCL	0.117785		
95% Hall's Bootstrap UCL	0.09627		
95% Percentile Bootstrap UCL	0.093389		
95% BCA Bootstrap UCL	0.108056		
Recommendations			
Human Inspection Recommended?	YES		Users must select one of the recommended UCLS
Appropriate Distribution	NON-PARAMETRIC		
1st Recommended UCL	0.094934		95% Student's-t UCL
2nd Recommended UCL	0.096192		95% Modified-t UCL
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File		J:\NE\WELLSG&H\OU3-supplemental\HHRA\Statistics\HH - June 2004\Fish stat - reach3.xls	
Variable:		Copper	
Raw Statistics			
Number of Observations		9	
Number of Missing Data		0	
Number of Valid Observations		9	
Number of Distinct Observations		9	
Minimum		0.16	
Maximum		0.62	
Mean		0.375556	
Standard Deviation		0.16318	
Variance		0.026628	
Coefficient of Variation		0.434503	
Skewness		0.085407	
Too Few Distinct Observations?		NO	
Normal Statistics			
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.955906		
Shapiro-Wilk 5% Critical Value	0.829		
5% Normality Test Result	NORMAL		Data are normal at 5% significance level
95% Student's-t UCL	0.476703		
Gamma Statistics			
k hat	5.290965		
k star (bias corrected)	3.601384		
Theta hat	0.070981		
Theta star	0.104281		
nu hat	95.23736		
nu star	64.82491		
5% Approximate Chi Square Value	47.29659		
Adjusted Level of Significance	0.02308		
Adjusted Chi Square Value	44.15522		
Anderson-Darling Test Statistic	0.252226		
Anderson-Darling 5% Critical Value	0.722701		
Anderson-Darling 5% Gamma Test Result	AD GAMMA		Data follow gamma distribution at 5% significance level.
Kolmogrov-Smirnov Test Statistic	0.149753		
Kolmogrov-Smirnov 5% Critical Value	0.27981		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA		Data follow gamma distribution at 5% significance level
5% Gamma Test Result	GAMMA		Data follow gamma distribution at 5% significance level
95% Approximate Gamma UCL	0.514738		
95% Adjusted Gamma UCL	0.551359		
Lognormal Statistics			
Minimum of log data	-1.832581		
Maximum of log data	-0.478036		
Mean of log data	-1.076816		
Standard Deviation of log data	0.488719		
Variance of log data	0.238846		
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.926883		
Shapiro-Wilk 5% Critical Value	0.829		
5% Lognormality Test Result	LOGNORMAL		Data are lognormal at 5% significance level
MLE Mean	0.383892		
MLE Standard Deviation	0.199396		
MLE Coefficient of Variation	0.519406		
MLE Skewness	1.698346		
MLE Median	0.340679		
MLE 80% Quantile	0.514866		
MLE 90% Quantile	0.638386		
MLE 95% Quantile	0.761189		
MLE 99% Quantile	1.061777		
MVU Estimate of Median	0.336182		
MVU Estimate of Mean	0.378415		
MVU Estimate of Standard Deviation	0.187779		
MVU Estimate of SE of Mean	0.062494		
95% H-UCL	0.56963		
95% Chebyshev (MVUE) UCL	0.650819		
97.5% Chebyshev (MVUE) UCL	0.768688		
99% Chebyshev (MVUE) UCL	1.000219		
Non-parametric Statistics			
95% CLT UCL	0.465025		
95% Adjusted-CLT UCL	0.466679		
95% Modified-t UCL	0.476961		
95% Jackknife UCL	0.476703		
95% Chebyshev (Mean, Sd) UCL	0.612651		
97.5% Chebyshev (Mean, Sd) UCL	0.715242		
99% Chebyshev (Mean, Sd) UCL	0.916763		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	0.459662		
95% Bootstrap-t UCL	0.483202		
95% Hall's Bootstrap UCL	0.469602		
95% Percentile Bootstrap UCL	0.46		
95% BCA Bootstrap UCL	0.492222		
Recommendations			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	0.476703		95% Student's-t UCL
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File		J:\NE\WELLSG&H\OU3-supplemental\HHRA\Statistics\HH - June 2004\Fish stat - reach3.xls	
Variable:		Lead	
Raw Statistics			
Number of Observations		9	
Number of Missing Data		0	
Number of Valid Observations		9	
Number of Distinct Observations		9	
Minimum		0.0255	
Maximum		0.065	
Mean		0.039222	
Standard Deviation		0.014342	
Variance		0.000206	
Coefficient of Variation		0.365661	
Skewness		1.302356	
Too Few Distinct Observations?		NO	
Normal Statistics			
Lilliefors Test Statistic		N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value		N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic		0.794245	
Shapiro-Wilk 5% Critical Value		0.829	
5% Normality Test Result		NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL		0.048112	
Gamma Statistics			
k hat		9.916337	
k star (bias corrected)		6.684966	
Theta hat		0.003955	
Theta star		0.005867	
nu hat		178.4941	
nu star		120.3294	
5% Approximate Chi Square Value		95.99424	
Adjusted Level of Significance		0.02308	
Adjusted Chi Square Value		91.41605	
Anderson-Darling Test Statistic		0.705036	
Anderson-Darling 5% Critical Value		0.721767	
Anderson-Darling 5% Gamma Test Result		AD GAMMA	Data follow gamma distribution at 5% significance level.
Kolmogrov-Smirnov Test Statistic		0.25867	
Kolmogrov-Smirnov 5% Critical Value		0.279329	
Kolmogrov-Smirnov 5% Gamma Test Result		KS GAMMA	Data follow gamma distribution at 5% significance level
5% Gamma Test Result		GAMMA	Data follow gamma distribution at 5% significance level
95% Approximate Gamma UCL		0.049165	
95% Adjusted Gamma UCL		0.051628	
Lognormal Statistics			
Minimum of log data		-3.669077	
Maximum of log data		-2.733368	
Mean of log data		-3.28978	
Standard Deviation of log data		0.327378	
Variance of log data		0.107176	
Lilliefors Test Statistic		N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value		N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic		0.868804	
Shapiro-Wilk 5% Critical Value		0.829	
5% Lognormality Test Result		LOGNORMAL	Data are lognormal at 5% significance level
MLE Mean		0.039313	
MLE Standard Deviation		0.013223	
MLE Coefficient of Variation		0.336348	
MLE Skewness		1.047097	
MLE Median		0.037262	
MLE 80% Quantile		0.049137	
MLE 90% Quantile		0.05675	
MLE 95% Quantile		0.063848	
MLE 99% Quantile		0.079795	
MVU Estimate of Median		0.037041	
MVU Estimate of Mean		0.039071	
MVU Estimate of Standard Deviation		0.012881	
MVU Estimate of SE of Mean		0.004292	
95% H-UCL		0.049895	
95% Chebyshev (MVUE) UCL		0.05778	
97.5% Chebyshev (MVUE) UCL		0.065876	
99% Chebyshev (MVUE) UCL		0.081778	
Non-parametric Statistics			
95% CLT UCL		0.047086	
95% Adjusted-CLT UCL		0.049303	
95% Modified-t UCL		0.048458	
95% Jackknife UCL		0.048112	
95% Chebyshev (Mean, Sd) UCL		0.060061	
97.5% Chebyshev (Mean, Sd) UCL		0.069078	
99% Chebyshev (Mean, Sd) UCL		0.086789	
Bootstrap Statistics			
Number of Bootstrap Runs		2000	
95% Standard Bootstrap UCL		0.04666	
95% Bootstrap-t UCL		0.062619	
95% Hall's Bootstrap UCL		0.108255	
95% Percentile Bootstrap UCL		0.047278	
95% BCA Bootstrap UCL		0.046	
Recommendations			
Human Inspection Recommended?		NO	
Appropriate Distribution		GAMMA	
1st Recommended UCL		0.049165	95% Approximate Gamma UCL
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value		NO	
Recommendation Warning!		NONE	
Alternative UCL		NONE	

Data File	J:\NE\WELLSG&H\OU3-supplemental\HHRA\Statistics\HH - June 2004\Fish stat - reach3.xls		
Variable:	Mercury		
Raw Statistics			
Number of Observations	9		
Number of Missing Data	0		
Number of Valid Observations	9		
Number of Distinct Observations	9		
Minimum	0.023		
Maximum	0.58		
Mean	0.100056		
Standard Deviation	0.18024		
Variance	0.032487		
Coefficient of Variation	1.801401		
Skewness	2.983223		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.441991		
Shapiro-Wilk 5% Critical Value	0.829		
5% Normality Test Result	NOT NORMAL		Data not normal at 5% significance level
95% Student's-t UCL	0.211777		
Gamma Statistics			
k hat	0.902533		
k star (bias corrected)	0.675763		
Theta hat	0.110861		
Theta star	0.148063		
nu hat	16.24559		
nu star	12.16373		
5% Approximate Chi Square Value	5.334047		
Adjusted Level of Significance	0.02308		
Adjusted Chi Square Value	4.41869		
Anderson-Darling Test Statistic	1.954365		
Anderson-Darling 5% Critical Value	0.746585		
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA		Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.442705		
Kolmogrov-Smirnov 5% Critical Value	0.287828		
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA		Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA		Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	0.228166		
95% Adjusted Gamma UCL	0.275432		
Lognormal Statistics			
Minimum of log data	-3.772261		
Maximum of log data	-0.544727		
Mean of log data	-2.949547		
Standard Deviation of log data	0.939877		
Variance of log data	0.883369		
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.663242		
Shapiro-Wilk 5% Critical Value	0.829		
5% Lognormality Test Result	NOT LOGNORMAL		Data not lognormal at 5% significance level
MLE Mean	0.081442		
MLE Standard Deviation	0.097017		
MLE Coefficient of Variation	1.191233		
MLE Skewness	5.2641		
MLE Median	0.052363		
MLE 80% Quantile	0.115863		
MLE 90% Quantile	0.175204		
MLE 95% Quantile	0.245748		
MLE 99% Quantile	0.466082		
MVU Estimate of Median	0.049844		
MVU Estimate of Mean	0.076448		
MVU Estimate of Standard Deviation	0.075599		
MVU Estimate of SE of Mean	0.024768		
95% H-UCL	0.233042		
95% Chebyshev (MVUE) UCL	0.184408		
97.5% Chebyshev (MVUE) UCL	0.231123		
99% Chebyshev (MVUE) UCL	0.322884		
Non-parametric Statistics			
95% CLT UCL	0.198878		
95% Adjusted-CLT UCL	0.262716		
95% Modified-t UCL	0.221735		
95% Jackknife UCL	0.211777		
95% Chebyshev (Mean, Sd) UCL	0.361938		
97.5% Chebyshev (Mean, Sd) UCL	0.475255		
99% Chebyshev (Mean, Sd) UCL	0.697845		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	0.191989		
95% Bootstrap-t UCL	1.58059		
95% Hall's Bootstrap UCL	1.171515		
95% Percentile Bootstrap UCL	0.216111		
95% BCA Bootstrap UCL	0.2805		
Recommendations			
Human Inspection Recommended?	YES		
Appropriate Distribution	NON-PARAMETRIC		
1st Recommended UCL	0.361938		95% Chebyshev (Mean, Sd) UCL
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	YES		Recommended UCL exceeds the maximum data value
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-supplemental\HHRA\Statistics\HH - June 2004\Fish stat - reach3.xls	
Variable:	Selenium	
Raw Statistics		
Number of Observations	9	
Number of Missing Data	0	
Number of Valid Observations	9	
Number of Distinct Observations	8	
Minimum	0.27	
Maximum	0.78	
Mean	0.468889	
Standard Deviation	0.168259	
Variance	0.028311	
Coefficient of Variation	0.358846	
Skewness	0.828469	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.913681	
Shapiro-Wilk 5% Critical Value	0.829	
5% Normality Test Result	NORMAL	Data are normal at 5% significance level
95% Student's-t UCL	0.573184	
Gamma Statistics		
k hat	9.376162	
k star (bias corrected)	6.324848	
Theta hat	0.050009	
Theta star	0.074134	
nu hat	168.7709	
nu star	113.8473	
5% Approximate Chi Square Value	90.21045	
Adjusted Level of Significance	0.02308	
Adjusted Chi Square Value	85.77987	
Anderson-Darling Test Statistic	0.333103	
Anderson-Darling 5% Critical Value	0.721876	
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.
Kolmogrov-Smirnov Test Statistic	0.224345	
Kolmogrov-Smirnov 5% Critical Value	0.279385	
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level
95% Approximate Gamma UCL	0.591747	
95% Adjusted Gamma UCL	0.622311	
Lognormal Statistics		
Minimum of log data	-1.309333	
Maximum of log data	-0.248461	
Mean of log data	-0.811663	
Standard Deviation of log data	0.345721	
Variance of log data	0.119523	
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.955992	
Shapiro-Wilk 5% Critical Value	0.829	
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level
MLE Mean	0.471469	
MLE Standard Deviation	0.167991	
MLE Coefficient of Variation	0.356313	
MLE Skewness	1.114177	
MLE Median	0.444119	
MLE 80% Quantile	0.594801	
MLE 90% Quantile	0.692525	
MLE 95% Quantile	0.784309	
MLE 99% Quantile	0.992512	
MVU Estimate of Median	0.441178	
MVU Estimate of Mean	0.468218	
MVU Estimate of Standard Deviation	0.163139	
MVU Estimate of SE of Mean	0.054357	
95% H-UCL	0.608106	
95% Chebyshev (MVUE) UCL	0.705155	
97.5% Chebyshev (MVUE) UCL	0.807678	
99% Chebyshev (MVUE) UCL	1.009064	
Non-parametric Statistics		
95% CLT UCL	0.561143	
95% Adjusted-CLT UCL	0.577693	
95% Modified-t UCL	0.575766	
95% Jackknife UCL	0.573184	
95% Chebyshev (Mean, Sd) UCL	0.713364	
97.5% Chebyshev (Mean, Sd) UCL	0.819148	
99% Chebyshev (Mean, Sd) UCL	1.026941	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	0.556518	
95% Bootstrap-t UCL	0.605304	
95% Hall's Bootstrap UCL	0.578706	
95% Percentile Bootstrap UCL	0.556667	
95% BCA Bootstrap UCL	0.55	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	NORMAL	
1st Recommended UCL	0.573184	95% Student's-t UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value	NO	
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Data File		J:\NE\WELLSG&H\OU3-supplemental\HHRA\Statistics\HH - June 2004\Fish stat - reach45.xls	
Variable:		4,4'-DDD	
Raw Statistics			
Number of Observations		10	
Number of Missing Data		0	
Number of Valid Observations		10	
Number of Distinct Observations		8	
Minimum		0.0021	
Maximum		0.0205	
Mean		0.00623	
Standard Deviation		0.006923	
Variance		4.79E-05	
Coefficient of Variation		1.111306	
Skewness		1.766551	
Too Few Distinct Observations?		NO	
Normal Statistics			
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.60799		
Shapiro-Wilk 5% Critical Value	0.842		
5% Normality Test Result	NOT NORMAL		Data not normal at 5% significance level
95% Student's-t UCL	0.010243		
Gamma Statistics			
k hat	1.432076		
k star (bias corrected)	1.06912		
Theta hat	0.00435		
Theta star	0.005827		
nu hat	28.64151		
nu star	21.38239		
5% Approximate Chi Square Value	11.87485		
Adjusted Level of Significance	0.0267		
Adjusted Chi Square Value	10.66289		
Anderson-Darling Test Statistic	1.626042		
Anderson-Darling 5% Critical Value	0.740458		
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA		Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.342751		
Kolmogrov-Smirnov 5% Critical Value	0.271477		
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA		Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA		Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	0.011218		
95% Adjusted Gamma UCL	0.012493		
Lognormal Statistics			
Minimum of log data	-6.165818		
Maximum of log data	-3.88733		
Mean of log data	-5.466498		
Standard Deviation of log data	0.826865		
Variance of log data	0.683706		
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.724125		
Shapiro-Wilk 5% Critical Value	0.842		
5% Lognormality Test Result	NOT LOGNORMAL		Data not lognormal at 5% significance level
MLE Mean	0.005948		
MLE Standard Deviation	0.005892		
MLE Coefficient of Variation	0.990559		
MLE Skewness	3.943619		
MLE Median	0.004226		
MLE 80% Quantile	0.008499		
MLE 90% Quantile	0.012229		
MLE 95% Quantile	0.016469		
MLE 99% Quantile	0.02892		
MVU Estimate of Median	0.004084		
MVU Estimate of Mean	0.005702		
MVU Estimate of Standard Deviation	0.004959		
MVU Estimate of SE of Mean	0.001549		
95% H-UCL	0.012729		
95% Chebyshev (MVUE) UCL	0.012455		
97.5% Chebyshev (MVUE) UCL	0.015377		
99% Chebyshev (MVUE) UCL	0.021117		
Non-parametric Statistics			
95% CLT UCL	0.009831		
95% Adjusted-CLT UCL	0.011138		
95% Modified-t UCL	0.010447		
95% Jackknife UCL	0.010243		
95% Chebyshev (Mean, Sd) UCL	0.015773		
97.5% Chebyshev (Mean, Sd) UCL	0.019903		
99% Chebyshev (Mean, Sd) UCL	0.028014		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	0.009678		
95% Bootstrap-t UCL	0.037596		
95% Hall's Bootstrap UCL	0.035971		
95% Percentile Bootstrap UCL	0.009825		
95% BCA Bootstrap UCL	0.009495		
Recommendations			
Human Inspection Recommended?	YES		
Appropriate Distribution	NON-PARAMETRIC		
1st Recommended UCL	0.015773		95% Chebyshev (Mean, Sd) UCL
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	YES		Recommended UCL exceeds the maximum data value
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-supplemental\HHRA\Statistics\HH - June 2004\Fish stat - reach45.xls		
Variable:	4,4'-DDE		
Raw Statistics			
Number of Observations	10		
Number of Missing Data	0		
Number of Valid Observations	10		
Number of Distinct Observations	10		
Minimum	0.0057		
Maximum	0.12		
Mean	0.03038		
Standard Deviation	0.040297		
Variance	0.001624		
Coefficient of Variation	1.326424		
Skewness	1.877797		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.611473		
Shapiro-Wilk 5% Critical Value	0.842		
5% Normality Test Result	NOT NORMAL		Data not normal at 5% significance level
95% Student's-t UCL	0.053739		
Gamma Statistics			
k hat	1.027994		
k star (bias corrected)	0.786262		
Theta hat	0.029553		
Theta star	0.038639		
nu hat	20.55987		
nu star	15.72525		
5% Approximate Chi Square Value	7.767458		
Adjusted Level of Significance	0.0267		
Adjusted Chi Square Value	6.817725		
Anderson-Darling Test Statistic	1.453358		
Anderson-Darling 5% Critical Value	0.747764		
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA		Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.376195		
Kolmogrov-Smirnov 5% Critical Value	0.273603		
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA		Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA		Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	0.061504		
95% Adjusted Gamma UCL	0.070072		
Lognormal Statistics			
Minimum of log data	-5.167289		
Maximum of log data	-2.120264		
Mean of log data	-4.053667		
Standard Deviation of log data	0.993707		
Variance of log data	0.987453		
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.793664		
Shapiro-Wilk 5% Critical Value	0.842		
5% Lognormality Test Result	NOT LOGNORMAL		Data not lognormal at 5% significance level
MLE Mean	0.028441		
MLE Standard Deviation	0.036911		
MLE Coefficient of Variation	1.29784		
MLE Skewness	6.079588		
MLE Median	0.017359		
MLE 80% Quantile	0.040196		
MLE 90% Quantile	0.06224		
MLE 95% Quantile	0.089009		
MLE 99% Quantile	0.175116		
MVU Estimate of Median	0.016519		
MVU Estimate of Mean	0.026628		
MVU Estimate of Standard Deviation	0.028387		
MVU Estimate of SE of Mean	0.008771		
95% H-UCL	0.079151		
95% Chebyshev (MVUE) UCL	0.064861		
97.5% Chebyshev (MVUE) UCL	0.081405		
99% Chebyshev (MVUE) UCL	0.113902		
Non-parametric Statistics			
95% CLT UCL	0.05134		
95% Adjusted-CLT UCL	0.059426		
95% Modified-t UCL	0.055		
95% Jackknife UCL	0.053739		
95% Chebyshev (Mean, Sd) UCL	0.085925		
97.5% Chebyshev (Mean, Sd) UCL	0.10996		
99% Chebyshev (Mean, Sd) UCL	0.157171		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	0.049843		
95% Bootstrap-t UCL	0.265342		
95% Hall's Bootstrap UCL	0.235422		
95% Percentile Bootstrap UCL	0.05174		
95% BCA Bootstrap UCL	0.04886		
Recommendations			
Human Inspection Recommended?	YES		
Appropriate Distribution	NON-PARAMETRIC		
1st Recommended UCL	0.085925		95% Chebyshev (Mean, Sd) UCL
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	YES		Recommended UCL exceeds the maximum data value
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File		J:\NE\WELLSG&H\OU3-supplemental\HHRA\Statistics\HH - June 2004\Fish stat - reach45.xls	
Variable:		4,4'-DDT	
Raw Statistics			
Number of Observations		10	
Number of Missing Data		0	
Number of Valid Observations		10	
Number of Distinct Observations		9	
Minimum		0.00064	
Maximum		0.0185	
Mean		0.003898	
Standard Deviation		0.005491	
Variance		3.01E-05	
Coefficient of Variation		1.408644	
Skewness		2.525668	
Too Few Distinct Observations?		NO	
Normal Statistics			
Lilliefors Test Statistic		N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value		N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic		0.631816	
Shapiro-Wilk 5% Critical Value		0.842	
5% Normality Test Result		NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL		0.007081	
Gamma Statistics			
k hat		0.972947	
k star (bias corrected)		0.74773	
Theta hat		0.004006	
Theta star		0.005213	
nu hat		19.45895	
nu star		14.9546	
5% Approximate Chi Square Value		7.22879	
Adjusted Level of Significance		0.0267	
Adjusted Chi Square Value		6.318029	
Anderson-Darling Test Statistic		0.760662	
Anderson-Darling 5% Critical Value		0.749211	
Anderson-Darling 5% Gamma Test Result		NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic		0.24105	
Kolmogrov-Smirnov 5% Critical Value		0.273991	
Kolmogrov-Smirnov 5% Gamma Test Result		KS GAMMA	Data follow gamma distribution at 5% significance level
5% Gamma Test Result		APPROX GAMMA	Data follow approximate gamma distribution at 5% significance level
95% Approximate Gamma UCL		0.008064	
95% Adjusted Gamma UCL		0.009226	
Lognormal Statistics			
Minimum of log data		-7.354042	
Maximum of log data		-3.989985	
Mean of log data		-6.142484	
Standard Deviation of log data		1.055097	
Variance of log data		1.113229	
Lilliefors Test Statistic		N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value		N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic		0.906929	
Shapiro-Wilk 5% Critical Value		0.842	
5% Lognormality Test Result		LOGNORMAL	Data are lognormal at 5% significance level
MLE Mean		0.00375	
MLE Standard Deviation		0.005362	
MLE Coefficient of Variation		1.429746	
MLE Skewness		7.211887	
MLE Median		0.00215	
MLE 80% Quantile		0.005243	
MLE 90% Quantile		0.00834	
MLE 95% Quantile		0.012194	
MLE 99% Quantile		0.025014	
MVU Estimate of Median		0.002033	
MVU Estimate of Mean		0.003475	
MVU Estimate of Standard Deviation		0.003964	
MVU Estimate of SE of Mean		0.001218	
95% H-UCL		0.011627	
95% Chebyshev (MVUE) UCL		0.008786	
97.5% Chebyshev (MVUE) UCL		0.011084	
99% Chebyshev (MVUE) UCL		0.015598	
Non-parametric Statistics			
95% CLT UCL		0.006754	
95% Adjusted-CLT UCL		0.008236	
95% Modified-t UCL		0.007312	
95% Jackknife UCL		0.007081	
95% Chebyshev (Mean, Sd) UCL		0.011467	
97.5% Chebyshev (Mean, Sd) UCL		0.014742	
99% Chebyshev (Mean, Sd) UCL		0.021175	
Bootstrap Statistics			
Number of Bootstrap Runs		2000	
95% Standard Bootstrap UCL		0.006648	
95% Bootstrap-t UCL		0.01585	
95% Hall's Bootstrap UCL		0.018609	
95% Percentile Bootstrap UCL		0.00691	
95% BCA Bootstrap UCL		0.006492	
Recommendations			
Human Inspection Recommended?		NO	
Appropriate Distribution		GAMMA	
1st Recommended UCL		0.008064	95% Approximate Gamma UCL
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value		NO	
Recommendation Warning!		NONE	
Alternative UCL		NONE	

Data File	J:\NE\WELLSG&H\OU3-supplemental\HHRA\Statistics\HH - June 2004\Fish stat - reach45.xls		
Variable:	Aldrin		
Raw Statistics			
Number of Observations	10		
Number of Missing Data	0		
Number of Valid Observations	10		
Number of Distinct Observations	7		
Minimum	0.00026		
Maximum	0.00255		
Mean	0.000646		
Standard Deviation	0.000687		
Variance	4.71E-07		
Coefficient of Variation	1.062856		
Skewness	2.873866		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.566253		
Shapiro-Wilk 5% Critical Value	0.842		
5% Normality Test Result	NOT NORMAL		Data not normal at 5% significance level
95% Student's-t UCL	0.001044		
Gamma Statistics			
k hat	1.953556		
k star (bias corrected)	1.434156		
Theta hat	0.000331		
Theta star	0.00045		
nu hat	39.07111		
nu star	28.68311		
5% Approximate Chi Square Value	17.45883		
Adjusted Level of Significance	0.0267		
Adjusted Chi Square Value	15.95377		
Anderson-Darling Test Statistic	1.086262		
Anderson-Darling 5% Critical Value	0.735919		
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA		Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.309422		
Kolmogrov-Smirnov 5% Critical Value	0.269932		
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA		Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA		Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	0.001061		
95% Adjusted Gamma UCL	0.001161		
Lognormal Statistics			
Minimum of log data	-8.254829		
Maximum of log data	-5.971662		
Mean of log data	-7.621976		
Standard Deviation of log data	0.682558		
Variance of log data	0.465886		
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.816177		
Shapiro-Wilk 5% Critical Value	0.842		
5% Lognormality Test Result	NOT LOGNORMAL		Data not lognormal at 5% significance level
MLE Mean	0.000618		
MLE Standard Deviation	0.000476		
MLE Coefficient of Variation	0.770341		
MLE Skewness	2.768162		
MLE Median	0.00049		
MLE 80% Quantile	0.000872		
MLE 90% Quantile	0.001177		
MLE 95% Quantile	0.001505		
MLE 99% Quantile	0.002395		
MVU Estimate of Median	0.000478		
MVU Estimate of Mean	0.000601		
MVU Estimate of Standard Deviation	0.000425		
MVU Estimate of SE of Mean	0.000134		
95% H-UCL	0.001092		
95% Chebyshev (MVUE) UCL	0.001184		
97.5% Chebyshev (MVUE) UCL	0.001436		
99% Chebyshev (MVUE) UCL	0.001932		
Non-parametric Statistics			
95% CLT UCL	0.001003		
95% Adjusted-CLT UCL	0.001214		
95% Modified-t UCL	0.001077		
95% Jackknife UCL	0.001044		
95% Chebyshev (Mean, Sd) UCL	0.001592		
97.5% Chebyshev (Mean, Sd) UCL	0.002002		
99% Chebyshev (Mean, Sd) UCL	0.002806		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	0.000997		
95% Bootstrap-t UCL	0.002156		
95% Hall's Bootstrap UCL	0.002742		
95% Percentile Bootstrap UCL	0.001053		
95% BCA Bootstrap UCL	0.000967		
Recommendations			
Human Inspection Recommended?	YES		
Appropriate Distribution	NON-PARAMETRIC		
1st Recommended UCL	0.001592		95% Chebyshev (Mean, Sd) UCL
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	YES		Recommended UCL exceeds the maximum data value
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-supplemental\HHRA\Statistics\HH - June 2004\Fish stat - reach45.xls		
Variable:	alpha-Chlordane		
Raw Statistics			
Number of Observations	10		
Number of Missing Data	0		
Number of Valid Observations	10		
Number of Distinct Observations	8		
Minimum	0.00145		
Maximum	0.0042		
Mean	0.00202		
Standard Deviation	0.00089		
Variance	7.91E-07		
Coefficient of Variation	0.44035		
Skewness	2.09916		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.662056		
Shapiro-Wilk 5% Critical Value	0.842		
5% Normality Test Result	NOT NORMAL		Data not normal at 5% significance level
95% Student's-t UCL	0.002536		
Gamma Statistics			
k hat	7.946992		
k star (bias corrected)	5.629561		
Theta hat	0.000254		
Theta star	0.000359		
nu hat	158.9398		
nu star	112.5912		
5% Approximate Chi Square Value	89.092		
Adjusted Level of Significance	0.0267		
Adjusted Chi Square Value	85.4643		
Anderson-Darling Test Statistic	1.391269		
Anderson-Darling 5% Critical Value	0.726863		
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA		Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.320631		
Kolmogrov-Smirnov 5% Critical Value	0.266958		
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA		Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA		Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	0.002553		
95% Adjusted Gamma UCL	0.002661		
Lognormal Statistics			
Minimum of log data	-6.536192		
Maximum of log data	-5.472671		
Mean of log data	-6.268892		
Standard Deviation of log data	0.349549		
Variance of log data	0.122185		
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.730833		
Shapiro-Wilk 5% Critical Value	0.842		
5% Lognormality Test Result	NOT LOGNORMAL		Data not lognormal at 5% significance level
MLE Mean	0.002014		
MLE Standard Deviation	0.000726		
MLE Coefficient of Variation	0.360504		
MLE Skewness	1.128363		
MLE Median	0.001894		
MLE 80% Quantile	0.002545		
MLE 90% Quantile	0.002968		
MLE 95% Quantile	0.003366		
MLE 99% Quantile	0.004271		
MVU Estimate of Median	0.001883		
MVU Estimate of Mean	0.002001		
MVU Estimate of Standard Deviation	0.000706		
MVU Estimate of SE of Mean	0.000223		
95% H-UCL	0.002551		
95% Chebyshev (MVUE) UCL	0.002974		
97.5% Chebyshev (MVUE) UCL	0.003395		
99% Chebyshev (MVUE) UCL	0.004222		
Non-parametric Statistics			
95% CLT UCL	0.002483		
95% Adjusted-CLT UCL	0.002682		
95% Modified-t UCL	0.002567		
95% Jackknife UCL	0.002536		
95% Chebyshev (Mean, Sd) UCL	0.003246		
97.5% Chebyshev (Mean, Sd) UCL	0.003777		
99% Chebyshev (Mean, Sd) UCL	0.004819		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	0.002463		
95% Bootstrap-t UCL	0.004579		
95% Hall's Bootstrap UCL	0.004892		
95% Percentile Bootstrap UCL	0.002475		
95% BCA Bootstrap UCL	0.00242		
Recommendations			
Human Inspection Recommended?	YES		Users must select one of the recommended UCLS
Appropriate Distribution	NON-PARAMETRIC		
1st Recommended UCL	0.002536		95% Student's-t UCL
2nd Recommended UCL	0.002567		95% Modified-t UCL
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File		J:\NE\WELLSG&H\OU3-supplemental\HHRA\Statistics\HH - June 2004\Fish stat - reach45.xls	
Variable:		Aroclor-1254	
Raw Statistics			
Number of Observations		10	
Number of Missing Data		0	
Number of Valid Observations		10	
Number of Distinct Observations		10	
Minimum		0.017	
Maximum		0.14	
Mean		0.0504	
Standard Deviation		0.040454	
Variance		0.001636	
Coefficient of Variation		0.80265	
Skewness		1.709847	
Too Few Distinct Observations?		NO	
Normal Statistics			
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic		0.728657	
Shapiro-Wilk 5% Critical Value		0.842	
5% Normality Test Result	NOT NORMAL		Data not normal at 5% significance level
95% Student's-t UCL		0.07385	
Gamma Statistics			
k hat		2.421175	
k star (bias corrected)		1.761489	
Theta hat		0.020816	
Theta star		0.028612	
nu hat		48.42349	
nu star		35.22978	
5% Approximate Chi Square Value		22.64729	
Adjusted Level of Significance		0.0267	
Adjusted Chi Square Value		20.90911	
Anderson-Darling Test Statistic		0.921358	
Anderson-Darling 5% Critical Value		0.734148	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA		Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic		0.293508	
Kolmogrov-Smirnov 5% Critical Value		0.269237	
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA		Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA		Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL		0.078401	
95% Adjusted Gamma UCL		0.084919	
Lognormal Statistics			
Minimum of log data		-4.074542	
Maximum of log data		-1.966113	
Mean of log data		-3.208266	
Standard Deviation of log data		0.654499	
Variance of log data		0.428369	
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic		0.873089	
Shapiro-Wilk 5% Critical Value		0.842	
5% Lognormality Test Result	LOGNORMAL		Data are lognormal at 5% significance level
MLE Mean		0.050083	
MLE Standard Deviation		0.036624	
MLE Coefficient of Variation		0.731268	
MLE Skewness		2.584852	
MLE Median		0.040427	
MLE 80% Quantile		0.070284	
MLE 90% Quantile		0.09374	
MLE 95% Quantile		0.118646	
MLE 99% Quantile		0.185278	
MVU Estimate of Median		0.039568	
MVU Estimate of Mean		0.048862	
MVU Estimate of Standard Deviation		0.033048	
MVU Estimate of SE of Mean		0.010396	
95% H-UCL		0.085572	
95% Chebyshev (MVUE) UCL		0.094176	
97.5% Chebyshev (MVUE) UCL		0.113784	
99% Chebyshev (MVUE) UCL		0.152299	
Non-parametric Statistics			
95% CLT UCL		0.071442	
95% Adjusted-CLT UCL		0.078833	
95% Modified-t UCL		0.075003	
95% Jackknife UCL		0.07385	
95% Chebyshev (Mean, Sd) UCL		0.106161	
97.5% Chebyshev (Mean, Sd) UCL		0.130289	
99% Chebyshev (Mean, Sd) UCL		0.177684	
Bootstrap Statistics			
Number of Bootstrap Runs		2000	
95% Standard Bootstrap UCL		0.070425	
95% Bootstrap-t UCL		0.125868	
95% Hall's Bootstrap UCL		0.17845	
95% Percentile Bootstrap UCL		0.0712	
95% BCA Bootstrap UCL		0.0682	
Recommendations			
Human Inspection Recommended?	NO		
Appropriate Distribution	LOGNORMAL		
1st Recommended UCL	0.085572	95% H-UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File		J:\NE\WELLSG&H\OU3-supplemental\HHRA\Statistics\HH - June 2004\Fish stat - reach45.xls	
Variable:		Aroclor-1260	
Raw Statistics			
Number of Observations		10	
Number of Missing Data		0	
Number of Valid Observations		10	
Number of Distinct Observations		9	
Minimum		0.015	
Maximum		0.315	
Mean		0.0641	
Standard Deviation		0.090103	
Variance		0.008119	
Coefficient of Variation		1.405662	
Skewness		2.932042	
Too Few Distinct Observations?		NO	
Normal Statistics			
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic		0.523789	
Shapiro-Wilk 5% Critical Value		0.842	
5% Normality Test Result	NOT NORMAL		Data not normal at 5% significance level
95% Student's-t UCL		0.116331	
Gamma Statistics			
k hat		1.260446	
k star (bias corrected)		0.948979	
Theta hat		0.050855	
Theta star		0.067546	
nu hat		25.20891	
nu star		18.97957	
5% Approximate Chi Square Value		10.10103	
Adjusted Level of Significance		0.0267	
Adjusted Chi Square Value		8.995842	
Anderson-Darling Test Statistic		1.395902	
Anderson-Darling 5% Critical Value		0.743561	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA		Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic		0.362689	
Kolmogrov-Smirnov 5% Critical Value		0.27238	
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA		Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA		Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL		0.120442	
95% Adjusted Gamma UCL		0.135239	
Lognormal Statistics			
Minimum of log data		-4.199705	
Maximum of log data		-1.155183	
Mean of log data		-3.193795	
Standard Deviation of log data		0.837472	
Variance of log data		0.701359	
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic		0.80751	
Shapiro-Wilk 5% Critical Value		0.842	
5% Lognormality Test Result	NOT LOGNORMAL		Data not lognormal at 5% significance level
MLE Mean		0.058244	
MLE Standard Deviation		0.058722	
MLE Coefficient of Variation		1.008212	
MLE Skewness		4.049476	
MLE Median		0.041016	
MLE 80% Quantile		0.083231	
MLE 90% Quantile		0.120315	
MLE 95% Quantile		0.16265	
MLE 99% Quantile		0.287701	
MVU Estimate of Median		0.039598	
MVU Estimate of Mean		0.05576	
MVU Estimate of Standard Deviation		0.049179	
MVU Estimate of SE of Mean		0.015354	
95% H-UCL		0.126568	
95% Chebyshev (MVUE) UCL		0.122686	
97.5% Chebyshev (MVUE) UCL		0.151644	
99% Chebyshev (MVUE) UCL		0.208528	
Non-parametric Statistics			
95% CLT UCL		0.110967	
95% Adjusted-CLT UCL		0.139196	
95% Modified-t UCL		0.120734	
95% Jackknife UCL		0.116331	
95% Chebyshev (Mean, Sd) UCL		0.188298	
97.5% Chebyshev (Mean, Sd) UCL		0.242039	
99% Chebyshev (Mean, Sd) UCL		0.347602	
Bootstrap Statistics			
Number of Bootstrap Runs		2000	
95% Standard Bootstrap UCL		0.10897	
95% Bootstrap-t UCL		0.504531	
95% Hall's Bootstrap UCL		0.416574	
95% Percentile Bootstrap UCL		0.1155	
95% BCA Bootstrap UCL		0.1153	
Recommendations			
Human Inspection Recommended?	YES		
Appropriate Distribution	NON-PARAMETRIC		
1st Recommended UCL	0.188298		95% Chebyshev (Mean, Sd) UCL
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	YES		Recommended UCL exceeds the maximum data value
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-supplemental\HHRA\Statistics\HH - June 2004\Fish stat - reach45.xls		
Variable:	Dieldrin		
Raw Statistics			
Number of Observations	10		
Number of Missing Data	0		
Number of Valid Observations	10		
Number of Distinct Observations	9		
Minimum	0.0007		
Maximum	0.0049		
Mean	0.001475		
Standard Deviation	0.001234		
Variance	1.52E-06		
Coefficient of Variation	0.836618		
Skewness	2.878304		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.575746		
Shapiro-Wilk 5% Critical Value	0.842		
5% Normality Test Result	NOT NORMAL		Data not normal at 5% significance level
95% Student's-t UCL	0.00219		
Gamma Statistics			
k hat	2.977284		
k star (bias corrected)	2.150766		
Theta hat	0.000495		
Theta star	0.000686		
nu hat	59.54569		
nu star	43.01531		
5% Approximate Chi Square Value	28.97482		
Adjusted Level of Significance	0.0267		
Adjusted Chi Square Value	26.98558		
Anderson-Darling Test Statistic	1.125829		
Anderson-Darling 5% Critical Value	0.732257		
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA		Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.311649		
Kolmogrov-Smirnov 5% Critical Value	0.268481		
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA		Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA		Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	0.00219		
95% Adjusted Gamma UCL	0.002351		
Lognormal Statistics			
Minimum of log data	-7.26443		
Maximum of log data	-5.31852		
Mean of log data	-6.696336		
Standard Deviation of log data	0.546909		
Variance of log data	0.29911		
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.803661		
Shapiro-Wilk 5% Critical Value	0.842		
5% Lognormality Test Result	NOT LOGNORMAL		Data not lognormal at 5% significance level
MLE Mean	0.001435		
MLE Standard Deviation	0.000847		
MLE Coefficient of Variation	0.590472		
MLE Skewness	1.977289		
MLE Median	0.001235		
MLE 80% Quantile	0.001961		
MLE 90% Quantile	0.002495		
MLE 95% Quantile	0.003038		
MLE 99% Quantile	0.004408		
MVU Estimate of Median	0.001217		
MVU Estimate of Mean	0.001411		
MVU Estimate of Standard Deviation	0.00079		
MVU Estimate of SE of Mean	0.000249		
95% H-UCL	0.002177		
95% Chebyshev (MVUE) UCL	0.002497		
97.5% Chebyshev (MVUE) UCL	0.002967		
99% Chebyshev (MVUE) UCL	0.00389		
Non-parametric Statistics			
95% CLT UCL	0.002117		
95% Adjusted-CLT UCL	0.002496		
95% Modified-t UCL	0.00225		
95% Jackknife UCL	0.00219		
95% Chebyshev (Mean, Sd) UCL	0.003176		
97.5% Chebyshev (Mean, Sd) UCL	0.003912		
99% Chebyshev (Mean, Sd) UCL	0.005358		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	0.002085		
95% Bootstrap-t UCL	0.003758		
95% Hall's Bootstrap UCL	0.004622		
95% Percentile Bootstrap UCL	0.002185		
95% BCA Bootstrap UCL	0.002129		
Recommendations			
Human Inspection Recommended?	YES		
Appropriate Distribution	NON-PARAMETRIC		
1st Recommended UCL	0.003176		95% Chebyshev (Mean, Sd) UCL
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	YES		Recommended UCL exceeds the maximum data value
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-supplemental\HHRA\Statistics\HH - June 2004\Fish stat - reach45.xls		
Variable:	Antimony		
Raw Statistics			
Number of Observations	10		
Number of Missing Data	0		
Number of Valid Observations	10		
Number of Distinct Observations	5		
Minimum	0.0445		
Maximum	0.14		
Mean	0.0603		
Standard Deviation	0.028228		
Variance	0.000797		
Coefficient of Variation	0.468133		
Skewness	3.067533		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.482571		
Shapiro-Wilk 5% Critical Value	0.842		
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level	
95% Student's-t UCL	0.076663		
Gamma Statistics			
k hat	8.370349		
k star (bias corrected)	5.925911		
Theta hat	0.007204		
Theta star	0.010176		
nu hat	167.407		
nu star	118.5182		
5% Approximate Chi Square Value	94.37626		
Adjusted Level of Significance	0.0267		
Adjusted Chi Square Value	90.6369		
Anderson-Darling Test Statistic	2.142898		
Anderson-Darling 5% Critical Value	0.726491		
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level	
Kolmogrov-Smirnov Test Statistic	0.457947		
Kolmogrov-Smirnov 5% Critical Value	0.266891		
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level	
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level	
95% Approximate Gamma UCL	0.075725		
95% Adjusted Gamma UCL	0.078849		
Lognormal Statistics			
Minimum of log data	-3.112266		
Maximum of log data	-1.966113		
Mean of log data	-2.869346		
Standard Deviation of log data	0.325102		
Variance of log data	0.105692		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.567992		
Shapiro-Wilk 5% Critical Value	0.842		
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level	
MLE Mean	0.059815		
MLE Standard Deviation	0.019971		
MLE Coefficient of Variation	0.333885		
MLE Skewness	1.038875		
MLE Median	0.056736		
MLE 80% Quantile	0.074673		
MLE 90% Quantile	0.086157		
MLE 95% Quantile	0.096854		
MLE 99% Quantile	0.120856		
MVU Estimate of Median	0.056437		
MVU Estimate of Mean	0.059488		
MVU Estimate of Standard Deviation	0.019505		
MVU Estimate of SE of Mean	0.006166		
95% H-UCL	0.07432		
95% Chebyshev (MVUE) UCL	0.086363		
97.5% Chebyshev (MVUE) UCL	0.097992		
99% Chebyshev (MVUE) UCL	0.120835		
Non-parametric Statistics			
95% CLT UCL	0.074983		
95% Adjusted-CLT UCL	0.084235		
95% Modified-t UCL	0.078107		
95% Jackknife UCL	0.076663		
95% Chebyshev (Mean, Sd) UCL	0.09921		
97.5% Chebyshev (Mean, Sd) UCL	0.116047		
99% Chebyshev (Mean, Sd) UCL	0.149119		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	0.073919		
95% Bootstrap-t UCL	0.147062		
95% Hall's Bootstrap UCL	0.151828		
95% Percentile Bootstrap UCL	0.0778		
95% BCA Bootstrap UCL	0.0868		
Recommendations			
Human Inspection Recommended?	YES	Users must select one of the recommended UCLS	
Appropriate Distribution	NON-PARAMETRIC		
1st Recommended UCL	0.076663	95% Student's-t UCL	
2nd Recommended UCL	0.078107	95% Modified-t UCL	
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File		J:\NE\WELLSG&H\OU3-supplemental\HHRA\Statistics\HH - June 2004\Fish stat - reach45.xls	
Variable:		Copper	
Raw Statistics			
Number of Observations		10	
Number of Missing Data		0	
Number of Valid Observations		10	
Number of Distinct Observations		7	
Minimum		0.1175	
Maximum		0.24	
Mean		0.16375	
Standard Deviation		0.035064	
Variance		0.00123	
Coefficient of Variation		0.214134	
Skewness		0.825426	
Too Few Distinct Observations?		NO	
Normal Statistics			
Lilliefors Test Statistic		N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value		N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic		0.907965	
Shapiro-Wilk 5% Critical Value		0.842	
5% Normality Test Result		NORMAL	Data are normal at 5% significance level
95% Student's-t UCL		0.184076	
Gamma Statistics			
k hat		25.24843	
k star (bias corrected)		17.74057	
Theta hat		0.006486	
Theta star		0.00923	
nu hat		504.9686	
nu star		354.8114	
5% Approximate Chi Square Value		312.1519	
Adjusted Level of Significance		0.0267	
Adjusted Chi Square Value		305.1903	
Anderson-Darling Test Statistic		0.393546	
Anderson-Darling 5% Critical Value		0.724522	
Anderson-Darling 5% Gamma Test Result		AD GAMMA	Data follow gamma distribution at 5% significance level.
Kolmogrov-Smirnov Test Statistic		0.191533	
Kolmogrov-Smirnov 5% Critical Value		0.266116	
Kolmogrov-Smirnov 5% Gamma Test Result		KS GAMMA	Data follow gamma distribution at 5% significance level
5% Gamma Test Result		GAMMA	Data follow gamma distribution at 5% significance level
95% Approximate Gamma UCL		0.186128	
95% Adjusted Gamma UCL		0.190374	
Lognormal Statistics			
Minimum of log data		-2.141317	
Maximum of log data		-1.427116	
Mean of log data		-1.829348	
Standard Deviation of log data		0.209577	
Variance of log data		0.043923	
Lilliefors Test Statistic		N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value		N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic		0.931957	
Shapiro-Wilk 5% Critical Value		0.842	
5% Lognormality Test Result		LOGNORMAL	Data are lognormal at 5% significance level
MLE Mean		0.164082	
MLE Standard Deviation		0.034769	
MLE Coefficient of Variation		0.2119	
MLE Skewness		0.645213	
MLE Median		0.160518	
MLE 80% Quantile		0.191617	
MLE 90% Quantile		0.210127	
MLE 95% Quantile		0.226594	
MLE 99% Quantile		0.261356	
MVU Estimate of Median		0.160166	
MVU Estimate of Mean		0.163717	
MVU Estimate of Standard Deviation		0.034434	
MVU Estimate of SE of Mean		0.010888	
95% H-UCL		0.187235	
95% Chebyshev (MVUE) UCL		0.211177	
97.5% Chebyshev (MVUE) UCL		0.231714	
99% Chebyshev (MVUE) UCL		0.272053	
Non-parametric Statistics			
95% CLT UCL		0.181989	
95% Adjusted-CLT UCL		0.185081	
95% Modified-t UCL		0.184559	
95% Jackknife UCL		0.184076	
95% Chebyshev (Mean, Sd) UCL		0.212083	
97.5% Chebyshev (Mean, Sd) UCL		0.232997	
99% Chebyshev (Mean, Sd) UCL		0.274078	
Bootstrap Statistics			
Number of Bootstrap Runs		2000	
95% Standard Bootstrap UCL		0.181046	
95% Bootstrap-t UCL		0.187627	
95% Hall's Bootstrap UCL		0.196098	
95% Percentile Bootstrap UCL		0.182	
95% BCA Bootstrap UCL		0.18975	
Recommendations			
Human Inspection Recommended?		NO	
Appropriate Distribution		NORMAL	
1st Recommended UCL		0.184076	95% Student's-t UCL
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value		NO	
Recommendation Warning!		NONE	
Alternative UCL		NONE	

Data File	J:\NE\WELLSG&H\OU3-supplemental\HHRA\Statistics\HH - June 2004\Fish stat - reach45.xls		
Variable:	Lead		
Raw Statistics			
Number of Observations	10		
Number of Missing Data	0		
Number of Valid Observations	10		
Number of Distinct Observations	10		
Minimum	0.0305		
Maximum	0.072		
Mean	0.04005		
Standard Deviation	0.012176		
Variance	0.000148		
Coefficient of Variation	0.304012		
Skewness	2.426943		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.6667		
Shapiro-Wilk 5% Critical Value	0.842		
5% Normality Test Result	NOT NORMAL		Data not normal at 5% significance level
95% Student's-t UCL	0.047108		
Gamma Statistics			
k hat	15.96641		
k star (bias corrected)	11.24315		
Theta hat	0.002508		
Theta star	0.003562		
nu hat	319.3281		
nu star	224.863		
5% Approximate Chi Square Value	191.1477		
Adjusted Level of Significance	0.0267		
Adjusted Chi Square Value	185.7434		
Anderson-Darling Test Statistic	1.262137		
Anderson-Darling 5% Critical Value	0.724756		
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA		Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.369866		
Kolmogrov-Smirnov 5% Critical Value	0.266356		
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA		Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA		Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	0.047114		
95% Adjusted Gamma UCL	0.048485		
Lognormal Statistics			
Minimum of log data	-3.490029		
Maximum of log data	-2.631089		
Mean of log data	-3.249269		
Standard Deviation of log data	0.247959		
Variance of log data	0.061484		
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.751526		
Shapiro-Wilk 5% Critical Value	0.842		
5% Lognormality Test Result	NOT LOGNORMAL		Data not lognormal at 5% significance level
MLE Mean	0.040014		
MLE Standard Deviation	0.010076		
MLE Coefficient of Variation	0.25182		
MLE Skewness	0.771428		
MLE Median	0.038803		
MLE 80% Quantile	0.047847		
MLE 90% Quantile	0.053363		
MLE 95% Quantile	0.058345		
MLE 99% Quantile	0.069078		
MVU Estimate of Median	0.038683		
MVU Estimate of Mean	0.039888		
MVU Estimate of Standard Deviation	0.00994		
MVU Estimate of SE of Mean	0.003143		
95% H-UCL	0.046915		
95% Chebyshev (MVUE) UCL	0.053588		
97.5% Chebyshev (MVUE) UCL	0.059516		
99% Chebyshev (MVUE) UCL	0.07116		
Non-parametric Statistics			
95% CLT UCL	0.046383		
95% Adjusted-CLT UCL	0.049541		
95% Modified-t UCL	0.047601		
95% Jackknife UCL	0.047108		
95% Chebyshev (Mean, Sd) UCL	0.056833		
97.5% Chebyshev (Mean, Sd) UCL	0.064095		
99% Chebyshev (Mean, Sd) UCL	0.07836		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	0.046013		
95% Bootstrap-t UCL	0.068174		
95% Hall's Bootstrap UCL	0.087078		
95% Percentile Bootstrap UCL	0.04695		
95% BCA Bootstrap UCL	0.051		
Recommendations			
Human Inspection Recommended?	YES		Users must select one of the recommended UCLS
Appropriate Distribution	NON-PARAMETRIC		
1st Recommended UCL	0.047108		95% Student's-t UCL
2nd Recommended UCL	0.047601		95% Modified-t UCL
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-supplemental\HHRA\Statistics\HH - June 2004\Fish stat - reach45.xls		
Variable:	Mercury		
Raw Statistics			
Number of Observations	10		
Number of Missing Data	0		
Number of Valid Observations	10		
Number of Distinct Observations	9		
Minimum	0.1		
Maximum	0.57		
Mean	0.206		
Standard Deviation	0.142922		
Variance	0.020427		
Coefficient of Variation	0.693796		
Skewness	2.245916		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.691653		
Shapiro-Wilk 5% Critical Value	0.842		
5% Normality Test Result	NOT NORMAL		Data not normal at 5% significance level
95% Student's-t UCL	0.288849		
Gamma Statistics			
k hat	3.557228		
k star (bias corrected)	2.556727		
Theta hat	0.05791		
Theta star	0.080572		
nu hat	71.14457		
nu star	51.13453		
5% Approximate Chi Square Value	35.70961		
Adjusted Level of Significance	0.0267		
Adjusted Chi Square Value	33.48141		
Anderson-Darling Test Statistic	0.922624		
Anderson-Darling 5% Critical Value	0.730625		
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA		Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.288659		
Kolmogrov-Smirnov 5% Critical Value	0.268099		
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA		Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA		Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	0.294983		
95% Adjusted Gamma UCL	0.314614		
Lognormal Statistics			
Minimum of log data	-2.302585		
Maximum of log data	-0.562119		
Mean of log data	-1.726973		
Standard Deviation of log data	0.520998		
Variance of log data	0.271439		
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.853274		
Shapiro-Wilk 5% Critical Value	0.842		
5% Lognormality Test Result	LOGNORMAL		Data are lognormal at 5% significance level
MLE Mean	0.20367		
MLE Standard Deviation	0.113737		
MLE Coefficient of Variation	0.558436		
MLE Skewness	1.849455		
MLE Median	0.177822		
MLE 80% Quantile	0.276172		
MLE 90% Quantile	0.347326		
MLE 95% Quantile	0.41898		
MLE 99% Quantile	0.597421		
MVU Estimate of Median	0.175422		
MVU Estimate of Mean	0.200659		
MVU Estimate of Standard Deviation	0.106792		
MVU Estimate of SE of Mean	0.033695		
95% H-UCL	0.301024		
95% Chebyshev (MVUE) UCL	0.347532		
97.5% Chebyshev (MVUE) UCL	0.411084		
99% Chebyshev (MVUE) UCL	0.53592		
Non-parametric Statistics			
95% CLT UCL	0.280341		
95% Adjusted-CLT UCL	0.314639		
95% Modified-t UCL	0.294199		
95% Jackknife UCL	0.288849		
95% Chebyshev (Mean, Sd) UCL	0.403004		
97.5% Chebyshev (Mean, Sd) UCL	0.488248		
99% Chebyshev (Mean, Sd) UCL	0.655693		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	0.275912		
95% Bootstrap-t UCL	0.510938		
95% Hall's Bootstrap UCL	0.679952		
95% Percentile Bootstrap UCL	0.28		
95% BCA Bootstrap UCL	0.325		
Recommendations			
Human Inspection Recommended?	NO		
Appropriate Distribution	LOGNORMAL		
1st Recommended UCL	0.301024		95% H-UCL
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File		J:\NE\WELLSG&H\OU3-supplemental\HHRA\Statistics\HH - June 2004\Fish stat - reach45.xls	
Variable:		Selenium	
Raw Statistics			
Number of Observations		10	
Number of Missing Data		0	
Number of Valid Observations		10	
Number of Distinct Observations		10	
Minimum		0.39	
Maximum		0.84	
Mean		0.596	
Standard Deviation		0.139539	
Variance		0.019471	
Coefficient of Variation		0.234126	
Skewness		0.026046	
Too Few Distinct Observations?		NO	
Normal Statistics			
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.963205		
Shapiro-Wilk 5% Critical Value	0.842		
5% Normality Test Result	NORMAL		Data are normal at 5% significance level
95% Student's-t UCL	0.676888		
Gamma Statistics			
k hat	19.34721		
k star (bias corrected)	13.60971		
Theta hat	0.030805		
Theta star	0.043792		
nu hat	386.9442		
nu star	272.1943		
5% Approximate Chi Square Value	234.979		
Adjusted Level of Significance	0.0267		
Adjusted Chi Square Value	228.9654		
Anderson-Darling Test Statistic	0.276919		
Anderson-Darling 5% Critical Value	0.724583		
Anderson-Darling 5% Gamma Test Result	AD GAMMA		Data follow gamma distribution at 5% significance level.
Kolmogrov-Smirnov Test Statistic	0.141399		
Kolmogrov-Smirnov 5% Critical Value	0.2662		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA		Data follow gamma distribution at 5% significance level
5% Gamma Test Result	GAMMA		Data follow gamma distribution at 5% significance level
95% Approximate Gamma UCL	0.690393		
95% Adjusted Gamma UCL	0.708525		
Lognormal Statistics			
Minimum of log data	-0.941609		
Maximum of log data	-0.174353		
Mean of log data	-0.543581		
Standard Deviation of log data	0.244786		
Variance of log data	0.05992		
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.941945		
Shapiro-Wilk 5% Critical Value	0.842		
5% Lognormality Test Result	LOGNORMAL		Data are lognormal at 5% significance level
MLE Mean	0.598325		
MLE Standard Deviation	0.148683		
MLE Coefficient of Variation	0.248499		
MLE Skewness	0.760841		
MLE Median	0.580665		
MLE 80% Quantile	0.714097		
MLE 90% Quantile	0.795304		
MLE 95% Quantile	0.868569		
MLE 99% Quantile	1.026126		
MVU Estimate of Median	0.578928		
MVU Estimate of Mean	0.596496		
MVU Estimate of Standard Deviation	0.146724		
MVU Estimate of SE of Mean	0.046393		
95% H-UCL	0.69991		
95% Chebyshev (MVUE) UCL	0.798718		
97.5% Chebyshev (MVUE) UCL	0.886219		
99% Chebyshev (MVUE) UCL	1.058099		
Non-parametric Statistics			
95% CLT UCL	0.668581		
95% Adjusted-CLT UCL	0.668969		
95% Modified-t UCL	0.676949		
95% Jackknife UCL	0.676888		
95% Chebyshev (Mean, Sd) UCL	0.788341		
97.5% Chebyshev (Mean, Sd) UCL	0.871567		
99% Chebyshev (Mean, Sd) UCL	1.035049		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	0.665591		
95% Bootstrap-t UCL	0.680262		
95% Hall's Bootstrap UCL	0.675355		
95% Percentile Bootstrap UCL	0.667		
95% BCA Bootstrap UCL	0.689		
Recommendations			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	0.676888		95% Student's-t UCL
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File		J:\NE\WELLSG&H\OU3-supplemental\HHRA\Statistics\HH - June 2004\Fish stat - reach6.xls	
Variable:		4,4'-DDD	
Raw Statistics			
Number of Observations		6	
Number of Missing Data		0	
Number of Valid Observations		6	
Number of Distinct Observations		6	
Minimum		0.004	
Maximum		0.027	
Mean		0.012683	
Standard Deviation		0.008916	
Variance		7.95E-05	
Coefficient of Variation		0.702946	
Skewness		0.984363	
Too Few Distinct Observations?		NO	
Normal Statistics			
Lilliefors Test Statistic		N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value		N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic		0.885477	
Shapiro-Wilk 5% Critical Value		0.788	
5% Normality Test Result		NORMAL	Data are normal at 5% significance level
95% Student's-t UCL		0.020018	
Gamma Statistics			
k hat		2.55303	
k star (bias corrected)		1.387626	
Theta hat		0.004968	
Theta star		0.00914	
nu hat		30.63636	
nu star		16.65151	
5% Approximate Chi Square Value		8.422468	
Adjusted Level of Significance		0.01222	
Adjusted Chi Square Value		6.423729	
Anderson-Darling Test Statistic		0.275733	
Anderson-Darling 5% Critical Value		0.702617	
Anderson-Darling 5% Gamma Test Result		AD GAMMA	Data follow gamma distribution at 5% significance level.
Kolmogrov-Smirnov Test Statistic		0.22684	
Kolmogrov-Smirnov 5% Critical Value		0.335122	
Kolmogrov-Smirnov 5% Gamma Test Result		KS GAMMA	Data follow gamma distribution at 5% significance level
5% Gamma Test Result		GAMMA	Data follow gamma distribution at 5% significance level
95% Approximate Gamma UCL		0.025075	
95% Adjusted Gamma UCL		0.032878	
Lognormal Statistics			
Minimum of log data		-5.521461	
Maximum of log data		-3.611918	
Mean of log data		-4.575914	
Standard Deviation of log data		0.71324	
Variance of log data		0.508711	
Lilliefors Test Statistic		N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value		N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic		0.965202	
Shapiro-Wilk 5% Critical Value		0.788	
5% Lognormality Test Result		LOGNORMAL	Data are lognormal at 5% significance level
MLE Mean		0.013279	
MLE Standard Deviation		0.010814	
MLE Coefficient of Variation		0.814337	
MLE Skewness		2.983037	
MLE Median		0.010297	
MLE 80% Quantile		0.018813	
MLE 90% Quantile		0.025748	
MLE 95% Quantile		0.033285	
MLE 99% Quantile		0.0541	
MVU Estimate of Median		0.009867	
MVU Estimate of Mean		0.012651	
MVU Estimate of Standard Deviation		0.009013	
MVU Estimate of SE of Mean		0.003665	
95% H-UCL		0.038348	
95% Chebyshev (MVUE) UCL		0.028627	
97.5% Chebyshev (MVUE) UCL		0.035539	
99% Chebyshev (MVUE) UCL		0.049118	
Non-parametric Statistics			
95% CLT UCL		0.01867	
95% Adjusted-CLT UCL		0.020233	
95% Modified-t UCL		0.020262	
95% Jackknife UCL		0.020018	
95% Chebyshev (Mean, Sd) UCL		0.028549	
97.5% Chebyshev (Mean, Sd) UCL		0.035414	
99% Chebyshev (Mean, Sd) UCL		0.048899	
Bootstrap Statistics			
Number of Bootstrap Runs		2000	
95% Standard Bootstrap UCL		0.01804	
95% Bootstrap-t UCL		0.033128	
95% Hall's Bootstrap UCL		0.070478	
95% Percentile Bootstrap UCL		0.018533	
95% BCA Bootstrap UCL		0.0212	
Recommendations			
Human Inspection Recommended?		NO	
Appropriate Distribution		NORMAL	
1st Recommended UCL		0.020018	95% Student's-t UCL
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value		NO	
Recommendation Warning!		NONE	
Alternative UCL		NONE	

Data File		J:\NE\WELLSG&H\OU3-supplemental\HHRA\Statistics\HH - June 2004\Fish stat - reach6.xls	
Variable:		4,4'-DDE	
Raw Statistics			
Number of Observations		6	
Number of Missing Data		0	
Number of Valid Observations		6	
Number of Distinct Observations		5	
Minimum		0.0061	
Maximum		0.083	
Mean		0.035517	
Standard Deviation		0.027487	
Variance		0.000756	
Coefficient of Variation		0.773911	
Skewness		1.149539	
Too Few Distinct Observations?		NO	
Normal Statistics			
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic		0.903875	
Shapiro-Wilk 5% Critical Value		0.788	
5% Normality Test Result	NORMAL		Data are normal at 5% significance level
95% Student's-t UCL		0.058128	
Gamma Statistics			
k hat		1.888806	
k star (bias corrected)		1.055514	
Theta hat		0.018804	
Theta star		0.033649	
nu hat		22.66567	
nu star		12.66617	
5% Approximate Chi Square Value		5.66791	
Adjusted Level of Significance		0.01222	
Adjusted Chi Square Value		4.099376	
Anderson-Darling Test Statistic		0.228748	
Anderson-Darling 5% Critical Value		0.705006	
Anderson-Darling 5% Gamma Test Result	AD GAMMA		Data follow gamma distribution at 5% significance level.
Kolmogrov-Smirnov Test Statistic		0.210731	
Kolmogrov-Smirnov 5% Critical Value		0.33619	
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA		Data follow gamma distribution at 5% significance level
5% Gamma Test Result	GAMMA		Data follow gamma distribution at 5% significance level
95% Approximate Gamma UCL		0.07937	
95% Adjusted Gamma UCL		0.109739	
Lognormal Statistics			
Minimum of log data		-5.099467	
Maximum of log data		-2.488915	
Mean of log data		-3.625244	
Standard Deviation of log data		0.89452	
Variance of log data		0.800167	
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic		0.956193	
Shapiro-Wilk 5% Critical Value		0.788	
5% Lognormality Test Result	LOGNORMAL		Data are lognormal at 5% significance level
MLE Mean		0.039749	
MLE Standard Deviation		0.044011	
MLE Coefficient of Variation		1.107209	
MLE Skewness		4.678968	
MLE Median		0.026643	
MLE 80% Quantile		0.056734	
MLE 90% Quantile		0.084097	
MLE 95% Quantile		0.116047	
MLE 99% Quantile		0.213399	
MVU Estimate of Median		0.024908	
MVU Estimate of Mean		0.036651	
MVU Estimate of Standard Deviation		0.032699	
MVU Estimate of SE of Mean		0.013232	
95% H-UCL		0.191472	
95% Chebyshev (MVUE) UCL		0.094328	
97.5% Chebyshev (MVUE) UCL		0.119285	
99% Chebyshev (MVUE) UCL		0.168308	
Non-parametric Statistics			
95% CLT UCL		0.053974	
95% Adjusted-CLT UCL		0.059601	
95% Modified-t UCL		0.059006	
95% Jackknife UCL		0.058128	
95% Chebyshev (Mean, Sd) UCL		0.08443	
97.5% Chebyshev (Mean, Sd) UCL		0.105594	
99% Chebyshev (Mean, Sd) UCL		0.147168	
Bootstrap Statistics			
Number of Bootstrap Runs		2000	
95% Standard Bootstrap UCL		0.052739	
95% Bootstrap-t UCL		0.088409	
95% Hall's Bootstrap UCL		0.203561	
95% Percentile Bootstrap UCL		0.052333	
95% BCA Bootstrap UCL		0.057667	
Recommendations			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL		0.058128	95% Student's-t UCL
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File		J:\NE\WELLSG&H\OU3-supplemental\HHRA\Statistics\HH - June 2004\Fish stat - reach6.xls	
Variable:		4,4'-DDT	
Raw Statistics			
Number of Observations		6	
Number of Missing Data		0	
Number of Valid Observations		6	
Number of Distinct Observations		6	
Minimum		0.00055	
Maximum		0.0067	
Mean		0.002767	
Standard Deviation		0.002333	
Variance		5.44E-06	
Coefficient of Variation		0.843313	
Skewness		1.10714	
Too Few Distinct Observations?		NO	
Normal Statistics			
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.895175		
Shapiro-Wilk 5% Critical Value	0.788		
5% Normality Test Result	NORMAL		Data are normal at 5% significance level
95% Student's-t UCL	0.004686		
Gamma Statistics			
k hat	1.688997		
k star (bias corrected)	0.955609		
Theta hat	0.001638		
Theta star	0.002895		
nu hat	20.26796		
nu star	11.46731		
5% Approximate Chi Square Value	4.877328		
Adjusted Level of Significance	0.01222		
Adjusted Chi Square Value	3.449609		
Anderson-Darling Test Statistic	0.192806		
Anderson-Darling 5% Critical Value	0.706437		
Anderson-Darling 5% Gamma Test Result	AD GAMMA		Data follow gamma distribution at 5% significance level.
Kolmogrov-Smirnov Test Statistic	0.174579		
Kolmogrov-Smirnov 5% Critical Value	0.336838		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA		Data follow gamma distribution at 5% significance level
5% Gamma Test Result	GAMMA		Data follow gamma distribution at 5% significance level
95% Approximate Gamma UCL	0.006505		
95% Adjusted Gamma UCL	0.009197		
Lognormal Statistics			
Minimum of log data	-7.505592		
Maximum of log data	-5.005648		
Mean of log data	-6.214464		
Standard Deviation of log data	0.916026		
Variance of log data	0.839104		
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.985301		
Shapiro-Wilk 5% Critical Value	0.788		
5% Lognormality Test Result	LOGNORMAL		Data are lognormal at 5% significance level
MLE Mean	0.003043		
MLE Standard Deviation	0.003489		
MLE Coefficient of Variation	1.146426		
MLE Skewness	4.946018		
MLE Median	0.002		
MLE 80% Quantile	0.004338		
MLE 90% Quantile	0.006491		
MLE 95% Quantile	0.009026		
MLE 99% Quantile	0.016844		
MVU Estimate of Median	0.001864		
MVU Estimate of Mean	0.002793		
MVU Estimate of Standard Deviation	0.002551		
MVU Estimate of SE of Mean	0.001032		
95% H-UCL	0.015696		
95% Chebyshev (MVUE) UCL	0.007289		
97.5% Chebyshev (MVUE) UCL	0.009235		
99% Chebyshev (MVUE) UCL	0.013056		
Non-parametric Statistics			
95% CLT UCL	0.004333		
95% Adjusted-CLT UCL	0.004793		
95% Modified-t UCL	0.004758		
95% Jackknife UCL	0.004686		
95% Chebyshev (Mean, Sd) UCL	0.006919		
97.5% Chebyshev (Mean, Sd) UCL	0.008715		
99% Chebyshev (Mean, Sd) UCL	0.012244		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	0.004153		
95% Bootstrap-t UCL	0.006596		
95% Hall's Bootstrap UCL	0.013484		
95% Percentile Bootstrap UCL	0.004325		
95% BCA Bootstrap UCL	0.005192		
Recommendations			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	0.004686		95% Student's-t UCL
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-supplemental\HHRA\Statistics\HH - June 2004\Fish stat - reach6.xls	
Variable:	Aldrin	
Raw Statistics		
Number of Observations	6	
Number of Missing Data	0	
Number of Valid Observations	6	
Number of Distinct Observations	5	
Minimum	0.00028	
Maximum	0.00255	
Mean	0.00106	
Standard Deviation	0.000836	
Variance	6.99E-07	
Coefficient of Variation	0.78876	
Skewness	1.294853	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.859546	
Shapiro-Wilk 5% Critical Value	0.788	
5% Normality Test Result	NORMAL	Data are normal at 5% significance level
95% Student's-t UCL	0.001748	
Gamma Statistics		
k hat	2.06416	
k star (bias corrected)	1.143191	
Theta hat	0.000514	
Theta star	0.000927	
nu hat	24.76992	
nu star	13.71829	
5% Approximate Chi Square Value	6.377822	
Adjusted Level of Significance	0.01222	
Adjusted Chi Square Value	4.690443	
Anderson-Darling Test Statistic	0.325939	
Anderson-Darling 5% Critical Value	0.704025	
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.
Kolmogrov-Smirnov Test Statistic	0.241578	
Kolmogrov-Smirnov 5% Critical Value	0.335748	
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level
95% Approximate Gamma UCL	0.00228	
95% Adjusted Gamma UCL	0.0031	
Lognormal Statistics		
Minimum of log data	-8.180721	
Maximum of log data	-5.971662	
Mean of log data	-7.110857	
Standard Deviation of log data	0.80403	
Variance of log data	0.646464	
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.950533	
Shapiro-Wilk 5% Critical Value	0.788	
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level
MLE Mean	0.001128	
MLE Standard Deviation	0.001075	
MLE Coefficient of Variation	0.953299	
MLE Skewness	3.726236	
MLE Median	0.000816	
MLE 80% Quantile	0.00161	
MLE 90% Quantile	0.002293	
MLE 95% Quantile	0.003063	
MLE 99% Quantile	0.005297	
MVU Estimate of Median	0.000773	
MVU Estimate of Mean	0.001058	
MVU Estimate of Standard Deviation	0.000849	
MVU Estimate of SE of Mean	0.000345	
95% H-UCL	0.004147	
95% Chebyshev (MVUE) UCL	0.002561	
97.5% Chebyshev (MVUE) UCL	0.003211	
99% Chebyshev (MVUE) UCL	0.004488	
Non-parametric Statistics		
95% CLT UCL	0.001621	
95% Adjusted-CLT UCL	0.001814	
95% Modified-t UCL	0.001778	
95% Jackknife UCL	0.001748	
95% Chebyshev (Mean, Sd) UCL	0.002548	
97.5% Chebyshev (Mean, Sd) UCL	0.003192	
99% Chebyshev (Mean, Sd) UCL	0.004456	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	0.00157	
95% Bootstrap-t UCL	0.00223	
95% Hall's Bootstrap UCL	0.002078	
95% Percentile Bootstrap UCL	0.001655	
95% BCA Bootstrap UCL	0.00183	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	NORMAL	
1st Recommended UCL	0.001748	95% Student's-t UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value	NO	
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Data File	J:\NE\WELLSG&H\OU3-supplemental\HHRA\Statistics\HH - June 2004\Fish stat - reach6.xls		
Variable:	alpha-Chlordane		
Raw Statistics			
Number of Observations	6		
Number of Missing Data	0		
Number of Valid Observations	6		
Number of Distinct Observations	6		
Minimum	0.0035		
Maximum	0.011		
Mean	0.005442		
Standard Deviation	0.002827		
Variance	7.99E-06		
Coefficient of Variation	0.519461		
Skewness	2.072503		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.733465		
Shapiro-Wilk 5% Critical Value	0.788		
5% Normality Test Result	NOT NORMAL		Data not normal at 5% significance level
95% Student's-t UCL	0.007767		
Gamma Statistics			
k hat	5.997066		
k star (bias corrected)	3.109644		
Theta hat	0.000907		
Theta star	0.00175		
nu hat	71.9648		
nu star	37.31573		
5% Approximate Chi Square Value	24.32785		
Adjusted Level of Significance	0.01222		
Adjusted Chi Square Value	20.62482		
Anderson-Darling Test Statistic	0.607261		
Anderson-Darling 5% Critical Value	0.698106		
Anderson-Darling 5% Gamma Test Result	AD GAMMA		Data follow gamma distribution at 5% significance level.
Kolmogrov-Smirnov Test Statistic	0.268727		
Kolmogrov-Smirnov 5% Critical Value	0.332728		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA		Data follow gamma distribution at 5% significance level
5% Gamma Test Result	GAMMA		Data follow gamma distribution at 5% significance level
95% Approximate Gamma UCL	0.008347		
95% Adjusted Gamma UCL	0.009845		
Lognormal Statistics			
Minimum of log data	-5.654992		
Maximum of log data	-4.50986		
Mean of log data	-5.299355		
Standard Deviation of log data	0.423604		
Variance of log data	0.17944		
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.839648		
Shapiro-Wilk 5% Critical Value	0.788		
5% Lognormality Test Result	LOGNORMAL		Data are lognormal at 5% significance level
MLE Mean	0.005464		
MLE Standard Deviation	0.002422		
MLE Coefficient of Variation	0.443337		
MLE Skewness	1.417147		
MLE Median	0.004995		
MLE 80% Quantile	0.007145		
MLE 90% Quantile	0.008608		
MLE 95% Quantile	0.010026		
MLE 99% Quantile	0.013379		
MVU Estimate of Median	0.004921		
MVU Estimate of Mean	0.005378		
MVU Estimate of Standard Deviation	0.002278		
MVU Estimate of SE of Mean	0.000929		
95% H-UCL	0.008806		
95% Chebyshev (MVUE) UCL	0.00943		
97.5% Chebyshev (MVUE) UCL	0.011183		
99% Chebyshev (MVUE) UCL	0.014626		
Non-parametric Statistics			
95% CLT UCL	0.00734		
95% Adjusted-CLT UCL	0.008383		
95% Modified-t UCL	0.00793		
95% Jackknife UCL	0.007767		
95% Chebyshev (Mean, Sd) UCL	0.010472		
97.5% Chebyshev (Mean, Sd) UCL	0.012648		
99% Chebyshev (Mean, Sd) UCL	0.016924		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	0.007189		
95% Bootstrap-t UCL	0.012993		
95% Hall's Bootstrap UCL	0.014969		
95% Percentile Bootstrap UCL	0.007483		
95% BCA Bootstrap UCL	0.008833		
Recommendations			
Human Inspection Recommended?	NO		
Appropriate Distribution	GAMMA		
1st Recommended UCL	0.008347		95% Approximate Gamma UCL
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File		J:\NE\WELLSG&H\OU3-supplemental\HHRA\Statistics\HH - June 2004\Fish stat - reach6.xls	
Variable:		Aroclor-1248	
Raw Statistics			
Number of Observations		6	
Number of Missing Data		0	
Number of Valid Observations		6	
Number of Distinct Observations		5	
Minimum		0.0025	
Maximum		0.025	
Mean		0.010892	
Standard Deviation		0.007986	
Variance		6.38E-05	
Coefficient of Variation		0.733234	
Skewness		1.17153	
Too Few Distinct Observations?		NO	
Normal Statistics			
Lilliefors Test Statistic		N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value		N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic		0.90528	
Shapiro-Wilk 5% Critical Value		0.788	
5% Normality Test Result		NORMAL	Data are normal at 5% significance level
95% Student's-t UCL		0.017461	
Gamma Statistics			
k hat		2.185836	
k star (bias corrected)		1.204029	
Theta hat		0.004983	
Theta star		0.009046	
nu hat		26.23003	
nu star		14.44835	
5% Approximate Chi Square Value		6.87828	
Adjusted Level of Significance		0.01222	
Adjusted Chi Square Value		5.110803	
Anderson-Darling Test Statistic		0.206552	
Anderson-Darling 5% Critical Value		0.703675	
Anderson-Darling 5% Gamma Test Result		AD GAMMA	Data follow gamma distribution at 5% significance level.
Kolmogrov-Smirnov Test Statistic		0.167596	
Kolmogrov-Smirnov 5% Critical Value		0.335592	
Kolmogrov-Smirnov 5% Gamma Test Result		KS GAMMA	Data follow gamma distribution at 5% significance level
5% Gamma Test Result		GAMMA	Data follow gamma distribution at 5% significance level
95% Approximate Gamma UCL		0.022879	
95% Adjusted Gamma UCL		0.030791	
Lognormal Statistics			
Minimum of log data		-5.991465	
Maximum of log data		-3.688879	
Mean of log data		-4.76561	
Standard Deviation of log data		0.807043	
Variance of log data		0.651319	
Lilliefors Test Statistic		N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value		N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic		0.973875	
Shapiro-Wilk 5% Critical Value		0.788	
5% Lognormality Test Result		LOGNORMAL	Data are lognormal at 5% significance level
MLE Mean		0.011797	
MLE Standard Deviation		0.011303	
MLE Coefficient of Variation		0.958159	
MLE Skewness		3.754133	
MLE Median		0.008518	
MLE 80% Quantile		0.016846	
MLE 90% Quantile		0.024027	
MLE 95% Quantile		0.032128	
MLE 99% Quantile		0.055664	
MVU Estimate of Median		0.008064	
MVU Estimate of Mean		0.011065	
MVU Estimate of Standard Deviation		0.008914	
MVU Estimate of SE of Mean		0.003617	
95% H-UCL		0.043758	
95% Chebyshev (MVUE) UCL		0.02683	
97.5% Chebyshev (MVUE) UCL		0.033651	
99% Chebyshev (MVUE) UCL		0.04705	
Non-parametric Statistics			
95% CLT UCL		0.016254	
95% Adjusted-CLT UCL		0.017921	
95% Modified-t UCL		0.017721	
95% Jackknife UCL		0.017461	
95% Chebyshev (Mean, Sd) UCL		0.025103	
97.5% Chebyshev (Mean, Sd) UCL		0.031252	
99% Chebyshev (Mean, Sd) UCL		0.043332	
Bootstrap Statistics			
Number of Bootstrap Runs		2000	
95% Standard Bootstrap UCL		0.015619	
95% Bootstrap-t UCL		0.020344	
95% Hall's Bootstrap UCL		0.022644	
95% Percentile Bootstrap UCL		0.016233	
95% BCA Bootstrap UCL		0.018808	
Recommendations			
Human Inspection Recommended?		NO	
Appropriate Distribution		NORMAL	
1st Recommended UCL		0.017461	95% Student's-t UCL
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value		NO	
Recommendation Warning!		NONE	
Alternative UCL		NONE	

Data File		J:\NE\WELLSG&H\OU3-supplemental\HHRA\Statistics\HH - June 2004\Fish stat - reach6.xls	
Variable:		Aroclor-1254	
Raw Statistics			
Number of Observations		6	
Number of Missing Data		0	
Number of Valid Observations		6	
Number of Distinct Observations		6	
Minimum		0.015	
Maximum		0.18	
Mean		0.076667	
Standard Deviation		0.062154	
Variance		0.003863	
Coefficient of Variation		0.810699	
Skewness		1.042058	
Too Few Distinct Observations?		NO	
Normal Statistics			
Lilliefors Test Statistic		N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value		N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic		0.906322	
Shapiro-Wilk 5% Critical Value		0.788	
5% Normality Test Result		NORMAL	Data are normal at 5% significance level
95% Student's-t UCL		0.127797	
Gamma Statistics			
k hat		1.775878	
k star (bias corrected)		0.99905	
Theta hat		0.043171	
Theta star		0.07674	
nu hat		21.31053	
nu star		11.9886	
5% Approximate Chi Square Value		5.218515	
Adjusted Level of Significance		0.01222	
Adjusted Chi Square Value		3.72882	
Anderson-Darling Test Statistic		0.17833	
Anderson-Darling 5% Critical Value		0.705815	
Anderson-Darling 5% Gamma Test Result		AD GAMMA	Data follow gamma distribution at 5% significance level.
Kolmogrov-Smirnov Test Statistic		0.157773	
Kolmogrov-Smirnov 5% Critical Value		0.336556	
Kolmogrov-Smirnov 5% Gamma Test Result		KS GAMMA	Data follow gamma distribution at 5% significance level
5% Gamma Test Result		GAMMA	Data follow gamma distribution at 5% significance level
95% Approximate Gamma UCL		0.176128	
95% Adjusted Gamma UCL		0.246492	
Lognormal Statistics			
Minimum of log data		-4.199705	
Maximum of log data		-1.714798	
Mean of log data		-2.875523	
Standard Deviation of log data		0.90106	
Variance of log data		0.811909	
Lilliefors Test Statistic		N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value		N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic		0.984778	
Shapiro-Wilk 5% Critical Value		0.788	
5% Lognormality Test Result		LOGNORMAL	Data are lognormal at 5% significance level
MLE Mean		0.084621	
MLE Standard Deviation		0.094693	
MLE Coefficient of Variation		1.119019	
MLE Skewness		4.758295	
MLE Median		0.056387	
MLE 80% Quantile		0.120739	
MLE 90% Quantile		0.179485	
MLE 95% Quantile		0.24826	
MLE 99% Quantile		0.458563	
MVU Estimate of Median		0.052663	
MVU Estimate of Mean		0.077917	
MVU Estimate of Standard Deviation		0.070019	
MVU Estimate of SE of Mean		0.028328	
95% H-UCL		0.416123	
95% Chebyshev (MVUE) UCL		0.201393	
97.5% Chebyshev (MVUE) UCL		0.254822	
99% Chebyshev (MVUE) UCL		0.359772	
Non-parametric Statistics			
95% CLT UCL		0.118403	
95% Adjusted-CLT UCL		0.129938	
95% Modified-t UCL		0.129596	
95% Jackknife UCL		0.127797	
95% Chebyshev (Mean, Sd) UCL		0.18727	
97.5% Chebyshev (Mean, Sd) UCL		0.235128	
99% Chebyshev (Mean, Sd) UCL		0.329136	
Bootstrap Statistics			
Number of Bootstrap Runs		2000	
95% Standard Bootstrap UCL		0.115169	
95% Bootstrap-t UCL		0.196323	
95% Hall's Bootstrap UCL		0.420036	
95% Percentile Bootstrap UCL		0.118333	
95% BCA Bootstrap UCL		0.1335	
Recommendations			
Human Inspection Recommended?		NO	
Appropriate Distribution		NORMAL	
1st Recommended UCL		0.127797	95% Student's-t UCL
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value		NO	
Recommendation Warning!		NONE	
Alternative UCL		NONE	

Data File		J:\NE\WELLSG&H\OU3-supplemental\HHRA\Statistics\HH - June 2004\Fish stat - reach6.xls	
Variable:		Aroclor-1260	
Raw Statistics			
Number of Observations		6	
Number of Missing Data		0	
Number of Valid Observations		6	
Number of Distinct Observations		6	
Minimum		0.025	
Maximum		0.11	
Mean		0.05175	
Standard Deviation		0.032202	
Variance		0.001037	
Coefficient of Variation		0.622263	
Skewness		1.45559	
Too Few Distinct Observations?		NO	
Normal Statistics			
Lilliefors Test Statistic		N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value		N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic		0.847311	
Shapiro-Wilk 5% Critical Value		0.788	
5% Normality Test Result		NORMAL	Data are normal at 5% significance level
95% Student's-t UCL		0.078241	
Gamma Statistics			
k hat		3.683841	
k star (bias corrected)		1.953032	
Theta hat		0.014048	
Theta star		0.026497	
nu hat		44.2061	
nu star		23.43638	
5% Approximate Chi Square Value		13.41916	
Adjusted Level of Significance		0.01222	
Adjusted Chi Square Value		10.78534	
Anderson-Darling Test Statistic		0.334237	
Anderson-Darling 5% Critical Value		0.700407	
Anderson-Darling 5% Gamma Test Result		AD GAMMA	Data follow gamma distribution at 5% significance level.
Kolmogrov-Smirnov Test Statistic		0.216934	
Kolmogrov-Smirnov 5% Critical Value		0.333859	
Kolmogrov-Smirnov 5% Gamma Test Result		KS GAMMA	Data follow gamma distribution at 5% significance level
5% Gamma Test Result		GAMMA	Data follow gamma distribution at 5% significance level
95% Approximate Gamma UCL		0.090381	
95% Adjusted Gamma UCL		0.112452	
Lognormal Statistics			
Minimum of log data		-3.688879	
Maximum of log data		-2.207275	
Mean of log data		-3.103156	
Standard Deviation of log data		0.56736	
Variance of log data		0.321897	
Lilliefors Test Statistic		N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value		N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic		0.930318	
Shapiro-Wilk 5% Critical Value		0.788	
5% Lognormality Test Result		LOGNORMAL	Data are lognormal at 5% significance level
MLE Mean		0.052749	
MLE Standard Deviation		0.032506	
MLE Coefficient of Variation		0.616233	
MLE Skewness		2.082708	
MLE Median		0.044907	
MLE 80% Quantile		0.072531	
MLE 90% Quantile		0.093098	
MLE 95% Quantile		0.114195	
MLE 99% Quantile		0.168053	
MVU Estimate of Median		0.043714	
MVU Estimate of Mean		0.051226	
MVU Estimate of Standard Deviation		0.029049	
MVU Estimate of SE of Mean		0.011839	
95% H-UCL		0.109729	
95% Chebyshev (MVUE) UCL		0.102832	
97.5% Chebyshev (MVUE) UCL		0.125163	
99% Chebyshev (MVUE) UCL		0.169026	
Non-parametric Statistics			
95% CLT UCL		0.073374	
95% Adjusted-CLT UCL		0.081721	
95% Modified-t UCL		0.079543	
95% Jackknife UCL		0.078241	
95% Chebyshev (Mean, Sd) UCL		0.109054	
97.5% Chebyshev (Mean, Sd) UCL		0.13385	
99% Chebyshev (Mean, Sd) UCL		0.182556	
Bootstrap Statistics			
Number of Bootstrap Runs		2000	
95% Standard Bootstrap UCL		0.071691	
95% Bootstrap-t UCL		0.119044	
95% Hall's Bootstrap UCL		0.199032	
95% Percentile Bootstrap UCL		0.073333	
95% BCA Bootstrap UCL		0.08425	
Recommendations			
Human Inspection Recommended?		NO	
Appropriate Distribution		NORMAL	
1st Recommended UCL		0.078241	95% Student's-t UCL
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value		NO	
Recommendation Warning!		NONE	
Alternative UCL		NONE	

Data File	J:\NE\WELLSG&H\OU3-supplemental\HHRA\Statistics\HH - June 2004\Fish stat - reach6.xls	
Variable:	Dieldrin	
Raw Statistics		
Number of Observations	6	
Number of Missing Data	0	
Number of Valid Observations	6	
Number of Distinct Observations	6	
Minimum	0.00055	
Maximum	0.0049	
Mean	0.002137	
Standard Deviation	0.001539	
Variance	2.37E-06	
Coefficient of Variation	0.72012	
Skewness	1.279402	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.899928	
Shapiro-Wilk 5% Critical Value	0.788	
5% Normality Test Result	NORMAL	Data are normal at 5% significance level
95% Student's-t UCL	0.003402	
Gamma Statistics		
k hat	2.37117	
k star (bias corrected)	1.296696	
Theta hat	0.000901	
Theta star	0.001648	
nu hat	28.45404	
nu star	15.56035	
5% Approximate Chi Square Value	7.651703	
Adjusted Level of Significance	0.01222	
Adjusted Chi Square Value	5.76564	
Anderson-Darling Test Statistic	0.193369	
Anderson-Darling 5% Critical Value	0.703141	
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.
Kolmogrov-Smirnov Test Statistic	0.166409	
Kolmogrov-Smirnov 5% Critical Value	0.335355	
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level
95% Approximate Gamma UCL	0.004345	
95% Adjusted Gamma UCL	0.005766	
Lognormal Statistics		
Minimum of log data	-7.505592	
Maximum of log data	-5.31852	
Mean of log data	-6.373952	
Standard Deviation of log data	0.761951	
Variance of log data	0.580569	
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.982285	
Shapiro-Wilk 5% Critical Value	0.788	
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level
MLE Mean	0.00228	
MLE Standard Deviation	0.002023	
MLE Coefficient of Variation	0.887161	
MLE Skewness	3.35973	
MLE Median	0.001705	
MLE 80% Quantile	0.003247	
MLE 90% Quantile	0.00454	
MLE 95% Quantile	0.005973	
MLE 99% Quantile	0.010035	
MVU Estimate of Median	0.001624	
MVU Estimate of Mean	0.002155	
MVU Estimate of Standard Deviation	0.00164	
MVU Estimate of SE of Mean	0.000666	
95% H-UCL	0.007468	
95% Chebyshev (MVUE) UCL	0.005059	
97.5% Chebyshev (MVUE) UCL	0.006315	
99% Chebyshev (MVUE) UCL	0.008783	
Non-parametric Statistics		
95% CLT UCL	0.00317	
95% Adjusted-CLT UCL	0.00352	
95% Modified-t UCL	0.003457	
95% Jackknife UCL	0.003402	
95% Chebyshev (Mean, Sd) UCL	0.004875	
97.5% Chebyshev (Mean, Sd) UCL	0.006059	
99% Chebyshev (Mean, Sd) UCL	0.008387	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	0.003063	
95% Bootstrap-t UCL	0.004087	
95% Hall's Bootstrap UCL	0.007714	
95% Percentile Bootstrap UCL	0.003195	
95% BCA Bootstrap UCL	0.00365	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	NORMAL	
1st Recommended UCL	0.003402	95% Student's-t UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value	NO	
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Data File	J:\NE\WELLSG&H\OU3-supplemental\HHRA\Statistics\HH - June 2004\Fish stat - reach6.xls	
Variable:	Heptachlor epoxide	
Raw Statistics		
Number of Observations	6	
Number of Missing Data	0	
Number of Valid Observations	6	
Number of Distinct Observations	5	
Minimum	0.00026	
Maximum	0.00255	
Mean	0.001057	
Standard Deviation	0.00084	
Variance	7.05E-07	
Coefficient of Variation	0.79481	
Skewness	1.276421	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.86455	
Shapiro-Wilk 5% Critical Value	0.788	
5% Normality Test Result	NORMAL	Data are normal at 5% significance level
95% Student's-t UCL	0.001748	
Gamma Statistics		
k hat	1.998555	
k star (bias corrected)	1.110389	
Theta hat	0.000529	
Theta star	0.000952	
nu hat	23.98266	
nu star	13.32466	
5% Approximate Chi Square Value	6.110592	
Adjusted Level of Significance	0.01222	
Adjusted Chi Square Value	4.467188	
Anderson-Darling Test Statistic	0.310934	
Anderson-Darling 5% Critical Value	0.70422	
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.
Kolmogrov-Smirnov Test Statistic	0.234465	
Kolmogrov-Smirnov 5% Critical Value	0.335835	
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level
95% Approximate Gamma UCL	0.002304	
95% Adjusted Gamma UCL	0.003152	
Lognormal Statistics		
Minimum of log data	-8.254829	
Maximum of log data	-5.971662	
Mean of log data	-7.123208	
Standard Deviation of log data	0.824071	
Variance of log data	0.679093	
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.954736	
Shapiro-Wilk 5% Critical Value	0.788	
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level
MLE Mean	0.001132	
MLE Standard Deviation	0.001116	
MLE Coefficient of Variation	0.985946	
MLE Skewness	3.916265	
MLE Median	0.000806	
MLE 80% Quantile	0.001618	
MLE 90% Quantile	0.002324	
MLE 95% Quantile	0.003127	
MLE 99% Quantile	0.005481	
MVU Estimate of Median	0.000761	
MVU Estimate of Mean	0.001059	
MVU Estimate of Standard Deviation	0.000871	
MVU Estimate of SE of Mean	0.000353	
95% H-UCL	0.004409	
95% Chebyshev (MVUE) UCL	0.002598	
97.5% Chebyshev (MVUE) UCL	0.003264	
99% Chebyshev (MVUE) UCL	0.004572	
Non-parametric Statistics		
95% CLT UCL	0.001621	
95% Adjusted-CLT UCL	0.001812	
95% Modified-t UCL	0.001777	
95% Jackknife UCL	0.001748	
95% Chebyshev (Mean, Sd) UCL	0.002551	
97.5% Chebyshev (Mean, Sd) UCL	0.003198	
99% Chebyshev (Mean, Sd) UCL	0.004468	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	0.001593	
95% Bootstrap-t UCL	0.002215	
95% Hall's Bootstrap UCL	0.002064	
95% Percentile Bootstrap UCL	0.00161	
95% BCA Bootstrap UCL	0.001872	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	NORMAL	
1st Recommended UCL	0.001748	95% Student's-t UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value	NO	
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Data File		J:\NE\WELLSG&H\OU3-supplemental\HHRA\Statistics\HH - June 2004\Fish stat - reach6.xls	
Variable:		Antimony	
Raw Statistics			
Number of Observations		6	
Number of Missing Data		0	
Number of Valid Observations		6	
Number of Distinct Observations		4	
Minimum		0.0385	
Maximum		0.05	
Mean		0.046917	
Standard Deviation		0.004641	
Variance		2.15E-05	
Coefficient of Variation		0.098926	
Skewness		-1.555624	
Too Few Distinct Observations?		NO	
Normal Statistics			
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic		0.763808	
Shapiro-Wilk 5% Critical Value		0.788	
5% Normality Test Result	NOT NORMAL		Data not normal at 5% significance level
95% Student's-t UCL		0.050735	
Gamma Statistics			
k hat		113.5553	
k star (bias corrected)		56.88875	
Theta hat		0.000413	
Theta star		0.000825	
nu hat		1362.663	
nu star		682.665	
5% Approximate Chi Square Value		623.0327	
Adjusted Level of Significance		0.01222	
Adjusted Chi Square Value		602.2276	
Anderson-Darling Test Statistic		0.773419	
Anderson-Darling 5% Critical Value		0.69621	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA		Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic		0.317236	
Kolmogrov-Smirnov 5% Critical Value		0.33154	
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA		Data follow gamma distribution at 5% significance level
5% Gamma Test Result	APPROX GAMMA		Data follow approximate gamma distribution at 5% significance level
95% Approximate Gamma UCL		0.051407	
95% Adjusted Gamma UCL		0.053183	
Lognormal Statistics			
Minimum of log data		-3.257097	
Maximum of log data		-2.995732	
Mean of log data		-3.063792	
Standard Deviation of log data		0.104906	
Variance of log data		0.011005	
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic		0.752201	
Shapiro-Wilk 5% Critical Value		0.788	
5% Lognormality Test Result	NOT LOGNORMAL		Data not lognormal at 5% significance level
MLE Mean		0.046968	
MLE Standard Deviation		0.004941	
MLE Coefficient of Variation		0.105196	
MLE Skewness		0.316751	
MLE Median		0.04671	
MLE 80% Quantile		0.05104	
MLE 90% Quantile		0.053451	
MLE 95% Quantile		0.055508	
MLE 99% Quantile		0.059619	
MVU Estimate of Median		0.046667	
MVU Estimate of Mean		0.046925	
MVU Estimate of Standard Deviation		0.004923	
MVU Estimate of SE of Mean		0.00201	
95% H-UCL		0.051507	
95% Chebyshev (MVUE) UCL		0.055685	
97.5% Chebyshev (MVUE) UCL		0.059475	
99% Chebyshev (MVUE) UCL		0.066921	
Non-parametric Statistics			
95% CLT UCL		0.050033	
95% Adjusted-CLT UCL		0.048748	
95% Modified-t UCL		0.050534	
95% Jackknife UCL		0.050735	
95% Chebyshev (Mean, Sd) UCL		0.055176	
97.5% Chebyshev (Mean, Sd) UCL		0.05875	
99% Chebyshev (Mean, Sd) UCL		0.06577	
Bootstrap Statistics			
Number of Bootstrap Runs		2000	
95% Standard Bootstrap UCL	N/R		Not enough distinct data warning
95% Bootstrap-t UCL	N/R		Not enough distinct data warning
95% Hall's Bootstrap UCL	N/R		Not enough distinct data warning
95% Percentile Bootstrap UCL	N/R		Not enough distinct data warning
95% BCA Bootstrap UCL	N/R		Not enough distinct data warning
Recommendations			
Human Inspection Recommended?	YES		
Appropriate Distribution	GAMMA		
1st Recommended UCL	0.051407		95% Approximate Gamma UCL
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	YES		Recommended UCL exceeds the maximum data value
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-supplemental\HHRA\Statistics\HH - June 2004\Fish stat - reach6.xls		
Variable:	Arsenic		
Raw Statistics			
Number of Observations	6		
Number of Missing Data	0		
Number of Valid Observations	6		
Number of Distinct Observations	6		
Minimum	0.037		
Maximum	0.17		
Mean	0.065417		
Standard Deviation	0.051415		
Variance	0.002644		
Coefficient of Variation	0.785968		
Skewness	2.410315		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.57722		
Shapiro-Wilk 5% Critical Value	0.788		
5% Normality Test Result	NOT NORMAL		Data not normal at 5% significance level
95% Student's-t UCL	0.107713		
Gamma Statistics			
k hat	3.168271		
k star (bias corrected)	1.695247		
Theta hat	0.020647		
Theta star	0.038588		
nu hat	38.01925		
nu star	20.34296		
5% Approximate Chi Square Value	11.10285		
Adjusted Level of Significance	0.01222		
Adjusted Chi Square Value	8.746126		
Anderson-Darling Test Statistic	1.223402		
Anderson-Darling 5% Critical Value	0.701103		
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA		Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.45681		
Kolmogrov-Smirnov 5% Critical Value	0.33438		
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA		Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA		Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	0.119858		
95% Adjusted Gamma UCL	0.152155		
Lognormal Statistics			
Minimum of log data	-3.296837		
Maximum of log data	-1.771957		
Mean of log data	-2.893016		
Standard Deviation of log data	0.558437		
Variance of log data	0.311852		
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.667874		
Shapiro-Wilk 5% Critical Value	0.788		
5% Lognormality Test Result	NOT LOGNORMAL		Data not lognormal at 5% significance level
MLE Mean	0.064759		
MLE Standard Deviation	0.039175		
MLE Coefficient of Variation	0.60494		
MLE Skewness	2.036199		
MLE Median	0.055409		
MLE 80% Quantile	0.088821		
MLE 90% Quantile	0.11356		
MLE 95% Quantile	0.138846		
MLE 99% Quantile	0.203093		
MVU Estimate of Median	0.053982		
MVU Estimate of Mean	0.062951		
MVU Estimate of Standard Deviation	0.035137		
MVU Estimate of SE of Mean	0.014322		
95% H-UCL	0.132344		
95% Chebyshev (MVUE) UCL	0.125379		
97.5% Chebyshev (MVUE) UCL	0.152392		
99% Chebyshev (MVUE) UCL	0.205454		
Non-parametric Statistics			
95% CLT UCL	0.099943		
95% Adjusted-CLT UCL	0.122012		
95% Modified-t UCL	0.111155		
95% Jackknife UCL	0.107713		
95% Chebyshev (Mean, Sd) UCL	0.156911		
97.5% Chebyshev (Mean, Sd) UCL	0.196501		
99% Chebyshev (Mean, Sd) UCL	0.274267		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	0.096145		
95% Bootstrap-t UCL	0.472898		
95% Hall's Bootstrap UCL	0.420916		
95% Percentile Bootstrap UCL	0.105417		
95% BCA Bootstrap UCL	0.0885		
Recommendations			
Human Inspection Recommended?	YES		
Appropriate Distribution	NON-PARAMETRIC		
1st Recommended UCL	0.156911		95% Chebyshev (Mean, Sd) UCL
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	YES		Recommended UCL exceeds the maximum data value
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-supplemental\HHRA\Statistics\HH - June 2004\Fish stat - reach6.xls		
Variable:	Copper		
Raw Statistics			
Number of Observations	6		
Number of Missing Data	0		
Number of Valid Observations	6		
Number of Distinct Observations	5		
Minimum	0.12		
Maximum	0.8		
Mean	0.248333		
Standard Deviation	0.270807		
Variance	0.073337		
Coefficient of Variation	1.0905		
Skewness	2.427666		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.550793		
Shapiro-Wilk 5% Critical Value	0.788		
5% Normality Test Result	NOT NORMAL		Data not normal at 5% significance level
95% Student's-t UCL	0.47111		
Gamma Statistics			
k hat	1.811798		
k star (bias corrected)	1.01701		
Theta hat	0.137065		
Theta star	0.24418		
nu hat	21.74158		
nu star	12.20412		
5% Approximate Chi Square Value	5.360757		
Adjusted Level of Significance	0.01222		
Adjusted Chi Square Value	3.845779		
Anderson-Darling Test Statistic	1.309351		
Anderson-Darling 5% Critical Value	0.705558		
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA		Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.421628		
Kolmogrov-Smirnov 5% Critical Value	0.33644		
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA		Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA		Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	0.565347		
95% Adjusted Gamma UCL	0.788056		
Lognormal Statistics			
Minimum of log data	-2.120264		
Maximum of log data	-0.223144		
Mean of log data	-1.693653		
Standard Deviation of log data	0.730066		
Variance of log data	0.532996		
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.635906		
Shapiro-Wilk 5% Critical Value	0.788		
5% Lognormality Test Result	NOT LOGNORMAL		Data not lognormal at 5% significance level
MLE Mean	0.239991		
MLE Standard Deviation	0.201368		
MLE Coefficient of Variation	0.839065		
MLE Skewness	3.107921		
MLE Median	0.183847		
MLE 80% Quantile	0.340702		
MLE 90% Quantile	0.469767		
MLE 95% Quantile	0.610977		
MLE 99% Quantile	1.00449		
MVU Estimate of Median	0.175809		
MVU Estimate of Mean	0.228051		
MVU Estimate of Standard Deviation	0.166279		
MVU Estimate of SE of Mean	0.067593		
95% H-UCL	0.723184		
95% Chebyshev (MVUE) UCL	0.522683		
97.5% Chebyshev (MVUE) UCL	0.650171		
99% Chebyshev (MVUE) UCL	0.900596		
Non-parametric Statistics			
95% CLT UCL	0.430183		
95% Adjusted-CLT UCL	0.547262		
95% Modified-t UCL	0.489372		
95% Jackknife UCL	0.47111		
95% Chebyshev (Mean, Sd) UCL	0.730239		
97.5% Chebyshev (Mean, Sd) UCL	0.93876		
99% Chebyshev (Mean, Sd) UCL	1.348358		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	0.412559		
95% Bootstrap-t UCL	4.445378		
95% Hall's Bootstrap UCL	2.13575		
95% Percentile Bootstrap UCL	0.465		
95% BCA Bootstrap UCL	0.368333		
Recommendations			
Human Inspection Recommended?	YES		
Appropriate Distribution	NON-PARAMETRIC		
1st Recommended UCL	0.730239		95% Chebyshev (Mean, Sd) UCL
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	YES		Recommended UCL exceeds the maximum data value
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\June 2004-revised\Fish stat - reach6.xls		
Variable:	Lead		
Raw Statistics			
Number of Observations	6		
Number of Missing Data	0		
Number of Valid Observations	6		
Number of Distinct Observations	6		
Minimum	0.0265		
Maximum	2.3		
Mean	0.416667		
Standard Deviation	0.92282		
Variance	0.851597		
Coefficient of Variation	2.214769		
Skewness	2.447366		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.510912		
Shapiro-Wilk 5% Critical Value	0.788		
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level	
95% Student's-t UCL	1.175816		
Gamma Statistics			
k hat	0.38226		
k star (bias corrected)	0.302241		
Theta hat	1.090008		
Theta star	1.37859		
nu hat	4.587122		
nu star	3.626894		
5% Approximate Chi Square Value	0.57985		
Adjusted Level of Significance	0.01222		
Adjusted Chi Square Value	0.271986		
Anderson-Darling Test Statistic	1.350007		
Anderson-Darling 5% Critical Value	0.754		
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level	
Kolmogrov-Smirnov Test Statistic	0.434318		
Kolmogrov-Smirnov 5% Critical Value	0.35342		
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level	
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level	
95% Approximate Gamma UCL	2.606203		
95% Adjusted Gamma UCL	5.556189		
Lognormal Statistics			
Minimum of log data	-3.630611		
Maximum of log data	0.832909		
Mean of log data	-2.609566		
Standard Deviation of log data	1.726723		
Variance of log data	2.981571		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.656866		
Shapiro-Wilk 5% Critical Value	0.788		
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level	
MLE Mean	0.326678		
MLE Standard Deviation	1.413378		
MLE Coefficient of Variation	4.326519		
MLE Skewness	93.96665		
MLE Median	0.073566		
MLE 80% Quantile	0.316483		
MLE 90% Quantile	0.676565		
MLE 95% Quantile	1.259724		
MLE 99% Quantile	4.082832		
MVU Estimate of Median	0.056837		
MVU Estimate of Mean	0.21629		
MVU Estimate of Standard Deviation	0.366262		
MVU Estimate of SE of Mean	0.139357		
95% H-UCL	73.61174		
95% Chebyshev (MVUE) UCL	0.823734		
97.5% Chebyshev (MVUE) UCL	1.086576		
99% Chebyshev (MVUE) UCL	1.602877		
Non-parametric Statistics			
95% CLT UCL	1.036349		
95% Adjusted-CLT UCL	1.438551		
95% Modified-t UCL	1.238551		
95% Jackknife UCL	1.175816		
95% Chebyshev (Mean, Sd) UCL	2.058837		
97.5% Chebyshev (Mean, Sd) UCL	2.769406		
99% Chebyshev (Mean, Sd) UCL	4.165181		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	0.975245		
95% Bootstrap-t UCL	117.9495		
95% Hall's Bootstrap UCL	48.61392		
95% Percentile Bootstrap UCL	1.165167		
95% BCA Bootstrap UCL	0.803333		
Recommendations			
Human Inspection Recommended?	YES		
Appropriate Distribution	NON-PARAMETRIC		
1st Recommended UCL	4.165181	99% Chebyshev (Mean, Sd) UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	YES	Recommended UCL exceeds the maximum data value	
Recommendation Warning!	NONE		
Alternative UCL	YES	Cosider using 95% or 97.5% Chebyshev (Mean, Sd) UCL	

Data File	J:\NE\WELLSG&H\OU3-supplemental\HHRA\Statistics\HH - June 2004\Fish stat - reach6.xls		
Variable:	Mercury		
Raw Statistics			
Number of Observations	6		
Number of Missing Data	0		
Number of Valid Observations	6		
Number of Distinct Observations	5		
Minimum	0.018		
Maximum	0.2		
Mean	0.146333		
Standard Deviation	0.068474		
Variance	0.004689		
Coefficient of Variation	0.467931		
Skewness	-1.678981		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.805061		
Shapiro-Wilk 5% Critical Value	0.788		
5% Normality Test Result	NORMAL		Data are normal at 5% significance level
95% Student's-t UCL	0.202663		
Gamma Statistics			
k hat	2.368278		
k star (bias corrected)	1.29525		
Theta hat	0.061789		
Theta star	0.112977		
nu hat	28.41934		
nu star	15.543		
5% Approximate Chi Square Value	7.639537		
Adjusted Level of Significance	0.01222		
Adjusted Chi Square Value	5.755295		
Anderson-Darling Test Statistic	0.970533		
Anderson-Darling 5% Critical Value	0.703149		
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA		Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.349963		
Kolmogrov-Smirnov 5% Critical Value	0.335359		
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA		Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA		Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	0.297722		
95% Adjusted Gamma UCL	0.395194		
Lognormal Statistics			
Minimum of log data	-4.017384		
Maximum of log data	-1.609438		
Mean of log data	-2.147604		
Standard Deviation of log data	0.931028		
Variance of log data	0.866812		
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.647899		
Shapiro-Wilk 5% Critical Value	0.788		
5% Lognormality Test Result	NOT LOGNORMAL		Data not lognormal at 5% significance level
MLE Mean	0.180108		
MLE Standard Deviation	0.211527		
MLE Coefficient of Variation	1.174442		
MLE Skewness	5.143251		
MLE Median	0.116764		
MLE 80% Quantile	0.256434		
MLE 90% Quantile	0.386264		
MLE 95% Quantile	0.540066		
MLE 99% Quantile	1.018128		
MVU Estimate of Median	0.108544		
MVU Estimate of Mean	0.164754		
MVU Estimate of Standard Deviation	0.15293		
MVU Estimate of SE of Mean	0.061803		
95% H-UCL	0.975353		
95% Chebyshev (MVUE) UCL	0.434149		
97.5% Chebyshev (MVUE) UCL	0.550716		
99% Chebyshev (MVUE) UCL	0.779689		
Non-parametric Statistics			
95% CLT UCL	0.192314		
95% Adjusted-CLT UCL	0.17184		
95% Modified-t UCL	0.199469		
95% Jackknife UCL	0.202663		
95% Chebyshev (Mean, Sd) UCL	0.268183		
97.5% Chebyshev (Mean, Sd) UCL	0.320908		
99% Chebyshev (Mean, Sd) UCL	0.424475		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	0.188088		
95% Bootstrap-t UCL	0.185586		
95% Hall's Bootstrap UCL	0.176863		
95% Percentile Bootstrap UCL	0.183333		
95% BCA Bootstrap UCL	0.185		
Recommendations			
Human Inspection Recommended?	YES		
Appropriate Distribution	NORMAL		
1st Recommended UCL	0.202663		95% Student's-t UCL
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	YES		Recommended UCL exceeds the maximum data value
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-supplemental\HHRA\Statistics\HH - June 2004\Fish stat - reach6.xls	
Variable:	Selenium	
Raw Statistics		
Number of Observations	6	
Number of Missing Data	0	
Number of Valid Observations	6	
Number of Distinct Observations	6	
Minimum	0.45	
Maximum	0.65	
Mean	0.565833	
Standard Deviation	0.071443	
Variance	0.005104	
Coefficient of Variation	0.126262	
Skewness	-0.653361	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.966171	
Shapiro-Wilk 5% Critical Value	0.788	
5% Normality Test Result	NORMAL	Data are normal at 5% significance level
95% Student's-t UCL	0.624606	
Gamma Statistics		
k hat	71.62218	
k star (bias corrected)	35.9222	
Theta hat	0.0079	
Theta star	0.015752	
nu hat	859.4661	
nu star	431.0664	
5% Approximate Chi Square Value	383.9238	
Adjusted Level of Significance	0.01222	
Adjusted Chi Square Value	367.71	
Anderson-Darling Test Statistic	0.23199	
Anderson-Darling 5% Critical Value	0.69659	
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.
Kolmogrov-Smirnov Test Statistic	0.147917	
Kolmogrov-Smirnov 5% Critical Value	0.331693	
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level
95% Approximate Gamma UCL	0.635313	
95% Adjusted Gamma UCL	0.663326	
Lognormal Statistics		
Minimum of log data	-0.798508	
Maximum of log data	-0.430783	
Mean of log data	-0.576453	
Standard Deviation of log data	0.13137	
Variance of log data	0.017258	
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.946705	
Shapiro-Wilk 5% Critical Value	0.788	
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level
MLE Mean	0.566757	
MLE Standard Deviation	0.074778	
MLE Coefficient of Variation	0.131939	
MLE Skewness	0.398115	
MLE Median	0.561888	
MLE 80% Quantile	0.627856	
MLE 90% Quantile	0.665217	
MLE 95% Quantile	0.697433	
MLE 99% Quantile	0.762704	
MVU Estimate of Median	0.56108	
MVU Estimate of Mean	0.565939	
MVU Estimate of Standard Deviation	0.074347	
MVU Estimate of SE of Mean	0.030352	
95% H-UCL	0.637386	
95% Chebyshev (MVUE) UCL	0.69824	
97.5% Chebyshev (MVUE) UCL	0.755487	
99% Chebyshev (MVUE) UCL	0.867938	
Non-parametric Statistics		
95% CLT UCL	0.613808	
95% Adjusted-CLT UCL	0.605495	
95% Modified-t UCL	0.623309	
95% Jackknife UCL	0.624606	
95% Chebyshev (Mean, Sd) UCL	0.692968	
97.5% Chebyshev (Mean, Sd) UCL	0.747979	
99% Chebyshev (Mean, Sd) UCL	0.856038	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	0.609462	
95% Bootstrap-t UCL	0.613728	
95% Hall's Bootstrap UCL	0.61216	
95% Percentile Bootstrap UCL	0.6075	
95% BCA Bootstrap UCL	0.618333	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	NORMAL	
1st Recommended UCL	0.624606	95% Student's-t UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value	NO	
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\July 2004\AJRW-SD.xls		
Variable:	Arsenic		
Raw Statistics			
Number of Observations	9		
Number of Missing Data	0		
Number of Valid Observations	9		
Number of Distinct Observations	5		
Minimum	9.5		
Maximum	29		
Mean	14.5		
Standard Deviation	7.27152		
Variance	52.875		
Coefficient of Variation	0.501484		
Skewness	1.27752		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.71167		
Shapiro-Wilk 5% Critical Value	0.829		
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level	
95% Student's-t UCL	19.00725		
Gamma Statistics			
k hat	5.461254		
k star (bias corrected)	3.71491		
Theta hat	2.655068		
Theta star	3.90319		
nu hat	98.30257		
nu star	66.86838		
5% Approximate Chi Square Value	49.04609		
Adjusted Level of Significance	0.02308		
Adjusted Chi Square Value	45.8428		
Anderson-Darling Test Statistic	1.401289		
Anderson-Darling 5% Critical Value	0.722667		
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level	
Kolmogrov-Smirnov Test Statistic	0.4154		
Kolmogrov-Smirnov 5% Critical Value	0.279792		
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level	
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level	
95% Approximate Gamma UCL	19.76899		
95% Adjusted Gamma UCL	21.15036		
Lognormal Statistics			
Minimum of log data	2.251292		
Maximum of log data	3.367296		
Mean of log data	2.57981		
Standard Deviation of log data	0.439698		
Variance of log data	0.193335		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.712608		
Shapiro-Wilk 5% Critical Value	0.829		
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level	
MLE Mean	14.5338		
MLE Standard Deviation	6.712172		
MLE Coefficient of Variation	0.461832		
MLE Skewness	1.483999		
MLE Median	13.19463		
MLE 80% Quantile	19.13186		
MLE 90% Quantile	23.21554		
MLE 95% Quantile	27.19718		
MLE 99% Quantile	36.6916		
MVU Estimate of Median	13.05351		
MVU Estimate of Mean	14.36812		
MVU Estimate of Standard Deviation	6.396704		
MVU Estimate of SE of Mean	2.129975		
95% H-UCL	20.49098		
95% Chebyshev (MVUE) UCL	23.65246		
97.5% Chebyshev (MVUE) UCL	27.66981		
99% Chebyshev (MVUE) UCL	35.5611		
Non-parametric Statistics			
95% CLT UCL	18.48686		
95% Adjusted-CLT UCL	19.58975		
95% Modified-t UCL	19.17927		
95% Jackknife UCL	19.00725		
95% Chebyshev (Mean, Sd) UCL	25.06527		
97.5% Chebyshev (Mean, Sd) UCL	29.63688		
99% Chebyshev (Mean, Sd) UCL	38.6169		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	18.21642		
95% Bootstrap-t UCL	21.95818		
95% Hall's Bootstrap UCL	17.43986		
95% Percentile Bootstrap UCL	18.5		
95% BCA Bootstrap UCL	17.72222		
Recommendations			
Human Inspection Recommended?	YES	Users must select one of the recommended UCLS	
Appropriate Distribution	NON-PARAMETRIC		
1st Recommended UCL	19.00725	95% Student's-t UCL	
2nd Recommended UCL	19.17927	95% Modified-t UCL	
3rd Recommended UCL			
Recommended UCL > Max Data Value			
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\July 2004\AJRW-SD.xls		
Variable:	Lead		
Raw Statistics			
Number of Observations	9		
Number of Missing Data	0		
Number of Valid Observations	9		
Number of Distinct Observations	7		
Minimum	78		
Maximum	470		
Mean	185.3333		
Standard Deviation	113.8244		
Variance	12956		
Coefficient of Variation	0.614161		
Skewness	2.320633		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.720917		
Shapiro-Wilk 5% Critical Value	0.829		
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level	
95% Student's-t UCL	255.8873		
Gamma Statistics			
k hat	4.289436		
k star (bias corrected)	2.933698		
Theta hat	43.20693		
Theta star	63.17397		
nu hat	77.20984		
nu star	52.80656		
5% Approximate Chi Square Value	37.11066		
Adjusted Level of Significance	0.02308		
Adjusted Chi Square Value	34.35492		
Anderson-Darling Test Statistic	0.641668		
Anderson-Darling 5% Critical Value	0.724323		
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.	
Kolmogrov-Smirnov Test Statistic	0.224538		
Kolmogrov-Smirnov 5% Critical Value	0.280259		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level	
95% Approximate Gamma UCL	263.7198		
95% Adjusted Gamma UCL	284.8738		
Lognormal Statistics			
Minimum of log data	4.356709		
Maximum of log data	6.152733		
Mean of log data	5.101085		
Standard Deviation of log data	0.490171		
Variance of log data	0.240268		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.904946		
Shapiro-Wilk 5% Critical Value	0.829		
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level	
MLE Mean	185.1598		
MLE Standard Deviation	96.4947		
MLE Coefficient of Variation	0.521143		
MLE Skewness	1.704965		
MLE Median	164.2		
MLE 80% Quantile	248.4596		
MLE 90% Quantile	308.2637		
MLE 95% Quantile	367.7551		
MLE 99% Quantile	513.4866		
MVU Estimate of Median	162.0199		
MVU Estimate of Mean	182.5013		
MVU Estimate of Standard Deviation	90.83873		
MVU Estimate of SE of Mean	30.23094		
95% H-UCL	275.1762		
95% Chebyshev (MVUE) UCL	314.2749		
97.5% Chebyshev (MVUE) UCL	371.2934		
99% Chebyshev (MVUE) UCL	483.2954		
Non-parametric Statistics			
95% CLT UCL	247.7415		
95% Adjusted-CLT UCL	279.1018		
95% Modified-t UCL	260.7789		
95% Jackknife UCL	255.8873		
95% Chebyshev (Mean, Sd) UCL	350.7164		
97.5% Chebyshev (Mean, Sd) UCL	422.2778		
99% Chebyshev (Mean, Sd) UCL	562.8462		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	243.7468		
95% Bootstrap-t UCL	340.5486		
95% Hall's Bootstrap UCL	511.7186		
95% Percentile Bootstrap UCL	248.8889		
95% BCA Bootstrap UCL	288.6667		
Recommendations			
Human Inspection Recommended?	NO		
Appropriate Distribution	GAMMA		
1st Recommended UCL	263.7198	95% Approximate Gamma UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value			
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\July 2004\AJRW-SD.xls		
Variable:	Manganese		
Raw Statistics			
Number of Observations	9		
Number of Missing Data	0		
Number of Valid Observations	9		
Number of Distinct Observations	9		
Minimum	91		
Maximum	330		
Mean	188.4444		
Standard Deviation	69.73541		
Variance	4863.028		
Coefficient of Variation	0.370058		
Skewness	0.831786		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.957843		
Shapiro-Wilk 5% Critical Value	0.829		
5% Normality Test Result	NORMAL	Data are normal at 5% significance level	
95% Student's-t UCL	231.6699		
Gamma Statistics			
k hat	8.393692		
k star (bias corrected)	5.669869		
Theta hat	22.45072		
Theta star	33.23612		
nu hat	151.0865		
nu star	102.0576		
5% Approximate Chi Square Value	79.74415		
Adjusted Level of Significance	0.02308		
Adjusted Chi Square Value	75.5932		
Anderson-Darling Test Statistic	0.148073		
Anderson-Darling 5% Critical Value	0.722074		
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.	
Kolmogrov-Smirnov Test Statistic	0.110885		
Kolmogrov-Smirnov 5% Critical Value	0.279487		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level	
95% Approximate Gamma UCL	241.1738		
95% Adjusted Gamma UCL	254.417		
Lognormal Statistics			
Minimum of log data	4.51086		
Maximum of log data	5.799093		
Mean of log data	5.178054		
Standard Deviation of log data	0.373787		
Variance of log data	0.139716		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.989608		
Shapiro-Wilk 5% Critical Value	0.829		
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level	
MLE Mean	190.1687		
MLE Standard Deviation	73.63917		
MLE Coefficient of Variation	0.387231		
MLE Skewness	1.219756		
MLE Median	177.3373		
MLE 80% Quantile	243.2046		
MLE 90% Quantile	286.6808		
MLE 95% Quantile	327.9734		
MLE 99% Quantile	423.046		
MVU Estimate of Median	175.9651		
MVU Estimate of Mean	188.6266		
MVU Estimate of Standard Deviation	71.14888		
MVU Estimate of SE of Mean	23.70288		
95% H-UCL	251.6009		
95% Chebyshev (MVUE) UCL	291.945		
97.5% Chebyshev (MVUE) UCL	336.651		
99% Chebyshev (MVUE) UCL	424.4672		
Non-parametric Statistics			
95% CLT UCL	226.6793		
95% Adjusted-CLT UCL	233.5659		
95% Modified-t UCL	232.7441		
95% Jackknife UCL	231.6699		
95% Chebyshev (Mean, Sd) UCL	289.7676		
97.5% Chebyshev (Mean, Sd) UCL	333.6103		
99% Chebyshev (Mean, Sd) UCL	419.7306		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	225.0242		
95% Bootstrap-t UCL	239.5937		
95% Hall's Bootstrap UCL	252.7015		
95% Percentile Bootstrap UCL	226.6667		
95% BCA Bootstrap UCL	217.7778		
Recommendations			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	231.6699	95% Student's-t UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value			
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\July 2004\AJRW-SD.xls		
Variable:	Mercury		
Raw Statistics			
Number of Observations	9		
Number of Missing Data	0		
Number of Valid Observations	9		
Number of Distinct Observations	8		
Minimum	0.15		
Maximum	1.045		
Mean	0.526111		
Standard Deviation	0.279372		
Variance	0.078049		
Coefficient of Variation	0.531013		
Skewness	0.609369		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.962579		
Shapiro-Wilk 5% Critical Value	0.829		
5% Normality Test Result	NORMAL	Data are normal at 5% significance level	
95% Student's-t UCL	0.69928		
Gamma Statistics			
k hat	3.645888		
k star (bias corrected)	2.504666		
Theta hat	0.144303		
Theta star	0.210052		
nu hat	65.62599		
nu star	45.08399		
5% Approximate Chi Square Value	30.67906		
Adjusted Level of Significance	0.02308		
Adjusted Chi Square Value	28.19449		
Anderson-Darling Test Statistic	0.172583		
Anderson-Darling 5% Critical Value	0.725612		
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.	
Kolmogrov-Smirnov Test Statistic	0.134826		
Kolmogrov-Smirnov 5% Critical Value	0.280752		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level	
95% Approximate Gamma UCL	0.773139		
95% Adjusted Gamma UCL	0.84127		
Lognormal Statistics			
Minimum of log data	-1.89712		
Maximum of log data	0.044017		
Mean of log data	-0.785607		
Standard Deviation of log data	0.599505		
Variance of log data	0.359406		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.963507		
Shapiro-Wilk 5% Critical Value	0.829		
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level	
MLE Mean	0.545581		
MLE Standard Deviation	0.358791		
MLE Coefficient of Variation	0.657631		
MLE Skewness	2.257303		
MLE Median	0.455843		
MLE 80% Quantile	0.75652		
MLE 90% Quantile	0.984872		
MLE 95% Quantile	1.222109		
MLE 99% Quantile	1.838299		
MVU Estimate of Median	0.446813		
MVU Estimate of Mean	0.533479		
MVU Estimate of Standard Deviation	0.327088		
MVU Estimate of SE of Mean	0.108655		
95% H-UCL	0.920693		
95% Chebyshev (MVUE) UCL	1.007097		
97.5% Chebyshev (MVUE) UCL	1.212032		
99% Chebyshev (MVUE) UCL	1.614587		
Non-parametric Statistics			
95% CLT UCL	0.679286		
95% Adjusted-CLT UCL	0.699498		
95% Modified-t UCL	0.702432		
95% Jackknife UCL	0.69928		
95% Chebyshev (Mean, Sd) UCL	0.932029		
97.5% Chebyshev (Mean, Sd) UCL	1.10767		
99% Chebyshev (Mean, Sd) UCL	1.452683		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	0.673352		
95% Bootstrap-t UCL	0.723118		
95% Hall's Bootstrap UCL	0.732811		
95% Percentile Bootstrap UCL	0.671667		
95% BCA Bootstrap UCL	0.764444		
Recommendations			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	0.69928	95% Student's-t UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value			
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\July 2004\AJRW-SO.xls		
Variable:	Arsenic		
Raw Statistics			
Number of Observations	9		
Number of Missing Data	0		
Number of Valid Observations	9		
Number of Distinct Observations	9		
Minimum	9.5		
Maximum	98		
Mean	46.38889		
Standard Deviation	33.55758		
Variance	1126.111		
Coefficient of Variation	0.723397		
Skewness	0.449852		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.889931		
Shapiro-Wilk 5% Critical Value	0.829		
5% Normality Test Result	NORMAL	Data are normal at 5% significance level	
95% Student's-t UCL	67.18953		
Gamma Statistics			
k hat	1.830882		
k star (bias corrected)	1.294662		
Theta hat	25.33691		
Theta star	35.83089		
nu hat	32.95587		
nu star	23.30391		
5% Approximate Chi Square Value	13.31886		
Adjusted Level of Significance	0.02308		
Adjusted Chi Square Value	11.75707		
Anderson-Darling Test Statistic	0.374433		
Anderson-Darling 5% Critical Value	0.731323		
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.	
Kolmogrov-Smirnov Test Statistic	0.181306		
Kolmogrov-Smirnov 5% Critical Value	0.282987		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level	
95% Approximate Gamma UCL	81.16628		
95% Adjusted Gamma UCL	91.94831		
Lognormal Statistics			
Minimum of log data	2.251292		
Maximum of log data	4.584967		
Mean of log data	3.539766		
Standard Deviation of log data	0.878728		
Variance of log data	0.772164		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.904544		
Shapiro-Wilk 5% Critical Value	0.829		
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level	
MLE Mean	50.69607		
MLE Standard Deviation	54.70583		
MLE Coefficient of Variation	1.079094		
MLE Skewness	4.493828		
MLE Median	34.45887		
MLE 80% Quantile	72.4062		
MLE 90% Quantile	106.5839		
MLE 95% Quantile	146.2438		
MLE 99% Quantile	266.0512		
MVU Estimate of Median	33.00578		
MVU Estimate of Mean	48.03804		
MVU Estimate of Standard Deviation	44.16304		
MVU Estimate of SE of Mean	14.5207		
95% H-UCL	129.8548		
95% Chebyshev (MVUE) UCL	111.3323		
97.5% Chebyshev (MVUE) UCL	138.7198		
99% Chebyshev (MVUE) UCL	192.5172		
Non-parametric Statistics			
95% CLT UCL	64.78799		
95% Adjusted-CLT UCL	66.58024		
95% Modified-t UCL	67.46909		
95% Jackknife UCL	67.18953		
95% Chebyshev (Mean, Sd) UCL	95.14692		
97.5% Chebyshev (Mean, Sd) UCL	116.2446		
99% Chebyshev (Mean, Sd) UCL	157.6868		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	63.64378		
95% Bootstrap-t UCL	70.86248		
95% Hall's Bootstrap UCL	62.22648		
95% Percentile Bootstrap UCL	64.44444		
95% BCA Bootstrap UCL	71.16667		
Recommendations			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	67.18953	95% Student's-t UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value			
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\July 2004\AJRW-SO.xls		
Variable:	Chromium		
Raw Statistics			
Number of Observations	9		
Number of Missing Data	0		
Number of Valid Observations	9		
Number of Distinct Observations	9		
Minimum	19		
Maximum	90		
Mean	39.94444		
Standard Deviation	21.8152		
Variance	475.9028		
Coefficient of Variation	0.546138		
Skewness	1.640527		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.843466		
Shapiro-Wilk 5% Critical Value	0.829		
5% Normality Test Result	NORMAL	Data are normal at 5% significance level	
95% Student's-t UCL	53.46658		
Gamma Statistics			
k hat	4.595557		
k star (bias corrected)	3.137779		
Theta hat	8.69197		
Theta star	12.73017		
nu hat	82.72002		
nu star	56.48002		
5% Approximate Chi Square Value	40.20356		
Adjusted Level of Significance	0.02308		
Adjusted Chi Square Value	37.32573		
Anderson-Darling Test Statistic	0.286883		
Anderson-Darling 5% Critical Value	0.72365		
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.	
Kolmogrov-Smirnov Test Statistic	0.160813		
Kolmogrov-Smirnov 5% Critical Value	0.280079		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level	
95% Approximate Gamma UCL	56.11599		
95% Adjusted Gamma UCL	60.44257		
Lognormal Statistics			
Minimum of log data	2.944439		
Maximum of log data	4.49981		
Mean of log data	3.574761		
Standard Deviation of log data	0.489995		
Variance of log data	0.240095		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.956479		
Shapiro-Wilk 5% Critical Value	0.829		
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level	
MLE Mean	40.23788		
MLE Standard Deviation	20.96119		
MLE Coefficient of Variation	0.520932		
MLE Skewness	1.70416		
MLE Median	35.6861		
MLE 80% Quantile	53.99044		
MLE 90% Quantile	66.98071		
MLE 95% Quantile	79.90215		
MLE 99% Quantile	111.5518		
MVU Estimate of Median	35.21263		
MVU Estimate of Mean	39.66058		
MVU Estimate of Standard Deviation	19.73346		
MVU Estimate of SE of Mean	6.56727		
95% H-UCL	59.78833		
95% Chebyshev (MVUE) UCL	68.28664		
97.5% Chebyshev (MVUE) UCL	80.67316		
99% Chebyshev (MVUE) UCL	105.0041		
Non-parametric Statistics			
95% CLT UCL	51.90538		
95% Adjusted-CLT UCL	56.15432		
95% Modified-t UCL	54.12933		
95% Jackknife UCL	53.46658		
95% Chebyshev (Mean, Sd) UCL	71.64119		
97.5% Chebyshev (Mean, Sd) UCL	85.3564		
99% Chebyshev (Mean, Sd) UCL	112.2973		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	51.42471		
95% Bootstrap-t UCL	62.21089		
95% Hall's Bootstrap UCL	104.6447		
95% Percentile Bootstrap UCL	52.27778		
95% BCA Bootstrap UCL	60.66667		
Recommendations			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	53.46658	95% Student's-t UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value			
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\July 2004\AJRW-SO.xls		
Variable:	Lead		
Raw Statistics			
Number of Observations	9		
Number of Missing Data	0		
Number of Valid Observations	9		
Number of Distinct Observations	9		
Minimum	88		
Maximum	930		
Mean	298.1111		
Standard Deviation	261.3754		
Variance	68317.11		
Coefficient of Variation	0.876772		
Skewness	2.068648		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.764107		
Shapiro-Wilk 5% Critical Value	0.829		
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level	
95% Student's-t UCL	460.1245		
Gamma Statistics			
k hat	2.015486		
k star (bias corrected)	1.417731		
Theta hat	147.9103		
Theta star	210.2733		
nu hat	36.27875		
nu star	25.51917		
5% Approximate Chi Square Value	15.00783		
Adjusted Level of Significance	0.02308		
Adjusted Chi Square Value	13.33685		
Anderson-Darling Test Statistic	0.367642		
Anderson-Darling 5% Critical Value	0.729724		
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.	
Kolmogrov-Smirnov Test Statistic	0.154599		
Kolmogrov-Smirnov 5% Critical Value	0.282462		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level	
95% Approximate Gamma UCL	506.9051		
95% Adjusted Gamma UCL	570.4157		
Lognormal Statistics			
Minimum of log data	4.477337		
Maximum of log data	6.835185		
Mean of log data	5.42933		
Standard Deviation of log data	0.749041		
Variance of log data	0.561063		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.951523		
Shapiro-Wilk 5% Critical Value	0.829		
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level	
MLE Mean	301.8291		
MLE Standard Deviation	261.833		
MLE Coefficient of Variation	0.867488		
MLE Skewness	3.255277		
MLE Median	227.9963		
MLE 80% Quantile	429.3488		
MLE 90% Quantile	596.9586		
MLE 95% Quantile	781.7248		
MLE 99% Quantile	1301.926		
MVU Estimate of Median	220.9776		
MVU Estimate of Mean	290.8464		
MVU Estimate of Standard Deviation	225.3721		
MVU Estimate of SE of Mean	74.54206		
95% H-UCL	625.7731		
95% Chebyshev (MVUE) UCL	615.7677		
97.5% Chebyshev (MVUE) UCL	756.3614		
99% Chebyshev (MVUE) UCL	1032.53		
Non-parametric Statistics			
95% CLT UCL	441.4192		
95% Adjusted-CLT UCL	505.6124		
95% Modified-t UCL	470.1373		
95% Jackknife UCL	460.1245		
95% Chebyshev (Mean, Sd) UCL	677.8808		
97.5% Chebyshev (Mean, Sd) UCL	842.2074		
99% Chebyshev (Mean, Sd) UCL	1164.995		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	433.6723		
95% Bootstrap-t UCL	622.3925		
95% Hall's Bootstrap UCL	1070.706		
95% Percentile Bootstrap UCL	444.7778		
95% BCA Bootstrap UCL	525.6667		
Recommendations			
Human Inspection Recommended?	NO		
Appropriate Distribution	GAMMA		
1st Recommended UCL	506.9051	95% Approximate Gamma UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value			
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\July 2004\AJRW-SO.xls		
Variable:	Manganese		
<b>Raw Statistics</b>			
Number of Observations	9		
Number of Missing Data	0		
Number of Valid Observations	9		
Number of Distinct Observations	9		
Minimum	63		
Maximum	600		
Mean	228.6667		
Standard Deviation	158.3501		
Variance	25074.75		
Coefficient of Variation	0.692493		
Skewness	1.851121		
Too Few Distinct Observations?	NO		
<b>Normal Statistics</b>			
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.815657		
Shapiro-Wilk 5% Critical Value	0.829		
5% Normality Test Result	NOT NORMAL		Data not normal at 5% significance level
95% Student's-t UCL	326.8199		
<b>Gamma Statistics</b>			
k hat	2.927242		
k star (bias corrected)	2.025569		
Theta hat	78.11675		
Theta star	112.8901		
nu hat	52.69036		
nu star	36.46024		
5% Approximate Chi Square Value	23.6372		
Adjusted Level of Significance	0.02308		
Adjusted Chi Square Value	21.48412		
Anderson-Darling Test Statistic	0.32958		
Anderson-Darling 5% Critical Value	0.727016		
Anderson-Darling 5% Gamma Test Result	AD GAMMA		Data follow gamma distribution at 5% significance level.
Kolmogrov-Smirnov Test Statistic	0.225638		
Kolmogrov-Smirnov 5% Critical Value	0.281423		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA		Data follow gamma distribution at 5% significance level
5% Gamma Test Result	GAMMA		Data follow gamma distribution at 5% significance level
95% Approximate Gamma UCL	352.717		
95% Adjusted Gamma UCL	388.0654		
<b>Lognormal Statistics</b>			
Minimum of log data	4.143135		
Maximum of log data	6.39693		
Mean of log data	5.251839		
Standard Deviation of log data	0.631761		
Variance of log data	0.399122		
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.971791		
Shapiro-Wilk 5% Critical Value	0.829		
5% Lognormality Test Result	LOGNORMAL		Data are lognormal at 5% significance level
MLE Mean	233.0842		
MLE Standard Deviation	163.2448		
MLE Coefficient of Variation	0.700368		
MLE Skewness	2.444647		
MLE Median	190.917		
MLE 80% Quantile	325.6024		
MLE 90% Quantile	429.9427		
MLE 95% Quantile	539.7391		
MLE 99% Quantile	829.9084		
MVU Estimate of Median	186.7211		
MVU Estimate of Mean	227.2835		
MVU Estimate of Standard Deviation	147.1911		
MVU Estimate of SE of Mean	48.85935		
95% H-UCL	409.8548		
95% Chebyshev (MVUE) UCL	440.2564		
97.5% Chebyshev (MVUE) UCL	532.41		
99% Chebyshev (MVUE) UCL	713.4278		
<b>Non-parametric Statistics</b>			
95% CLT UCL	315.4876		
95% Adjusted-CLT UCL	350.2885		
95% Modified-t UCL	332.2481		
95% Jackknife UCL	326.8199		
95% Chebyshev (Mean, Sd) UCL	458.744		
97.5% Chebyshev (Mean, Sd) UCL	558.2987		
99% Chebyshev (Mean, Sd) UCL	753.8545		
<b>Bootstrap Statistics</b>			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	310.3858		
95% Bootstrap-t UCL	444.5326		
95% Hall's Bootstrap UCL	804.0799		
95% Percentile Bootstrap UCL	315.5556		
95% BCA Bootstrap UCL	367.7778		
<b>Recommendations</b>			
Human Inspection Recommended?	NO		
Appropriate Distribution	GAMMA		
1st Recommended UCL	352.717		95% Approximate Gamma UCL
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value			
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\July 2004\AJRW-SO.xls		
Variable:	Mercury		
<b>Raw Statistics</b>			
Number of Observations	9		
Number of Missing Data	0		
Number of Valid Observations	9		
Number of Distinct Observations	8		
Minimum	0.22		
Maximum	1.2		
Mean	0.432222		
Standard Deviation	0.316969		
Variance	0.100469		
Coefficient of Variation	0.733348		
Skewness	2.126718		
Too Few Distinct Observations?	NO		
<b>Normal Statistics</b>			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.71061		
Shapiro-Wilk 5% Critical Value	0.829		
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level	
95% Student's-t UCL	0.628695		
<b>Gamma Statistics</b>			
k hat	3.082819		
k star (bias corrected)	2.129287		
Theta hat	0.140204		
Theta star	0.202989		
nu hat	55.49074		
nu star	38.32716		
5% Approximate Chi Square Value	25.14684		
Adjusted Level of Significance	0.02308		
Adjusted Chi Square Value	22.91899		
Anderson-Darling Test Statistic	0.77339		
Anderson-Darling 5% Critical Value	0.726648		
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level	
Kolmogrov-Smirnov Test Statistic	0.231702		
Kolmogrov-Smirnov 5% Critical Value	0.281265		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	APPROX GAMMA	Data follow approximate gamma distribution at 5% significance level	
95% Approximate Gamma UCL	0.658765		
95% Adjusted Gamma UCL	0.7228		
<b>Lognormal Statistics</b>			
Minimum of log data	-1.514128		
Maximum of log data	0.182322		
Mean of log data	-1.009685		
Standard Deviation of log data	0.573279		
Variance of log data	0.328649		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.841158		
Shapiro-Wilk 5% Critical Value	0.829		
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level	
MLE Mean	0.429403		
MLE Standard Deviation	0.267849		
MLE Coefficient of Variation	0.623771		
MLE Skewness	2.114017		
MLE Median	0.364334		
MLE 80% Quantile	0.591399		
MLE 90% Quantile	0.761077		
MLE 95% Quantile	0.935532		
MLE 99% Quantile	1.38232		
MVU Estimate of Median	0.35773		
MVU Estimate of Mean	0.420763		
MVU Estimate of Standard Deviation	0.246247		
MVU Estimate of SE of Mean	0.081844		
95% H-UCL	0.701675		
95% Chebyshev (MVUE) UCL	0.777513		
97.5% Chebyshev (MVUE) UCL	0.93188		
99% Chebyshev (MVUE) UCL	1.235102		
<b>Non-parametric Statistics</b>			
95% CLT UCL	0.606012		
95% Adjusted-CLT UCL	0.686044		
95% Modified-t UCL	0.641179		
95% Jackknife UCL	0.628695		
95% Chebyshev (Mean, Sd) UCL	0.892768		
97.5% Chebyshev (Mean, Sd) UCL	1.092046		
99% Chebyshev (Mean, Sd) UCL	1.48349		
<b>Bootstrap Statistics</b>			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	0.601753		
95% Bootstrap-t UCL	0.858189		
95% Hall's Bootstrap UCL	1.148958		
95% Percentile Bootstrap UCL	0.618889		
95% BCA Bootstrap UCL	0.735556		
<b>Recommendations</b>			
Human Inspection Recommended?	NO		
Appropriate Distribution	GAMMA		
1st Recommended UCL	0.658765	95% Approximate Gamma UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value			
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\July 2004\AJRW-SO.xls		
Variable:	Vanadium		
Raw Statistics			
Number of Observations	9		
Number of Missing Data	0		
Number of Valid Observations	9		
Number of Distinct Observations	9		
Minimum	29		
Maximum	70		
Mean	44.11111		
Standard Deviation	13.10004		
Variance	171.6111		
Coefficient of Variation	0.296978		
Skewness	0.803771		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.934239		
Shapiro-Wilk 5% Critical Value	0.829		
5% Normality Test Result	NORMAL	Data are normal at 5% significance level	
95% Student's-t UCL	52.23116		
Gamma Statistics			
k hat	13.45		
k star (bias corrected)	9.040738		
Theta hat	3.279638		
Theta star	4.879149		
nu hat	242.0999		
nu star	162.7333		
5% Approximate Chi Square Value	134.2331		
Adjusted Level of Significance	0.02308		
Adjusted Chi Square Value	128.7738		
Anderson-Darling Test Statistic	0.233848		
Anderson-Darling 5% Critical Value	0.721481		
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.	
Kolmogrov-Smirnov Test Statistic	0.155099		
Kolmogrov-Smirnov 5% Critical Value	0.279158		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level	
95% Approximate Gamma UCL	53.47674		
95% Adjusted Gamma UCL	55.74383		
Lognormal Statistics			
Minimum of log data	3.367296		
Maximum of log data	4.248495		
Mean of log data	3.749077		
Standard Deviation of log data	0.289032		
Variance of log data	0.08354		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.960329		
Shapiro-Wilk 5% Critical Value	0.829		
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level	
MLE Mean	44.29387		
MLE Standard Deviation	13.07444		
MLE Coefficient of Variation	0.295175		
MLE Skewness	0.911243		
MLE Median	42.48183		
MLE 80% Quantile	54.23404		
MLE 90% Quantile	61.58898		
MLE 95% Quantile	68.34268		
MLE 99% Quantile	83.20982		
MVU Estimate of Median	42.28504		
MVU Estimate of Mean	44.08275		
MVU Estimate of Standard Deviation	12.81138		
MVU Estimate of SE of Mean	4.269576		
95% H-UCL	54.41274		
95% Chebyshev (MVUE) UCL	62.6934		
97.5% Chebyshev (MVUE) UCL	70.74625		
99% Chebyshev (MVUE) UCL	86.5645		
Non-parametric Statistics			
95% CLT UCL	51.29366		
95% Adjusted-CLT UCL	52.54376		
95% Modified-t UCL	52.42615		
95% Jackknife UCL	52.23116		
95% Chebyshev (Mean, Sd) UCL	63.14503		
97.5% Chebyshev (Mean, Sd) UCL	71.38102		
99% Chebyshev (Mean, Sd) UCL	87.55904		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	50.84604		
95% Bootstrap-t UCL	53.79375		
95% Hall's Bootstrap UCL	54.18474		
95% Percentile Bootstrap UCL	51.11111		
95% BCA Bootstrap UCL	54		
Recommendations			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	52.23116	95% Student's-t UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value			
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\July 2004\SW05base.xls		
Variable:	Arsenic		
<b>Raw Statistics</b>			
Number of Observations	11		
Number of Missing Data	0		
Number of Valid Observations	11		
Number of Distinct Observations	11		
Minimum	13		
Maximum	28		
Mean	21.25455		
Standard Deviation	4.647443		
Variance	21.59873		
Coefficient of Variation	0.218656		
Skewness	-0.530441		
Too Few Distinct Observations?	NO		
<b>Normal Statistics</b>			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.947759		
Shapiro-Wilk 5% Critical Value	0.85		
5% Normality Test Result	NORMAL	Data are normal at 5% significance level	
95% Student's-t UCL	23.79427		
<b>Gamma Statistics</b>			
k hat	20.59584		
k star (bias corrected)	15.0394		
Theta hat	1.031983		
Theta star	1.413258		
nu hat	453.1084		
nu star	330.8667		
5% Approximate Chi Square Value	289.713		
Adjusted Level of Significance	0.02783		
Adjusted Chi Square Value	283.4304		
Anderson-Darling Test Statistic	0.419934		
Anderson-Darling 5% Critical Value	0.728694		
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.	
Kolmogrov-Smirnov Test Statistic	0.17897		
Kolmogrov-Smirnov 5% Critical Value	0.255022		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level	
95% Approximate Gamma UCL	24.27376		
95% Adjusted Gamma UCL	24.81181		
<b>Lognormal Statistics</b>			
Minimum of log data	2.564949		
Maximum of log data	3.332205		
Mean of log data	3.032098		
Standard Deviation of log data	0.239623		
Variance of log data	0.057419		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.906479		
Shapiro-Wilk 5% Critical Value	0.85		
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level	
MLE Mean	21.34478		
MLE Standard Deviation	5.189008		
MLE Coefficient of Variation	0.243104		
MLE Skewness	0.74368		
MLE Median	20.74069		
MLE 80% Quantile	25.39568		
MLE 90% Quantile	28.2195		
MLE 95% Quantile	30.76192		
MLE 99% Quantile	36.21455		
MVU Estimate of Median	20.68662		
MVU Estimate of Mean	21.28794		
MVU Estimate of Standard Deviation	5.128669		
MVU Estimate of SE of Mean	1.546168		
95% H-UCL	24.64204		
95% Chebyshev (MVUE) UCL	28.02753		
97.5% Chebyshev (MVUE) UCL	30.94376		
99% Chebyshev (MVUE) UCL	36.67212		
<b>Non-parametric Statistics</b>			
95% CLT UCL	23.55941		
95% Adjusted-CLT UCL	23.31994		
95% Modified-t UCL	23.75692		
95% Jackknife UCL	23.79427		
95% Chebyshev (Mean, Sd) UCL	27.36248		
97.5% Chebyshev (Mean, Sd) UCL	30.00539		
99% Chebyshev (Mean, Sd) UCL	35.19687		
<b>Bootstrap Statistics</b>			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	23.46948		
95% Bootstrap-t UCL	23.58608		
95% Hall's Bootstrap UCL	23.28026		
95% Percentile Bootstrap UCL	23.27273		
95% BCA Bootstrap UCL	23.81818		
<b>Recommendations</b>			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	23.79427	95% Student's-t UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value			
Recommendation Warning!	NONE		
Alternative UCL	NONE		

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Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\July 2004\SW05base.xls		
Variable:	Chromium		
Raw Statistics			
Number of Observations	11		
Number of Missing Data	0		
Number of Valid Observations	11		
Number of Distinct Observations	11		
Minimum	2.85		
Maximum	14.2		
Mean	7.75		
Standard Deviation	3.297196		
Variance	10.8715		
Coefficient of Variation	0.425445		
Skewness	0.568981		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.964564		
Shapiro-Wilk 5% Critical Value	0.85		
5% Normality Test Result	NORMAL	Data are normal at 5% significance level	
95% Student's-t UCL	9.551844		
Gamma Statistics			
k hat	5.861886		
k star (bias corrected)	4.323796		
Theta hat	1.3221		
Theta star	1.792407		
nu hat	128.9615		
nu star	95.12351		
5% Approximate Chi Square Value	73.62443		
Adjusted Level of Significance	0.02783		
Adjusted Chi Square Value	70.54669		
Anderson-Darling Test Statistic	0.171409		
Anderson-Darling 5% Critical Value	0.731058		
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.	
Kolmogrov-Smirnov Test Statistic	0.126414		
Kolmogrov-Smirnov 5% Critical Value	0.255893		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level	
95% Approximate Gamma UCL	10.01308		
95% Adjusted Gamma UCL	10.44992		
Lognormal Statistics			
Minimum of log data	1.047319		
Maximum of log data	2.653242		
Mean of log data	1.959978		
Standard Deviation of log data	0.452774		
Variance of log data	0.205004		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.973574		
Shapiro-Wilk 5% Critical Value	0.85		
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level	
MLE Mean	7.86545		
MLE Standard Deviation	3.751826		
MLE Coefficient of Variation	0.477001		
MLE Skewness	1.539534		
MLE Median	7.09917		
MLE 80% Quantile	10.40797		
MLE 90% Quantile	12.70241		
MLE 95% Quantile	14.95118		
MLE 99% Quantile	20.35098		
MVU Estimate of Median	7.033273		
MVU Estimate of Mean	7.786959		
MVU Estimate of Standard Deviation	3.592896		
MVU Estimate of SE of Mean	1.081756		
95% H-UCL	10.65526		
95% Chebyshev (MVUE) UCL	12.50222		
97.5% Chebyshev (MVUE) UCL	14.54252		
99% Chebyshev (MVUE) UCL	18.55029		
Non-parametric Statistics			
95% CLT UCL	9.385218		
95% Adjusted-CLT UCL	9.567452		
95% Modified-t UCL	9.580268		
95% Jackknife UCL	9.551844		
95% Chebyshev (Mean, Sd) UCL	12.08336		
97.5% Chebyshev (Mean, Sd) UCL	13.95841		
99% Chebyshev (Mean, Sd) UCL	17.64159		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	9.257684		
95% Bootstrap-t UCL	9.757633		
95% Hall's Bootstrap UCL	9.786297		
95% Percentile Bootstrap UCL	9.427273		
95% BCA Bootstrap UCL	9.009091		
Recommendations			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	9.551844	95% Student's-t UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value			
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\July 2004\SW05base.xls		
Variable:	Manganese		
<b>Raw Statistics</b>			
Number of Observations	11		
Number of Missing Data	0		
Number of Valid Observations	11		
Number of Distinct Observations	10		
Minimum	462		
Maximum	764		
Mean	593.1818		
Standard Deviation	102.7374		
Variance	10554.96		
Coefficient of Variation	0.173197		
Skewness	0.463246		
Too Few Distinct Observations?	NO		
<b>Normal Statistics</b>			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.934559		
Shapiro-Wilk 5% Critical Value	0.85		
5% Normality Test Result	NORMAL	Data are normal at 5% significance level	
95% Student's-t UCL	649.3255		
<b>Gamma Statistics</b>			
k hat	37.48689		
k star (bias corrected)	27.3238		
Theta hat	15.82371		
Theta star	21.70934		
nu hat	824.7116		
nu star	601.1236		
5% Approximate Chi Square Value	545.2387		
Adjusted Level of Significance	0.02783		
Adjusted Chi Square Value	536.5507		
Anderson-Darling Test Statistic	0.26543		
Anderson-Darling 5% Critical Value	0.728525		
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.	
Kolmogrov-Smirnov Test Statistic	0.138386		
Kolmogrov-Smirnov 5% Critical Value	0.254808		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level	
95% Approximate Gamma UCL	653.9807		
95% Adjusted Gamma UCL	664.5702		
<b>Lognormal Statistics</b>			
Minimum of log data	6.135565		
Maximum of log data	6.638568		
Mean of log data	6.372104		
Standard Deviation of log data	0.171088		
Variance of log data	0.029271		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.946853		
Shapiro-Wilk 5% Critical Value	0.85		
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level	
MLE Mean	593.9167		
MLE Standard Deviation	102.3599		
MLE Coefficient of Variation	0.172347		
MLE Skewness	0.522161		
MLE Median	585.2878		
MLE 80% Quantile	676.3243		
MLE 90% Quantile	729.2023		
MLE 95% Quantile	775.5269		
MLE 99% Quantile	871.3584		
MVU Estimate of Median	584.5095		
MVU Estimate of Mean	593.1183		
MVU Estimate of Standard Deviation	101.7557		
MVU Estimate of SE of Mean	30.67953		
95% H-UCL	656.0499		
95% Chebyshev (MVUE) UCL	726.8473		
97.5% Chebyshev (MVUE) UCL	784.7119		
99% Chebyshev (MVUE) UCL	898.3758		
<b>Non-parametric Statistics</b>			
95% CLT UCL	644.1336		
95% Adjusted-CLT UCL	648.7566		
95% Modified-t UCL	650.0466		
95% Jackknife UCL	649.3255		
95% Chebyshev (Mean, Sd) UCL	728.2052		
97.5% Chebyshev (Mean, Sd) UCL	786.6299		
99% Chebyshev (Mean, Sd) UCL	901.3939		
<b>Bootstrap Statistics</b>			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	641.2237		
95% Bootstrap-t UCL	656.8851		
95% Hall's Bootstrap UCL	649.4282		
95% Percentile Bootstrap UCL	642.5455		
95% BCA Bootstrap UCL	635.1818		
<b>Recommendations</b>			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	649.3255	95% Student's-t UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value			
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\July 2004\SW05base.xls		
Variable:	Mercury		
<b>Raw Statistics</b>			
Number of Observations	11		
Number of Missing Data	0		
Number of Valid Observations	11		
Number of Distinct Observations	4		
Minimum	0.02		
Maximum	0.1		
Mean	0.054091		
Standard Deviation	0.019598		
Variance	0.000384		
Coefficient of Variation	0.36232		
Skewness	1.067298		
Too Few Distinct Observations?	NO		
<b>Normal Statistics</b>			
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.733975		
Shapiro-Wilk 5% Critical Value	0.85		
5% Normality Test Result	NOT NORMAL		Data not normal at 5% significance level
95% Student's-t UCL	0.064801		
<b>Gamma Statistics</b>			
k hat	8.218742		
k star (bias corrected)	6.037873		
Theta hat	0.006581		
Theta star	0.008959		
nu hat	180.8123		
nu star	132.8332		
5% Approximate Chi Square Value	107.2024		
Adjusted Level of Significance	0.02783		
Adjusted Chi Square Value	103.452		
Anderson-Darling Test Statistic	1.655183		
Anderson-Darling 5% Critical Value	0.730097		
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA		Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.367196		
Kolmogrov-Smirnov 5% Critical Value	0.255601		
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA		Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA		Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	0.067023		
95% Adjusted Gamma UCL	0.069453		
<b>Lognormal Statistics</b>			
Minimum of log data	-3.912023		
Maximum of log data	-2.302585		
Mean of log data	-2.979158		
Standard Deviation of log data	0.384892		
Variance of log data	0.148142		
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.724305		
Shapiro-Wilk 5% Critical Value	0.85		
5% Lognormality Test Result	NOT LOGNORMAL		Data not lognormal at 5% significance level
MLE Mean	0.054744		
MLE Standard Deviation	0.021876		
MLE Coefficient of Variation	0.399597		
MLE Skewness	1.262598		
MLE Median	0.050836		
MLE 80% Quantile	0.070375		
MLE 90% Quantile	0.083361		
MLE 95% Quantile	0.09575		
MLE 99% Quantile	0.124444		
MVU Estimate of Median	0.050494		
MVU Estimate of Mean	0.054356		
MVU Estimate of Standard Deviation	0.021211		
MVU Estimate of SE of Mean	0.00639		
95% H-UCL	0.070178		
95% Chebyshev (MVUE) UCL	0.082212		
97.5% Chebyshev (MVUE) UCL	0.094265		
99% Chebyshev (MVUE) UCL	0.11794		
<b>Non-parametric Statistics</b>			
95% CLT UCL	0.06381		
95% Adjusted-CLT UCL	0.065842		
95% Modified-t UCL	0.065118		
95% Jackknife UCL	0.064801		
95% Chebyshev (Mean, Sd) UCL	0.079848		
97.5% Chebyshev (Mean, Sd) UCL	0.090993		
99% Chebyshev (Mean, Sd) UCL	0.112886		
<b>Bootstrap Statistics</b>			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	N/R		Not enough distinct data warning
95% Bootstrap-t UCL	N/R		Not enough distinct data warning
95% Hall's Bootstrap UCL	N/R		Not enough distinct data warning
95% Percentile Bootstrap UCL	N/R		Not enough distinct data warning
95% BCA Bootstrap UCL	N/R		Not enough distinct data warning
<b>Recommendations</b>			
Human Inspection Recommended?	YES		Users must select one of the recommended UCLS
Appropriate Distribution	NON-PARAMETRIC		
1st Recommended UCL	0.064801		95% Student's-t UCL
2nd Recommended UCL	0.065118		95% Modified-t UCL
3rd Recommended UCL			
Recommended UCL > Max Data Value			
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\July 2004\SW05storm.xls		
Variable:	Antimony		
<b>Raw Statistics</b>			
Number of Observations	6		
Number of Missing Data	0		
Number of Valid Observations	6		
Number of Distinct Observations	5		
Minimum	0.85		
Maximum	3.9		
Mean	1.758333		
Standard Deviation	1.124907		
Variance	1.265417		
Coefficient of Variation	0.639758		
Skewness	1.793274		
Too Few Distinct Observations?	NO		
<b>Normal Statistics</b>			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.798774		
Shapiro-Wilk 5% Critical Value	0.788		
5% Normality Test Result	NORMAL	Data are normal at 5% significance level	
95% Student's-t UCL	2.683727		
<b>Gamma Statistics</b>			
k hat	3.779523		
k star (bias corrected)	2.000873		
Theta hat	0.465226		
Theta star	0.878783		
nu hat	45.35428		
nu star	24.01047		
5% Approximate Chi Square Value	13.85491		
Adjusted Level of Significance	0.01222		
Adjusted Chi Square Value	11.1716		
Anderson-Darling Test Statistic	0.421603		
Anderson-Darling 5% Critical Value	0.700278		
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.	
Kolmogrov-Smirnov Test Statistic	0.247797		
Kolmogrov-Smirnov 5% Critical Value	0.333763		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level	
95% Approximate Gamma UCL	3.047182		
95% Adjusted Gamma UCL	3.779083		
<b>Lognormal Statistics</b>			
Minimum of log data	-0.162519		
Maximum of log data	1.360977		
Mean of log data	0.42628		
Standard Deviation of log data	0.548328		
Variance of log data	0.300664		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.919771		
Shapiro-Wilk 5% Critical Value	0.788		
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level	
MLE Mean	1.779998		
MLE Standard Deviation	1.054197		
MLE Coefficient of Variation	0.592246		
MLE Skewness	1.984471		
MLE Median	1.53155		
MLE 80% Quantile	2.434199		
MLE 90% Quantile	3.098389		
MLE 95% Quantile	3.774547		
MLE 99% Quantile	5.483217		
MVU Estimate of Median	1.493519		
MVU Estimate of Mean	1.732204		
MVU Estimate of Standard Deviation	0.949396		
MVU Estimate of SE of Mean	0.387017		
95% H-UCL	3.566529		
95% Chebyshev (MVUE) UCL	3.41917		
97.5% Chebyshev (MVUE) UCL	4.149122		
99% Chebyshev (MVUE) UCL	5.58297		
<b>Non-parametric Statistics</b>			
95% CLT UCL	2.513718		
95% Adjusted-CLT UCL	2.872965		
95% Modified-t UCL	2.739762		
95% Jackknife UCL	2.683727		
95% Chebyshev (Mean, Sd) UCL	3.760121		
97.5% Chebyshev (Mean, Sd) UCL	4.626296		
99% Chebyshev (Mean, Sd) UCL	6.327729		
<b>Bootstrap Statistics</b>			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	2.440128		
95% Bootstrap-t UCL	4.260169		
95% Hall's Bootstrap UCL	5.321136		
95% Percentile Bootstrap UCL	2.558333		
95% BCA Bootstrap UCL	2.925		
<b>Recommendations</b>			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	2.683727	95% Student's-t UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value			
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\July 2004\SW05storm.xls		
Variable:	Arsenic		
Raw Statistics			
Number of Observations	6		
Number of Missing Data	0		
Number of Valid Observations	6		
Number of Distinct Observations	6		
Minimum	11.5		
Maximum	23.3		
Mean	15.30833		
Standard Deviation	4.507374		
Variance	20.31642		
Coefficient of Variation	0.294439		
Skewness	1.341784		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.858311		
Shapiro-Wilk 5% Critical Value	0.788		
5% Normality Test Result	NORMAL	Data are normal at 5% significance level	
95% Student's-t UCL	19.01628		
Gamma Statistics			
k hat	15.62334		
k star (bias corrected)	7.92278		
Theta hat	0.979838		
Theta star	1.932192		
nu hat	187.4801		
nu star	95.07337		
5% Approximate Chi Square Value	73.58029		
Adjusted Level of Significance	0.01222		
Adjusted Chi Square Value	66.77902		
Anderson-Darling Test Statistic	0.39848		
Anderson-Darling 5% Critical Value	0.697633		
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.	
Kolmogrov-Smirnov Test Statistic	0.245255		
Kolmogrov-Smirnov 5% Critical Value	0.332058		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level	
95% Approximate Gamma UCL	19.77996		
95% Adjusted Gamma UCL	21.79449		
Lognormal Statistics			
Minimum of log data	2.442347		
Maximum of log data	3.148453		
Mean of log data	2.696053		
Standard Deviation of log data	0.271166		
Variance of log data	0.073531		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.89906		
Shapiro-Wilk 5% Critical Value	0.788		
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level	
MLE Mean	15.37616		
MLE Standard Deviation	4.247327		
MLE Coefficient of Variation	0.276228		
MLE Skewness	0.849761		
MLE Median	14.82111		
MLE 80% Quantile	18.63773		
MLE 90% Quantile	20.99955		
MLE 95% Quantile	23.15292		
MLE 99% Quantile	27.84866		
MVU Estimate of Median	14.73049		
MVU Estimate of Mean	15.2802		
MVU Estimate of Standard Deviation	4.143351		
MVU Estimate of SE of Mean	1.691353		
95% H-UCL	20.10555		
95% Chebyshev (MVUE) UCL	22.65263		
97.5% Chebyshev (MVUE) UCL	25.84269		
99% Chebyshev (MVUE) UCL	32.10895		
Non-parametric Statistics			
95% CLT UCL	18.33507		
95% Adjusted-CLT UCL	19.41212		
95% Modified-t UCL	19.18428		
95% Jackknife UCL	19.01628		
95% Chebyshev (Mean, Sd) UCL	23.32926		
97.5% Chebyshev (Mean, Sd) UCL	26.79993		
99% Chebyshev (Mean, Sd) UCL	33.61737		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	18.11123		
95% Bootstrap-t UCL	22.02023		
95% Hall's Bootstrap UCL	32.41326		
95% Percentile Bootstrap UCL	18.34167		
95% BCA Bootstrap UCL	19.975		
Recommendations			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	19.01628	95% Student's-t UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value			
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\July 2004\SW05storm.xls		
Variable:	Chromium		
<b>Raw Statistics</b>			
Number of Observations	6		
Number of Missing Data	0		
Number of Valid Observations	6		
Number of Distinct Observations	6		
Minimum	1.3		
Maximum	12.1		
Mean	6.983333		
Standard Deviation	3.962533		
Variance	15.70167		
Coefficient of Variation	0.567427		
Skewness	-0.166984		
Too Few Distinct Observations?	NO		
<b>Normal Statistics</b>			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.985751		
Shapiro-Wilk 5% Critical Value	0.788		
5% Normality Test Result	NORMAL	Data are normal at 5% significance level	
95% Student's-t UCL	10.24307		
<b>Gamma Statistics</b>			
k hat	2.535795		
k star (bias corrected)	1.379009		
Theta hat	2.753903		
Theta star	5.064024		
nu hat	30.42954		
nu star	16.5481		
5% Approximate Chi Square Value	8.348954		
Adjusted Level of Significance	0.01222		
Adjusted Chi Square Value	6.360745		
Anderson-Darling Test Statistic	0.278801		
Anderson-Darling 5% Critical Value	0.702667		
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.	
Kolmogrov-Smirnov Test Statistic	0.177463		
Kolmogrov-Smirnov 5% Critical Value	0.335144		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level	
95% Approximate Gamma UCL	13.84137		
95% Adjusted Gamma UCL	18.16783		
<b>Lognormal Statistics</b>			
Minimum of log data	0.262364		
Maximum of log data	2.493205		
Mean of log data	1.733579		
Standard Deviation of log data	0.812393		
Variance of log data	0.659982		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.882447		
Shapiro-Wilk 5% Critical Value	0.788		
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level	
MLE Mean	7.874025		
MLE Standard Deviation	7.61283		
MLE Coefficient of Variation	0.966828		
MLE Skewness	3.804234		
MLE Median	5.660875		
MLE 80% Quantile	11.24642		
MLE 90% Quantile	16.07882		
MLE 95% Quantile	21.54113		
MLE 99% Quantile	37.45738		
MVU Estimate of Median	5.355589		
MVU Estimate of Mean	7.378493		
MVU Estimate of Standard Deviation	5.983016		
MVU Estimate of SE of Mean	2.427252		
95% H-UCL	29.65466		
95% Chebyshev (MVUE) UCL	17.95864		
97.5% Chebyshev (MVUE) UCL	22.53668		
99% Chebyshev (MVUE) UCL	31.52935		
<b>Non-parametric Statistics</b>			
95% CLT UCL	9.644209		
95% Adjusted-CLT UCL	9.526373		
95% Modified-t UCL	10.22469		
95% Jackknife UCL	10.24307		
95% Chebyshev (Mean, Sd) UCL	14.03471		
97.5% Chebyshev (Mean, Sd) UCL	17.08585		
99% Chebyshev (Mean, Sd) UCL	23.07922		
<b>Bootstrap Statistics</b>			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	9.434211		
95% Bootstrap-t UCL	10.11762		
95% Hall's Bootstrap UCL	10.00422		
95% Percentile Bootstrap UCL	9.383333		
95% BCA Bootstrap UCL	9.916667		
<b>Recommendations</b>			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	10.24307	95% Student's-t UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value			
Recommendation Warning!	NONE		
Alternative UCL	NONE		

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Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\July 2004\SW05storm.xls				
Variable:	Manganese				
Raw Statistics					
Number of Observations	6				
Number of Missing Data	0				
Number of Valid Observations	6				
Number of Distinct Observations	6				
Minimum	124				
Maximum	529				
Mean	237.5833				
Standard Deviation	148.9881				
Variance	22197.44				
Coefficient of Variation	0.627098				
Skewness	2.016761				
Too Few Distinct Observations?	NO				
Normal Statistics					
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result		
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result		
Shapiro-Wilk Test Statistic	0.748165				
Shapiro-Wilk 5% Critical Value	0.788				
5% Normality Test Result	NOT NORMAL		Data not normal at 5% significance level		
95% Student's-t UCL	360.1469				
Gamma Statistics					
k hat	4.158562				
k star (bias corrected)	2.190392				
Theta hat	57.13112				
Theta star	108.4661				
nu hat	49.90275				
nu star	26.28471				
5% Approximate Chi Square Value	15.59693				
Adjusted Level of Significance	0.01222				
Adjusted Chi Square Value	12.72295				
Anderson-Darling Test Statistic	0.545851				
Anderson-Darling 5% Critical Value	0.699674				
Anderson-Darling 5% Gamma Test Result	AD GAMMA		Data follow gamma distribution at 5% significance level.		
Kolmogrov-Smirnov Test Statistic	0.283614				
Kolmogrov-Smirnov 5% Critical Value	0.333421				
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA		Data follow gamma distribution at 5% significance level		
5% Gamma Test Result	GAMMA		Data follow gamma distribution at 5% significance level		
95% Approximate Gamma UCL	400.3869				
95% Adjusted Gamma UCL	490.8303				
Lognormal Statistics					
Minimum of log data	4.820282				
Maximum of log data	6.270988				
Mean of log data	5.345493				
Standard Deviation of log data	0.513143				
Variance of log data	0.263316				
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result		
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result		
Shapiro-Wilk Test Statistic	0.88249				
Shapiro-Wilk 5% Critical Value	0.788				
5% Lognormality Test Result	LOGNORMAL		Data are lognormal at 5% significance level		
MLE Mean	239.1643				
MLE Standard Deviation	131.2656				
MLE Coefficient of Variation	0.548851				
MLE Skewness	1.811888				
MLE Median	209.6612				
MLE 80% Quantile	323.4676				
MLE 90% Quantile	405.4031				
MLE 95% Quantile	487.6575				
MLE 99% Quantile	691.6387				
MVU Estimate of Median	205.0965				
MVU Estimate of Mean	233.5841				
MVU Estimate of Standard Deviation	119.8207				
MVU Estimate of SE of Mean	48.86039				
95% H-UCL	448.5178				
95% Chebyshev (MVUE) UCL	446.5616				
97.5% Chebyshev (MVUE) UCL	538.7171				
99% Chebyshev (MVUE) UCL	719.7388				
Non-parametric Statistics					
95% CLT UCL	337.6301				
95% Adjusted-CLT UCL	391.1401				
95% Modified-t UCL	368.4933				
95% Jackknife UCL	360.1469				
95% Chebyshev (Mean, Sd) UCL	502.7095				
97.5% Chebyshev (Mean, Sd) UCL	617.4298				
99% Chebyshev (Mean, Sd) UCL	842.7757				
Bootstrap Statistics					
Number of Bootstrap Runs	2000				
95% Standard Bootstrap UCL	329.239				
95% Bootstrap-t UCL	540.7505				
95% Hall's Bootstrap UCL	715.3657				
95% Percentile Bootstrap UCL	338.1667				
95% BCA Bootstrap UCL	315.5833				
Recommendations					
Human Inspection Recommended?	NO				
Appropriate Distribution	GAMMA				
1st Recommended UCL	400.3869		95% Approximate Gamma UCL		
2nd Recommended UCL					
3rd Recommended UCL					
Recommended UCL > Max Data Value					
Recommendation Warning!	NONE				
Alternative UCL	NONE				

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\July 2004\SW05storm.xls		
Variable:	Mercury		
Raw Statistics			
Number of Observations	6		
Number of Missing Data	0		
Number of Valid Observations	6		
Number of Distinct Observations	2		
Minimum	0.05		
Maximum	0.13		
Mean	0.063333		
Standard Deviation	0.03266		
Variance	0.001067		
Coefficient of Variation	0.515682		
Skewness	2.44949		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.496293		
Shapiro-Wilk 5% Critical Value	0.788		
5% Normality Test Result	NOT NORMAL		Data not normal at 5% significance level
95% Student's-t UCL	0.090201		
Gamma Statistics			
k hat	6.644217		
k star (bias corrected)	3.43322		
Theta hat	0.009532		
Theta star	0.018447		
nu hat	79.73061		
nu star	41.19864		
5% Approximate Chi Square Value	27.48556		
Adjusted Level of Significance	0.01222		
Adjusted Chi Square Value	23.51991		
Anderson-Darling Test Statistic	1.724108		
Anderson-Darling 5% Critical Value	0.698142		
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA		Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.508454		
Kolmogrov-Smirnov 5% Critical Value	0.332688		
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA		Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA		Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	0.094932		
95% Adjusted Gamma UCL	0.110938		
Lognormal Statistics			
Minimum of log data	-2.995732		
Maximum of log data	-2.040221		
Mean of log data	-2.83648		
Standard Deviation of log data	0.390086		
Variance of log data	0.152167		
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.496293		
Shapiro-Wilk 5% Critical Value	0.788		
5% Lognormality Test Result	NOT LOGNORMAL		Data not lognormal at 5% significance level
MLE Mean	0.063267		
MLE Standard Deviation	0.025649		
MLE Coefficient of Variation	0.405407		
MLE Skewness	1.282851		
MLE Median	0.058632		
MLE 80% Quantile	0.081524		
MLE 90% Quantile	0.096789		
MLE 95% Quantile	0.111382		
MLE 99% Quantile	0.145273		
MVU Estimate of Median	0.057892		
MVU Estimate of Mean	0.062434		
MVU Estimate of Standard Deviation	0.024352		
MVU Estimate of SE of Mean	0.009938		
95% H-UCL	0.096918		
95% Chebyshev (MVUE) UCL	0.105751		
97.5% Chebyshev (MVUE) UCL	0.124495		
99% Chebyshev (MVUE) UCL	0.161312		
Non-parametric Statistics			
95% CLT UCL	0.085265		
95% Adjusted-CLT UCL	0.099512		
95% Modified-t UCL	0.092423		
95% Jackknife UCL	0.090201		
95% Chebyshev (Mean, Sd) UCL	0.121452		
97.5% Chebyshev (Mean, Sd) UCL	0.1466		
99% Chebyshev (Mean, Sd) UCL	0.195998		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	N/R		Not enough distinct data warning
95% Bootstrap-t UCL	N/R		Not enough distinct data warning
95% Hall's Bootstrap UCL	N/A		Not enough distinct data error
95% Percentile Bootstrap UCL	N/R		Not enough distinct data warning
95% BCA Bootstrap UCL	N/R		Not enough distinct data warning
Recommendations			
Human Inspection Recommended?	YES		Users must select one of the recommended UCLS
Appropriate Distribution	NON-PARAMETRIC		
1st Recommended UCL	0.090201		95% Student's-t UCL
2nd Recommended UCL	0.092423		95% Modified-t UCL
3rd Recommended UCL			
Recommended UCL > Max Data Value			
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\July 2004\SW06base.xls		
Variable:	Arsenic		
Raw Statistics			
Number of Observations	10		
Number of Missing Data	0		
Number of Valid Observations	10		
Number of Distinct Observations	10		
Minimum	6.6		
Maximum	18.9		
Mean	12.06		
Standard Deviation	3.931695		
Variance	15.45822		
Coefficient of Variation	0.326011		
Skewness	0.177382		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.952473		
Shapiro-Wilk 5% Critical Value	0.842		
5% Normality Test Result	NORMAL	Data are normal at 5% significance level	
95% Student's-t UCL	14.33913		
Gamma Statistics			
k hat	9.975532		
k star (bias corrected)	7.049539		
Theta hat	1.208958		
Theta star	1.71075		
nu hat	199.5106		
nu star	140.9908		
5% Approximate Chi Square Value	114.5475		
Adjusted Level of Significance	0.0267		
Adjusted Chi Square Value	110.4082		
Anderson-Darling Test Statistic	0.300112		
Anderson-Darling 5% Critical Value	0.725081		
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.	
Kolmogrov-Smirnov Test Statistic	0.173534		
Kolmogrov-Smirnov 5% Critical Value	0.266634		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level	
95% Approximate Gamma UCL	14.84405		
95% Adjusted Gamma UCL	15.40056		
Lognormal Statistics			
Minimum of log data	1.88707		
Maximum of log data	2.939162		
Mean of log data	2.438935		
Standard Deviation of log data	0.342942		
Variance of log data	0.117609		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.947798		
Shapiro-Wilk 5% Critical Value	0.842		
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level	
MLE Mean	12.15499		
MLE Standard Deviation	4.294069		
MLE Coefficient of Variation	0.353276		
MLE Skewness	1.103919		
MLE Median	11.46083		
MLE 80% Quantile	15.31328		
MLE 90% Quantile	17.80741		
MLE 95% Quantile	20.14737		
MLE 99% Quantile	25.44749		
MVU Estimate of Median	11.3936		
MVU Estimate of Mean	12.08068		
MVU Estimate of Standard Deviation	4.182276		
MVU Estimate of SE of Mean	1.32196		
95% H-UCL	15.31774		
95% Chebyshev (MVUE) UCL	17.84297		
97.5% Chebyshev (MVUE) UCL	20.33631		
99% Chebyshev (MVUE) UCL	25.23401		
Non-parametric Statistics			
95% CLT UCL	14.10506		
95% Adjusted-CLT UCL	14.17958		
95% Modified-t UCL	14.35075		
95% Jackknife UCL	14.33913		
95% Chebyshev (Mean, Sd) UCL	17.47947		
97.5% Chebyshev (Mean, Sd) UCL	19.82447		
99% Chebyshev (Mean, Sd) UCL	24.43079		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	14.00813		
95% Bootstrap-t UCL	14.41693		
95% Hall's Bootstrap UCL	14.21123		
95% Percentile Bootstrap UCL	13.95		
95% BCA Bootstrap UCL	14.78		
Recommendations			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	14.33913	95% Student's-t UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value			
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\July 2004\SW06base.xls		
Variable:	Chromium		
<b>Raw Statistics</b>			
Number of Observations	10		
Number of Missing Data	0		
Number of Valid Observations	10		
Number of Distinct Observations	9		
Minimum	1.35		
Maximum	13.4		
Mean	4.13		
Standard Deviation	3.440543		
Variance	11.83733		
Coefficient of Variation	0.833061		
Skewness	2.575032		
Too Few Distinct Observations?	NO		
<b>Normal Statistics</b>			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.674209		
Shapiro-Wilk 5% Critical Value	0.842		
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level	
95% Student's-t UCL	6.124418		
<b>Gamma Statistics</b>			
k hat	2.60413		
k star (bias corrected)	1.889558		
Theta hat	1.585942		
Theta star	2.185696		
nu hat	52.08261		
nu star	37.79116		
5% Approximate Chi Square Value	24.7125		
Adjusted Level of Significance	0.0267		
Adjusted Chi Square Value	22.88896		
Anderson-Darling Test Statistic	0.626147		
Anderson-Darling 5% Critical Value	0.733526		
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.	
Kolmogrov-Smirnov Test Statistic	0.219623		
Kolmogrov-Smirnov 5% Critical Value	0.268988		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level	
95% Approximate Gamma UCL	6.315731		
95% Adjusted Gamma UCL	6.818897		
<b>Lognormal Statistics</b>			
Minimum of log data	0.300105		
Maximum of log data	2.595255		
Mean of log data	1.214156		
Standard Deviation of log data	0.622049		
Variance of log data	0.386945		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.929141		
Shapiro-Wilk 5% Critical Value	0.842		
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level	
MLE Mean	4.086255		
MLE Standard Deviation	2.808762		
MLE Coefficient of Variation	0.687368		
MLE Skewness	2.38687		
MLE Median	3.367452		
MLE 80% Quantile	5.696135		
MLE 90% Quantile	7.489405		
MLE 95% Quantile	9.369193		
MLE 99% Quantile	14.3112		
MVU Estimate of Median	3.302815		
MVU Estimate of Mean	3.997302		
MVU Estimate of Standard Deviation	2.561821		
MVU Estimate of SE of Mean	0.806594		
95% H-UCL	6.725092		
95% Chebyshev (MVUE) UCL	7.513165		
97.5% Chebyshev (MVUE) UCL	9.034482		
99% Chebyshev (MVUE) UCL	12.02281		
<b>Non-parametric Statistics</b>			
95% CLT UCL	5.919593		
95% Adjusted-CLT UCL	6.866244		
95% Modified-t UCL	6.272076		
95% Jackknife UCL	6.124418		
95% Chebyshev (Mean, Sd) UCL	8.872461		
97.5% Chebyshev (Mean, Sd) UCL	10.92453		
99% Chebyshev (Mean, Sd) UCL	14.95541		
<b>Bootstrap Statistics</b>			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	5.814048		
95% Bootstrap-t UCL	9.108491		
95% Hall's Bootstrap UCL	13.15606		
95% Percentile Bootstrap UCL	5.985		
95% BCA Bootstrap UCL	7.32		
<b>Recommendations</b>			
Human Inspection Recommended?	NO		
Appropriate Distribution	GAMMA		
1st Recommended UCL	6.315731	95% Approximate Gamma UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value			
Recommendation Warning!	NONE		
Alternative UCL	NONE		

US EPA ARCHIVE DOCUMENT

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\July 2004\SW06base.xls		
Variable:	Manganese		
<b>Raw Statistics</b>			
Number of Observations	10		
Number of Missing Data	0		
Number of Valid Observations	10		
Number of Distinct Observations	10		
Minimum	367		
Maximum	757		
Mean	506.5		
Standard Deviation	124.6		
Variance	15525.17		
Coefficient of Variation	0.246002		
Skewness	0.706411		
Too Few Distinct Observations?	NO		
<b>Normal Statistics</b>			
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.920648		
Shapiro-Wilk 5% Critical Value	0.842		
5% Normality Test Result	NORMAL		Data are normal at 5% significance level
95% Student's-t UCL	578.7283		
<b>Gamma Statistics</b>			
k hat	19.17443		
k star (bias corrected)	13.48877		
Theta hat	26.41539		
Theta star	37.54976		
nu hat	383.4886		
nu star	269.7753		
5% Approximate Chi Square Value	232.7311		
Adjusted Level of Significance	0.0267		
Adjusted Chi Square Value	226.7473		
Anderson-Darling Test Statistic	0.331068		
Anderson-Darling 5% Critical Value	0.724592		
Anderson-Darling 5% Gamma Test Result	AD GAMMA		Data follow gamma distribution at 5% significance level.
Kolmogrov-Smirnov Test Statistic	0.151374		
Kolmogrov-Smirnov 5% Critical Value	0.266208		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA		Data follow gamma distribution at 5% significance level
5% Gamma Test Result	GAMMA		Data follow gamma distribution at 5% significance level
95% Approximate Gamma UCL	587.1205		
95% Adjusted Gamma UCL	602.6145		
<b>Lognormal Statistics</b>			
Minimum of log data	5.905362		
Maximum of log data	6.629363		
Mean of log data	6.201221		
Standard Deviation of log data	0.240241		
Variance of log data	0.057716		
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.934744		
Shapiro-Wilk 5% Critical Value	0.842		
5% Lognormality Test Result	LOGNORMAL		Data are lognormal at 5% significance level
MLE Mean	507.7957		
MLE Standard Deviation	123.775		
MLE Coefficient of Variation	0.24375		
MLE Skewness	0.745731		
MLE Median	493.3512		
MLE 80% Quantile	604.3933		
MLE 90% Quantile	671.7802		
MLE 95% Quantile	732.4668		
MLE 99% Quantile	862.6614		
MVU Estimate of Median	491.9292		
MVU Estimate of Mean	506.3016		
MVU Estimate of Standard Deviation	122.2049		
MVU Estimate of SE of Mean	38.64031		
95% H-UCL	592.0792		
95% Chebyshev (MVUE) UCL	674.7307		
97.5% Chebyshev (MVUE) UCL	747.6102		
99% Chebyshev (MVUE) UCL	890.7677		
<b>Non-parametric Statistics</b>			
95% CLT UCL	571.3105		
95% Adjusted-CLT UCL	580.7154		
95% Modified-t UCL	580.1953		
95% Jackknife UCL	578.7283		
95% Chebyshev (Mean, Sd) UCL	678.2493		
97.5% Chebyshev (Mean, Sd) UCL	752.5653		
99% Chebyshev (Mean, Sd) UCL	898.5448		
<b>Bootstrap Statistics</b>			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	568.8258		
95% Bootstrap-t UCL	591.12		
95% Hall's Bootstrap UCL	595.2144		
95% Percentile Bootstrap UCL	569.3		
95% BCA Bootstrap UCL	598.3		
<b>Recommendations</b>			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	578.7283		95% Student's-t UCL
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value			
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\July 2004\SW06storm.xls		
Variable:	Antimony		
Raw Statistics			
Number of Observations	6		
Number of Missing Data	0		
Number of Valid Observations	6		
Number of Distinct Observations	6		
Minimum	0.75		
Maximum	3.9		
Mean	1.45		
Standard Deviation	1.218195		
Variance	1.484		
Coefficient of Variation	0.840135		
Skewness	2.29443		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.645159		
Shapiro-Wilk 5% Critical Value	0.788		
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level	
95% Student's-t UCL	2.452136		
Gamma Statistics			
k hat	2.688635		
k star (bias corrected)	1.455428		
Theta hat	0.539307		
Theta star	0.99627		
nu hat	32.26362		
nu star	17.46514		
5% Approximate Chi Square Value	9.004126		
Adjusted Level of Significance	0.01222		
Adjusted Chi Square Value	6.923556		
Anderson-Darling Test Statistic	0.839391		
Anderson-Darling 5% Critical Value	0.702227		
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level	
Kolmogrov-Smirnov Test Statistic	0.321112		
Kolmogrov-Smirnov 5% Critical Value	0.334949		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	APPROX GAMMA	Data follow approximate gamma distribution at 5% significance level	
95% Approximate Gamma UCL	2.812539		
95% Adjusted Gamma UCL	3.657724		
Lognormal Statistics			
Minimum of log data	-0.287682		
Maximum of log data	1.360977		
Mean of log data	0.174218		
Standard Deviation of log data	0.617581		
Variance of log data	0.381406		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.77926		
Shapiro-Wilk 5% Critical Value	0.788		
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level	
MLE Mean	1.4404		
MLE Standard Deviation	0.981527		
MLE Coefficient of Variation	0.681427		
MLE Skewness	2.360696		
MLE Median	1.190315		
MLE 80% Quantile	2.005862		
MLE 90% Quantile	2.632172		
MLE 95% Quantile	3.287537		
MLE 99% Quantile	5.006371		
MVU Estimate of Median	1.152909		
MVU Estimate of Mean	1.390537		
MVU Estimate of Standard Deviation	0.858175		
MVU Estimate of SE of Mean	0.34954		
95% H-UCL	3.327102		
95% Chebyshev (MVUE) UCL	2.914146		
97.5% Chebyshev (MVUE) UCL	3.573413		
99% Chebyshev (MVUE) UCL	4.868416		
Non-parametric Statistics			
95% CLT UCL	2.268029		
95% Adjusted-CLT UCL	2.76579		
95% Modified-t UCL	2.529777		
95% Jackknife UCL	2.452136		
95% Chebyshev (Mean, Sd) UCL	3.617795		
97.5% Chebyshev (Mean, Sd) UCL	4.555801		
99% Chebyshev (Mean, Sd) UCL	6.398333		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	2.188234		
95% Bootstrap-t UCL	6.325319		
95% Hall's Bootstrap UCL	6.180274		
95% Percentile Bootstrap UCL	2.366667		
95% BCA Bootstrap UCL	2.875		
Recommendations			
Human Inspection Recommended?	NO		
Appropriate Distribution	GAMMA		
1st Recommended UCL	2.812539	95% Approximate Gamma UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value			
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\July 2004\SW06storm.xls		
Variable:	Arsenic		
<b>Raw Statistics</b>			
Number of Observations	6		
Number of Missing Data	0		
Number of Valid Observations	6		
Number of Distinct Observations	5		
Minimum	15.2		
Maximum	25.5		
Mean	19.89167		
Standard Deviation	4.85061		
Variance	23.52842		
Coefficient of Variation	0.243851		
Skewness	0.300378		
Too Few Distinct Observations?	NO		
<b>Normal Statistics</b>			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.830611		
Shapiro-Wilk 5% Critical Value	0.788		
5% Normality Test Result	NORMAL	Data are normal at 5% significance level	
95% Student's-t UCL	23.88197		
<b>Gamma Statistics</b>			
k hat	20.37544		
k star (bias corrected)	10.29883		
Theta hat	0.976257		
Theta star	1.931449		
nu hat	244.5052		
nu star	123.5859		
5% Approximate Chi Square Value	98.90711		
Adjusted Level of Significance	0.01222		
Adjusted Chi Square Value	90.9397		
Anderson-Darling Test Statistic	0.535966		
Anderson-Darling 5% Critical Value	0.697087		
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.	
Kolmogrov-Smirnov Test Statistic	0.247516		
Kolmogrov-Smirnov 5% Critical Value	0.331731		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level	
95% Approximate Gamma UCL	24.85494		
95% Adjusted Gamma UCL	27.03253		
<b>Lognormal Statistics</b>			
Minimum of log data	2.721295		
Maximum of log data	3.238678		
Mean of log data	2.965561		
Standard Deviation of log data	0.243335		
Variance of log data	0.059212		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.836709		
Shapiro-Wilk 5% Critical Value	0.788		
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level	
MLE Mean	19.98869		
MLE Standard Deviation	4.936845		
MLE Coefficient of Variation	0.246982		
MLE Skewness	0.756012		
MLE Median	19.40558		
MLE 80% Quantile	23.83557		
MLE 90% Quantile	26.52921		
MLE 95% Quantile	28.95801		
MLE 99% Quantile	34.17717		
MVU Estimate of Median	19.31		
MVU Estimate of Mean	19.88859		
MVU Estimate of Standard Deviation	4.839498		
MVU Estimate of SE of Mean	1.975592		
95% H-UCL	25.2959		
95% Chebyshev (MVUE) UCL	28.5		
97.5% Chebyshev (MVUE) UCL	32.22616		
99% Chebyshev (MVUE) UCL	39.54549		
<b>Non-parametric Statistics</b>			
95% CLT UCL	23.14889		
95% Adjusted-CLT UCL	23.40837		
95% Modified-t UCL	23.92245		
95% Jackknife UCL	23.88197		
95% Chebyshev (Mean, Sd) UCL	28.52339		
97.5% Chebyshev (Mean, Sd) UCL	32.25834		
99% Chebyshev (Mean, Sd) UCL	39.59494		
<b>Bootstrap Statistics</b>			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	22.86293		
95% Bootstrap-t UCL	23.86895		
95% Hall's Bootstrap UCL	22.5749		
95% Percentile Bootstrap UCL	23.05		
95% BCA Bootstrap UCL	22.325		
<b>Recommendations</b>			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	23.88197	95% Student's-t UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value			
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\July 2004\SW06storm.xls		
Variable:	Chromium		
Raw Statistics			
Number of Observations	6		
Number of Missing Data	0		
Number of Valid Observations	6		
Number of Distinct Observations	6		
Minimum	5.6		
Maximum	24.2		
Mean	14.26667		
Standard Deviation	7.344839		
Variance	53.94667		
Coefficient of Variation	0.514825		
Skewness	0.17544		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.937582		
Shapiro-Wilk 5% Critical Value	0.788		
5% Normality Test Result	NORMAL	Data are normal at 5% significance level	
95% Student's-t UCL	20.30883		
Gamma Statistics			
k hat	4.087962		
k star (bias corrected)	2.155092		
Theta hat	3.489922		
Theta star	6.61998		
nu hat	49.05554		
nu star	25.8611		
5% Approximate Chi Square Value	15.27063		
Adjusted Level of Significance	0.01222		
Adjusted Chi Square Value	12.43155		
Anderson-Darling Test Statistic	0.287171		
Anderson-Darling 5% Critical Value	0.69981		
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.	
Kolmogrov-Smirnov Test Statistic	0.226656		
Kolmogrov-Smirnov 5% Critical Value	0.333474		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level	
95% Approximate Gamma UCL	24.16087		
95% Adjusted Gamma UCL	29.67866		
Lognormal Statistics			
Minimum of log data	1.722767		
Maximum of log data	3.186353		
Mean of log data	2.530658		
Standard Deviation of log data	0.573178		
Variance of log data	0.328533		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.938392		
Shapiro-Wilk 5% Critical Value	0.788		
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level	
MLE Mean	14.8044		
MLE Standard Deviation	9.232636		
MLE Coefficient of Variation	0.623641		
MLE Skewness	2.113476		
MLE Median	12.56177		
MLE 80% Quantile	20.38895		
MLE 90% Quantile	26.23754		
MLE 95% Quantile	32.25056		
MLE 99% Quantile	47.64937		
MVU Estimate of Median	12.2212		
MVU Estimate of Mean	14.36756		
MVU Estimate of Standard Deviation	8.230858		
MVU Estimate of SE of Mean	3.354366		
95% H-UCL	31.15858		
95% Chebyshev (MVUE) UCL	28.98891		
97.5% Chebyshev (MVUE) UCL	35.31557		
99% Chebyshev (MVUE) UCL	47.74309		
Non-parametric Statistics			
95% CLT UCL	19.19879		
95% Adjusted-CLT UCL	19.42827		
95% Modified-t UCL	20.34462		
95% Jackknife UCL	20.30883		
95% Chebyshev (Mean, Sd) UCL	27.3369		
97.5% Chebyshev (Mean, Sd) UCL	32.99241		
99% Chebyshev (Mean, Sd) UCL	44.10155		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	18.74945		
95% Bootstrap-t UCL	21.30921		
95% Hall's Bootstrap UCL	18.30385		
95% Percentile Bootstrap UCL	18.6		
95% BCA Bootstrap UCL	17.86667		
Recommendations			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	20.30883	95% Student's-t UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value			
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\July 2004\SW06storm.xls		
Variable:	Lead		
<b>Raw Statistics</b>			
Number of Observations	6		
Number of Missing Data	0		
Number of Valid Observations	6		
Number of Distinct Observations	5		
Minimum	3.55		
Maximum	16.25		
Mean	8.916667		
Standard Deviation	5.897937		
Variance	34.78567		
Coefficient of Variation	0.661451		
Skewness	0.212442		
Too Few Distinct Observations?	NO		
<b>Normal Statistics</b>			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.811376		
Shapiro-Wilk 5% Critical Value	0.788		
5% Normality Test Result	NORMAL	Data are normal at 5% significance level	
95% Student's-t UCL	13.76855		
<b>Gamma Statistics</b>			
k hat	2.470442		
k star (bias corrected)	1.346332		
Theta hat	3.60934		
Theta star	6.622932		
nu hat	29.64531		
nu star	16.15599		
5% Approximate Chi Square Value	8.071068		
Adjusted Level of Significance	0.01222		
Adjusted Chi Square Value	6.123067		
Anderson-Darling Test Statistic	0.71477		
Anderson-Darling 5% Critical Value	0.702855		
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level	
Kolmogrov-Smirnov Test Statistic	0.31654		
Kolmogrov-Smirnov 5% Critical Value	0.335228		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	APPROX GAMMA	Data follow approximate gamma distribution at 5% significance level	
95% Approximate Gamma UCL	17.84863		
95% Adjusted Gamma UCL	23.52702		
<b>Lognormal Statistics</b>			
Minimum of log data	1.266948		
Maximum of log data	2.788093		
Mean of log data	1.972084		
Standard Deviation of log data	0.741136		
Variance of log data	0.549282		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.782222		
Shapiro-Wilk 5% Critical Value	0.788		
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level	
MLE Mean	9.45671		
MLE Standard Deviation	8.090927		
MLE Coefficient of Variation	0.855575		
MLE Skewness	3.193014		
MLE Median	7.185633		
MLE 80% Quantile	13.44145		
MLE 90% Quantile	18.62385		
MLE 95% Quantile	24.31885		
MLE 99% Quantile	40.28443		
MVU Estimate of Median	6.862053		
MVU Estimate of Mean	8.970462		
MVU Estimate of Standard Deviation	6.639364		
MVU Estimate of SE of Mean	2.698288		
95% H-UCL	29.322		
95% Chebyshev (MVUE) UCL	20.73203		
97.5% Chebyshev (MVUE) UCL	25.82127		
99% Chebyshev (MVUE) UCL	35.81809		
<b>Non-parametric Statistics</b>			
95% CLT UCL	12.87718		
95% Adjusted-CLT UCL	13.10032		
95% Modified-t UCL	13.80335		
95% Jackknife UCL	13.76855		
95% Chebyshev (Mean, Sd) UCL	19.41212		
97.5% Chebyshev (Mean, Sd) UCL	23.95352		
99% Chebyshev (Mean, Sd) UCL	32.8742		
<b>Bootstrap Statistics</b>			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	12.47187		
95% Bootstrap-t UCL	13.66367		
95% Hall's Bootstrap UCL	11.03202		
95% Percentile Bootstrap UCL	12.5		
95% BCA Bootstrap UCL	11.43333		
<b>Recommendations</b>			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	13.76855	95% Student's-t UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value			
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\July 2004\SW06storm.xls				
Variable:	Manganese				
<b>Raw Statistics</b>					
Number of Observations	6				
Number of Missing Data	0				
Number of Valid Observations	6				
Number of Distinct Observations	6				
Minimum	177				
Maximum	490				
Mean	306.6667				
Standard Deviation	126.421				
Variance	15982.27				
Coefficient of Variation	0.412242				
Skewness	0.544268				
Too Few Distinct Observations?	NO				
<b>Normal Statistics</b>					
Lilliefors Test Statistic	N/R				
Lilliefors 5% Critical Value	N/R				
Shapiro-Wilk Test Statistic	0.902915				
Shapiro-Wilk 5% Critical Value	0.788				
5% Normality Test Result	NORMAL				
95% Student's-t UCL	410.6656				
<b>Gamma Statistics</b>					
k hat	7.220773				
k star (bias corrected)	3.721498				
Theta hat	42.47006				
Theta star	82.4041				
nu hat	86.64928				
nu star	44.65797				
5% Approximate Chi Square Value	30.32739				
Adjusted Level of Significance	0.01222				
Adjusted Chi Square Value	26.13778				
Anderson-Darling Test Statistic	0.365025				
Anderson-Darling 5% Critical Value	0.698174				
Anderson-Darling 5% Gamma Test Result	AD GAMMA				
Kolmogrov-Smirnov Test Statistic	0.270363				
Kolmogrov-Smirnov 5% Critical Value	0.332652				
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA				
5% Gamma Test Result	GAMMA				
95% Approximate Gamma UCL	451.5756				
95% Adjusted Gamma UCL	523.9585				
<b>Lognormal Statistics</b>					
Minimum of log data	5.17615				
Maximum of log data	6.194405				
Mean of log data	5.654921				
Standard Deviation of log data	0.411904				
Variance of log data	0.169665				
Lilliefors Test Statistic	N/R				
Lilliefors 5% Critical Value	N/R				
Shapiro-Wilk Test Statistic	0.917539				
Shapiro-Wilk 5% Critical Value	0.788				
5% Lognormality Test Result	LOGNORMAL				
MLE Mean	310.9879				
MLE Standard Deviation	133.7277				
MLE Coefficient of Variation	0.430009				
MLE Skewness	1.36954				
MLE Median	285.694				
MLE 80% Quantile	404.6331				
MLE 90% Quantile	485.0338				
MLE 95% Quantile	562.5636				
MLE 99% Quantile	744.722				
MVU Estimate of Median	281.675				
MVU Estimate of Mean	306.4075				
MVU Estimate of Standard Deviation	126.1919				
MVU Estimate of SE of Mean	51.49214				
95% H-UCL	492.2593				
95% Chebyshev (MVUE) UCL	530.8565				
97.5% Chebyshev (MVUE) UCL	627.9758				
99% Chebyshev (MVUE) UCL	818.7478				
<b>Non-parametric Statistics</b>					
95% CLT UCL	391.5595				
95% Adjusted-CLT UCL	403.813				
95% Modified-t UCL	412.5769				
95% Jackknife UCL	410.6656				
95% Chebyshev (Mean, Sd) UCL	531.6345				
97.5% Chebyshev (Mean, Sd) UCL	628.9782				
99% Chebyshev (Mean, Sd) UCL	820.1912				
<b>Bootstrap Statistics</b>					
Number of Bootstrap Runs	2000				
95% Standard Bootstrap UCL	385.03				
95% Bootstrap-t UCL	427.0969				
95% Hall's Bootstrap UCL	402.4533				
95% Percentile Bootstrap UCL	385				
95% BCA Bootstrap UCL	367.5				
<b>Recommendations</b>					
Human Inspection Recommended?	NO				
Appropriate Distribution	NORMAL				
1st Recommended UCL	410.6656				
2nd Recommended UCL					
3rd Recommended UCL					
Recommended UCL > Max Data Value					
Recommendation Warning!	NONE				
Alternative UCL	NONE				

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\July 2004\SW06storm.xls		
Variable:	Mercury		
Raw Statistics			
Number of Observations	6		
Number of Missing Data	0		
Number of Valid Observations	6		
Number of Distinct Observations	3		
Minimum	0.05		
Maximum	0.16		
Mean	0.08		
Standard Deviation	0.048166		
Variance	0.00232		
Coefficient of Variation	0.60208		
Skewness	1.256421		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.704232		
Shapiro-Wilk 5% Critical Value	0.788		
5% Normality Test Result	NOT NORMAL		Data not normal at 5% significance level
95% Student's-t UCL	0.119624		
Gamma Statistics			
k hat	3.998315		
k star (bias corrected)	2.110269		
Theta hat	0.020008		
Theta star	0.03791		
nu hat	47.97978		
nu star	25.32322		
5% Approximate Chi Square Value	14.85748		
Adjusted Level of Significance	0.01222		
Adjusted Chi Square Value	12.06311		
Anderson-Darling Test Statistic	1.055871		
Anderson-Darling 5% Critical Value	0.699982		
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA		Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.424174		
Kolmogrov-Smirnov 5% Critical Value	0.333542		
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA		Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA		Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	0.136353		
95% Adjusted Gamma UCL	0.167938		
Lognormal Statistics			
Minimum of log data	-2.995732		
Maximum of log data	-1.832581		
Mean of log data	-2.655962		
Standard Deviation of log data	0.534173		
Variance of log data	0.285341		
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.692083		
Shapiro-Wilk 5% Critical Value	0.788		
5% Lognormality Test Result	NOT LOGNORMAL		Data not lognormal at 5% significance level
MLE Mean	0.081001		
MLE Standard Deviation	0.046547		
MLE Coefficient of Variation	0.574644		
MLE Skewness	1.913687		
MLE Median	0.070231		
MLE 80% Quantile	0.110296		
MLE 90% Quantile	0.13952		
MLE 95% Quantile	0.169103		
MLE 99% Quantile	0.243296		
MVU Estimate of Median	0.068575		
MVU Estimate of Mean	0.078944		
MVU Estimate of Standard Deviation	0.042153		
MVU Estimate of SE of Mean	0.017186		
95% H-UCL	0.15796		
95% Chebyshev (MVUE) UCL	0.153854		
97.5% Chebyshev (MVUE) UCL	0.186268		
99% Chebyshev (MVUE) UCL	0.249939		
Non-parametric Statistics			
95% CLT UCL	0.112344		
95% Adjusted-CLT UCL	0.123121		
95% Modified-t UCL	0.121305		
95% Jackknife UCL	0.119624		
95% Chebyshev (Mean, Sd) UCL	0.165713		
97.5% Chebyshev (Mean, Sd) UCL	0.202801		
99% Chebyshev (Mean, Sd) UCL	0.275653		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	N/R		Not enough distinct data warning
95% Bootstrap-t UCL	N/R		Not enough distinct data warning
95% Hall's Bootstrap UCL	N/R		Not enough distinct data warning
95% Percentile Bootstrap UCL	N/R		Not enough distinct data warning
95% BCA Bootstrap UCL	N/R		Not enough distinct data warning
Recommendations			
Human Inspection Recommended?	YES		
Appropriate Distribution	NON-PARAMETRIC		
1st Recommended UCL	0.165713		95% Chebyshev (Mean, Sd) UCL
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	YES		Recommended UCL exceeds the maximum data value
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\July 2004\SW07base.xls		
Variable:	Arsenic		
Raw Statistics			
Number of Observations	10		
Number of Missing Data	0		
Number of Valid Observations	10		
Number of Distinct Observations	10		
Minimum	3.95		
Maximum	8.3		
Mean	5.695		
Standard Deviation	1.204955		
Variance	1.451917		
Coefficient of Variation	0.211581		
Skewness	0.902474		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.948213		
Shapiro-Wilk 5% Critical Value	0.842		
5% Normality Test Result	NORMAL	Data are normal at 5% significance level	
95% Student's-t UCL	6.39349		
Gamma Statistics			
k hat	26.14156		
k star (bias corrected)	18.36576		
Theta hat	0.217852		
Theta star	0.310088		
nu hat	522.8312		
nu star	367.3151		
5% Approximate Chi Square Value	323.8897		
Adjusted Level of Significance	0.0267		
Adjusted Chi Square Value	316.7946		
Anderson-Darling Test Statistic	0.191309		
Anderson-Darling 5% Critical Value	0.724517		
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.	
Kolmogrov-Smirnov Test Statistic	0.124902		
Kolmogrov-Smirnov 5% Critical Value	0.266107		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level	
95% Approximate Gamma UCL	6.458557		
95% Adjusted Gamma UCL	6.603206		
Lognormal Statistics			
Minimum of log data	1.373716		
Maximum of log data	2.116256		
Mean of log data	1.72034		
Standard Deviation of log data	0.20531		
Variance of log data	0.042152		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.982516		
Shapiro-Wilk 5% Critical Value	0.842		
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level	
MLE Mean	5.705418		
MLE Standard Deviation	1.183835		
MLE Coefficient of Variation	0.207493		
MLE Skewness	0.631412		
MLE Median	5.586428		
MLE 80% Quantile	6.644751		
MLE 90% Quantile	7.272963		
MLE 95% Quantile	7.830885		
MLE 99% Quantile	9.006008		
MVU Estimate of Median	5.574664		
MVU Estimate of Mean	5.69322		
MVU Estimate of Standard Deviation	1.172888		
MVU Estimate of SE of Mean	0.370878		
95% H-UCL	6.491317		
95% Chebyshev (MVUE) UCL	7.309838		
97.5% Chebyshev (MVUE) UCL	8.00935		
99% Chebyshev (MVUE) UCL	9.383406		
Non-parametric Statistics			
95% CLT UCL	6.321755		
95% Adjusted-CLT UCL	6.43795		
95% Modified-t UCL	6.411614		
95% Jackknife UCL	6.39349		
95% Chebyshev (Mean, Sd) UCL	7.355916		
97.5% Chebyshev (Mean, Sd) UCL	8.074596		
99% Chebyshev (Mean, Sd) UCL	9.486303		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	6.29956		
95% Bootstrap-t UCL	6.595199		
95% Hall's Bootstrap UCL	6.874562		
95% Percentile Bootstrap UCL	6.33		
95% BCA Bootstrap UCL	6.53		
Recommendations			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	6.39349	95% Student's-t UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value			
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\July 2004\SW07base.xls		
Variable:	Manganese		
<b>Raw Statistics</b>			
Number of Observations	10		
Number of Missing Data	0		
Number of Valid Observations	10		
Number of Distinct Observations	10		
Minimum	234		
Maximum	591		
Mean	374.5		
Standard Deviation	113.9193		
Variance	12977.61		
Coefficient of Variation	0.30419		
Skewness	0.621396		
Too Few Distinct Observations?	NO		
<b>Normal Statistics</b>			
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.925236		
Shapiro-Wilk 5% Critical Value	0.842		
5% Normality Test Result	NORMAL		Data are normal at 5% significance level
95% Student's-t UCL	440.5369		
<b>Gamma Statistics</b>			
k hat	12.44073		
k star (bias corrected)	8.775176		
Theta hat	30.10274		
Theta star	42.67721		
nu hat	248.8145		
nu star	175.5035		
5% Approximate Chi Square Value	145.8591		
Adjusted Level of Significance	0.0267		
Adjusted Chi Square Value	141.1632		
Anderson-Darling Test Statistic	0.340438		
Anderson-Darling 5% Critical Value	0.724936		
Anderson-Darling 5% Gamma Test Result	AD GAMMA		Data follow gamma distribution at 5% significance level.
Kolmogrov-Smirnov Test Statistic	0.193717		
Kolmogrov-Smirnov 5% Critical Value	0.266518		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA		Data follow gamma distribution at 5% significance level
5% Gamma Test Result	GAMMA		Data follow gamma distribution at 5% significance level
95% Approximate Gamma UCL	450.6133		
95% Adjusted Gamma UCL	465.6035		
<b>Lognormal Statistics</b>			
Minimum of log data	5.455321		
Maximum of log data	6.381816		
Mean of log data	5.884863		
Standard Deviation of log data	0.299937		
Variance of log data	0.089962		
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.95003		
Shapiro-Wilk 5% Critical Value	0.842		
5% Lognormality Test Result	LOGNORMAL		Data are lognormal at 5% significance level
MLE Mean	376.0959		
MLE Standard Deviation	115.3902		
MLE Coefficient of Variation	0.30681		
MLE Skewness	0.949312		
MLE Median	359.5536		
MLE 80% Quantile	463.2698		
MLE 90% Quantile	528.6263		
MLE 95% Quantile	588.9014		
MLE 99% Quantile	722.3542		
MVU Estimate of Median	357.9392		
MVU Estimate of Mean	374.3526		
MVU Estimate of Standard Deviation	113.0996		
MVU Estimate of SE of Mean	35.75578		
95% H-UCL	458.287		
95% Chebyshev (MVUE) UCL	530.2085		
97.5% Chebyshev (MVUE) UCL	597.6474		
99% Chebyshev (MVUE) UCL	730.1181		
<b>Non-parametric Statistics</b>			
95% CLT UCL	433.7549		
95% Adjusted-CLT UCL	441.3189		
95% Modified-t UCL	441.7167		
95% Jackknife UCL	440.5369		
95% Chebyshev (Mean, Sd) UCL	531.5269		
97.5% Chebyshev (Mean, Sd) UCL	599.4726		
99% Chebyshev (Mean, Sd) UCL	732.9388		
<b>Bootstrap Statistics</b>			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	430.5764		
95% Bootstrap-t UCL	446.4749		
95% Hall's Bootstrap UCL	441.0315		
95% Percentile Bootstrap UCL	433.7		
95% BCA Bootstrap UCL	461		
<b>Recommendations</b>			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	440.5369		95% Student's-t UCL
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value			
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\July 2004\SW07storm.xls		
Variable:	Arsenic		
Raw Statistics			
Number of Observations	6		
Number of Missing Data	0		
Number of Valid Observations	6		
Number of Distinct Observations	6		
Minimum	4.8		
Maximum	18.1		
Mean	9.733333		
Standard Deviation	5.014745		
Variance	25.14767		
Coefficient of Variation	0.515214		
Skewness	0.896454		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.907254		
Shapiro-Wilk 5% Critical Value	0.788		
5% Normality Test Result	NORMAL	Data are normal at 5% significance level	
95% Student's-t UCL	13.85866		
Gamma Statistics			
k hat	4.73901		
k star (bias corrected)	2.480616		
Theta hat	2.053875		
Theta star	3.923756		
nu hat	56.86812		
nu star	29.76739		
5% Approximate Chi Square Value	18.30806		
Adjusted Level of Significance	0.01222		
Adjusted Chi Square Value	15.15676		
Anderson-Darling Test Statistic	0.289957		
Anderson-Darling 5% Critical Value	0.698554		
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.	
Kolmogrov-Smirnov Test Statistic	0.180529		
Kolmogrov-Smirnov 5% Critical Value	0.332986		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level	
95% Approximate Gamma UCL	15.8256		
95% Adjusted Gamma UCL	19.11596		
Lognormal Statistics			
Minimum of log data	1.568616		
Maximum of log data	2.895912		
Mean of log data	2.166355		
Standard Deviation of log data	0.51216		
Variance of log data	0.262308		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.941472		
Shapiro-Wilk 5% Critical Value	0.788		
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level	
MLE Mean	9.949366		
MLE Standard Deviation	5.44883		
MLE Coefficient of Variation	0.547656		
MLE Skewness	1.807225		
MLE Median	8.726416		
MLE 80% Quantile	13.45203		
MLE 90% Quantile	16.85219		
MLE 95% Quantile	20.26425		
MLE 99% Quantile	28.72132		
MVU Estimate of Median	8.537148		
MVU Estimate of Mean	9.718162		
MVU Estimate of Standard Deviation	4.975554		
MVU Estimate of SE of Mean	2.028944		
95% H-UCL	18.62518		
95% Chebyshev (MVUE) UCL	18.56212		
97.5% Chebyshev (MVUE) UCL	22.38891		
99% Chebyshev (MVUE) UCL	29.9059		
Non-parametric Statistics			
95% CLT UCL	13.10078		
95% Adjusted-CLT UCL	13.90136		
95% Modified-t UCL	13.98354		
95% Jackknife UCL	13.85866		
95% Chebyshev (Mean, Sd) UCL	18.65714		
97.5% Chebyshev (Mean, Sd) UCL	22.51847		
99% Chebyshev (Mean, Sd) UCL	30.10332		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	12.7934		
95% Bootstrap-t UCL	15.6425		
95% Hall's Bootstrap UCL	13.64199		
95% Percentile Bootstrap UCL	13.00833		
95% BCA Bootstrap UCL	14.15833		
Recommendations			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	13.85866	95% Student's-t UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value			
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\July 2004\SW07storm.xls		
Variable:	Chromium		
Raw Statistics			
Number of Observations	6		
Number of Missing Data	0		
Number of Valid Observations	6		
Number of Distinct Observations	6		
Minimum	1.65		
Maximum	13.2		
Mean	5.8		
Standard Deviation	4.501222		
Variance	20.261		
Coefficient of Variation	0.776073		
Skewness	0.889986		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.8917		
Shapiro-Wilk 5% Critical Value	0.788		
5% Normality Test Result	NORMAL	Data are normal at 5% significance level	
95% Student's-t UCL	9.502885		
Gamma Statistics			
k hat	1.946409		
k star (bias corrected)	1.084316		
Theta hat	2.979846		
Theta star	5.348995		
nu hat	23.35691		
nu star	13.01179		
5% Approximate Chi Square Value	5.899558		
Adjusted Level of Significance	0.01222		
Adjusted Chi Square Value	4.291519		
Anderson-Darling Test Statistic	0.325646		
Anderson-Darling 5% Critical Value	0.704594		
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.	
Kolmogrov-Smirnov Test Statistic	0.224429		
Kolmogrov-Smirnov 5% Critical Value	0.336004		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level	
95% Approximate Gamma UCL	12.79221		
95% Adjusted Gamma UCL	17.58547		
Lognormal Statistics			
Minimum of log data	0.500775		
Maximum of log data	2.580217		
Mean of log data	1.4795		
Standard Deviation of log data	0.83994		
Variance of log data	0.7055		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.924923		
Shapiro-Wilk 5% Critical Value	0.788		
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level	
MLE Mean	6.247929		
MLE Standard Deviation	6.325108		
MLE Coefficient of Variation	1.012353		
MLE Skewness	4.074576		
MLE Median	4.390751		
MLE 80% Quantile	8.928511		
MLE 90% Quantile	12.92061		
MLE 95% Quantile	17.48253		
MLE 99% Quantile	30.97564		
MVU Estimate of Median	4.137973		
MVU Estimate of Mean	5.82458		
MVU Estimate of Standard Deviation	4.882005		
MVU Estimate of SE of Mean	1.979018		
95% H-UCL	25.486		
95% Chebyshev (MVUE) UCL	14.45092		
97.5% Chebyshev (MVUE) UCL	18.18354		
99% Chebyshev (MVUE) UCL	25.51556		
Non-parametric Statistics			
95% CLT UCL	8.82261		
95% Adjusted-CLT UCL	9.536025		
95% Modified-t UCL	9.614164		
95% Jackknife UCL	9.502885		
95% Chebyshev (Mean, Sd) UCL	13.80998		
97.5% Chebyshev (Mean, Sd) UCL	17.27591		
99% Chebyshev (Mean, Sd) UCL	24.08405		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	8.547232		
95% Bootstrap-t UCL	10.59971		
95% Hall's Bootstrap UCL	9.520321		
95% Percentile Bootstrap UCL	8.566667		
95% BCA Bootstrap UCL	8.308333		
Recommendations			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	9.502885	95% Student's-t UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value			
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\July 2004\SW07storm.xls				
Variable:	Lead				
<b>Raw Statistics</b>					
Number of Observations	6				
Number of Missing Data	0				
Number of Valid Observations	6				
Number of Distinct Observations	6				
Minimum	1.85				
Maximum	17				
Mean	7.033333				
Standard Deviation	5.678175				
Variance	32.24167				
Coefficient of Variation	0.807323				
Skewness	1.217426				
Too Few Distinct Observations?	NO				
<b>Normal Statistics</b>					
Lilliefors Test Statistic	N/R				
Lilliefors 5% Critical Value	N/R				
Shapiro-Wilk Test Statistic	0.875731				
Shapiro-Wilk 5% Critical Value	0.788				
5% Normality Test Result	NORMAL				
95% Student's-t UCL	11.70443				
<b>Gamma Statistics</b>					
k hat	1.935405				
k star (bias corrected)	1.078814				
Theta hat	3.634037				
Theta star	6.519508				
nu hat	23.22486				
nu star	12.94576				
5% Approximate Chi Square Value	5.855184				
Adjusted Level of Significance	0.01222				
Adjusted Chi Square Value	4.254656				
Anderson-Darling Test Statistic	0.281757				
Anderson-Darling 5% Critical Value	0.704673				
Anderson-Darling 5% Gamma Test Result	AD GAMMA				
Kolmogrov-Smirnov Test Statistic	0.231428				
Kolmogrov-Smirnov 5% Critical Value	0.336039				
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA				
5% Gamma Test Result	GAMMA				
95% Approximate Gamma UCL	15.55064				
95% Adjusted Gamma UCL	21.40052				
<b>Lognormal Statistics</b>					
Minimum of log data	0.615186				
Maximum of log data	2.833213				
Mean of log data	1.670603				
Standard Deviation of log data	0.833637				
Variance of log data	0.694951				
Lilliefors Test Statistic	N/R				
Lilliefors 5% Critical Value	N/R				
Shapiro-Wilk Test Statistic	0.956853				
Shapiro-Wilk 5% Critical Value	0.788				
5% Lognormality Test Result	LOGNORMAL				
MLE Mean	7.523854				
MLE Standard Deviation	7.537424				
MLE Coefficient of Variation	1.001804				
MLE Skewness	4.010832				
MLE Median	5.315372				
MLE 80% Quantile	10.7513				
MLE 90% Quantile	15.5153				
MLE 95% Quantile	20.94576				
MLE 99% Quantile	36.95286				
MVU Estimate of Median	5.013844				
MVU Estimate of Mean	7.022499				
MVU Estimate of Standard Deviation	5.842218				
MVU Estimate of SE of Mean	2.368701				
95% H-UCL	30.12794				
95% Chebyshev (MVUE) UCL	17.34743				
97.5% Chebyshev (MVUE) UCL	21.81503				
99% Chebyshev (MVUE) UCL	30.59078				
<b>Non-parametric Statistics</b>					
95% CLT UCL	10.84628				
95% Adjusted-CLT UCL	12.07734				
95% Modified-t UCL	11.89645				
95% Jackknife UCL	11.70443				
95% Chebyshev (Mean, Sd) UCL	17.13772				
97.5% Chebyshev (Mean, Sd) UCL	21.50989				
99% Chebyshev (Mean, Sd) UCL	30.09819				
<b>Bootstrap Statistics</b>					
Number of Bootstrap Runs	2000				
95% Standard Bootstrap UCL	10.39643				
95% Bootstrap-t UCL	15.60848				
95% Hall's Bootstrap UCL	12.73486				
95% Percentile Bootstrap UCL	10.76667				
95% BCA Bootstrap UCL	13.125				
<b>Recommendations</b>					
Human Inspection Recommended?	NO				
Appropriate Distribution	NORMAL				
1st Recommended UCL	11.70443				
2nd Recommended UCL					
3rd Recommended UCL					
Recommended UCL > Max Data Value					
Recommendation Warning!	NONE				
Alternative UCL	NONE				

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\July 2004\SW07storm.xls		
Variable:	Manganese		
<b>Raw Statistics</b>			
Number of Observations	6		
Number of Missing Data	0		
Number of Valid Observations	6		
Number of Distinct Observations	6		
Minimum	114.5		
Maximum	308		
Mean	181.25		
Standard Deviation	72.6772		
Variance	5281.975		
Coefficient of Variation	0.400978		
Skewness	1.278275		
Too Few Distinct Observations?	NO		
<b>Normal Statistics</b>			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.868676		
Shapiro-Wilk 5% Critical Value	0.788		
5% Normality Test Result	NORMAL	Data are normal at 5% significance level	
95% Student's-t UCL	241.0372		
<b>Gamma Statistics</b>			
k hat	8.524198		
k star (bias corrected)	4.37321		
Theta hat	21.263		
Theta star	41.44553		
nu hat	102.2904		
nu star	52.47852		
5% Approximate Chi Square Value	36.83544		
Adjusted Level of Significance	0.01222		
Adjusted Chi Square Value	32.16892		
Anderson-Darling Test Statistic	0.370046		
Anderson-Darling 5% Critical Value	0.698247		
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.	
Kolmogrov-Smirnov Test Statistic	0.282197		
Kolmogrov-Smirnov 5% Critical Value	0.332571		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level	
95% Approximate Gamma UCL	258.2223		
95% Adjusted Gamma UCL	295.6808		
<b>Lognormal Statistics</b>			
Minimum of log data	4.740575		
Maximum of log data	5.7301		
Mean of log data	5.140075		
Standard Deviation of log data	0.368678		
Variance of log data	0.135923		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.927519		
Shapiro-Wilk 5% Critical Value	0.788		
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level	
MLE Mean	182.735		
MLE Standard Deviation	69.72584		
MLE Coefficient of Variation	0.381568		
MLE Skewness	1.200258		
MLE Median	170.7287		
MLE 80% Quantile	233.1328		
MLE 90% Quantile	274.1914		
MLE 95% Quantile	313.1088		
MLE 99% Quantile	402.4699		
MVU Estimate of Median	168.8026		
MVU Estimate of Mean	180.5955		
MVU Estimate of Standard Deviation	66.57514		
MVU Estimate of SE of Mean	27.17045		
95% H-UCL	271.4052		
95% Chebyshev (MVUE) UCL	299.0287		
97.5% Chebyshev (MVUE) UCL	350.2749		
99% Chebyshev (MVUE) UCL	450.938		
<b>Non-parametric Statistics</b>			
95% CLT UCL	230.0534		
95% Adjusted-CLT UCL	246.5978		
95% Modified-t UCL	243.6178		
95% Jackknife UCL	241.0372		
95% Chebyshev (Mean, Sd) UCL	310.58		
97.5% Chebyshev (Mean, Sd) UCL	366.5412		
99% Chebyshev (Mean, Sd) UCL	476.4662		
<b>Bootstrap Statistics</b>			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	225.5596		
95% Bootstrap-t UCL	329.986		
95% Hall's Bootstrap UCL	571.5012		
95% Percentile Bootstrap UCL	229.5		
95% BCA Bootstrap UCL	218.3333		
<b>Recommendations</b>			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	241.0372	95% Student's-t UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value			
Recommendation Warning!	NONE		
Alternative UCL	NONE		

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Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\July 2004\SW07storm.xls		
Variable:	Mercury		
Raw Statistics			
Number of Observations	6		
Number of Missing Data	0		
Number of Valid Observations	6		
Number of Distinct Observations	2		
Minimum	0.05		
Maximum	0.11		
Mean	0.06		
Standard Deviation	0.024495		
Variance	0.0006		
Coefficient of Variation	0.408248		
Skewness	2.44949		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.496293		
Shapiro-Wilk 5% Critical Value	0.788		
5% Normality Test Result	NOT NORMAL		Data not normal at 5% significance level
95% Student's-t UCL	0.08015		
Gamma Statistics			
k hat	9.984637		
k star (bias corrected)	5.10343		
Theta hat	0.006009		
Theta star	0.011757		
nu hat	119.8156		
nu star	61.24116		
5% Approximate Chi Square Value	44.23987		
Adjusted Level of Significance	0.01222		
Adjusted Chi Square Value	39.07885		
Anderson-Darling Test Statistic	1.722078		
Anderson-Darling 5% Critical Value	0.698329		
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA		Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.507649		
Kolmogrov-Smirnov 5% Critical Value	0.332481		
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA		Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA		Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	0.083058		
95% Adjusted Gamma UCL	0.094027		
Lognormal Statistics			
Minimum of log data	-2.995732		
Maximum of log data	-2.207275		
Mean of log data	-2.864323		
Standard Deviation of log data	0.321886		
Variance of log data	0.103611		
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.496293		
Shapiro-Wilk 5% Critical Value	0.788		
5% Lognormality Test Result	NOT LOGNORMAL		Data not lognormal at 5% significance level
MLE Mean	0.060054		
MLE Standard Deviation	0.019842		
MLE Coefficient of Variation	0.330407		
MLE Skewness	1.027291		
MLE Median	0.057022		
MLE 80% Quantile	0.074846		
MLE 90% Quantile	0.086233		
MLE 95% Quantile	0.096828		
MLE 99% Quantile	0.120559		
MVU Estimate of Median	0.056531		
MVU Estimate of Mean	0.059522		
MVU Estimate of Standard Deviation	0.019158		
MVU Estimate of SE of Mean	0.00782		
95% H-UCL	0.083684		
95% Chebyshev (MVUE) UCL	0.093607		
97.5% Chebyshev (MVUE) UCL	0.108356		
99% Chebyshev (MVUE) UCL	0.137328		
Non-parametric Statistics			
95% CLT UCL	0.076449		
95% Adjusted-CLT UCL	0.087134		
95% Modified-t UCL	0.081817		
95% Jackknife UCL	0.08015		
95% Chebyshev (Mean, Sd) UCL	0.103589		
97.5% Chebyshev (Mean, Sd) UCL	0.12245		
99% Chebyshev (Mean, Sd) UCL	0.159499		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	N/R		Not enough distinct data warning
95% Bootstrap-t UCL	N/R		Not enough distinct data warning
95% Hall's Bootstrap UCL	N/A		Not enough distinct data error
95% Percentile Bootstrap UCL	N/R		Not enough distinct data warning
95% BCA Bootstrap UCL	N/R		Not enough distinct data warning
Recommendations			
Human Inspection Recommended?	YES		Users must select one of the recommended UCLS
Appropriate Distribution	NON-PARAMETRIC		
1st Recommended UCL	0.08015		95% Student's-t UCL
2nd Recommended UCL	0.081817		95% Modified-t UCL
3rd Recommended UCL			
Recommended UCL > Max Data Value			
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\July 2004\SW08base.xls		
Variable:	Arsenic		
<b>Raw Statistics</b>			
Number of Observations	10		
Number of Missing Data	0		
Number of Valid Observations	10		
Number of Distinct Observations	9		
Minimum	1.5		
Maximum	6.35		
Mean	3.525		
Standard Deviation	1.690044		
Variance	2.85625		
Coefficient of Variation	0.479445		
Skewness	0.490063		
Too Few Distinct Observations?	NO		
<b>Normal Statistics</b>			
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.935072		
Shapiro-Wilk 5% Critical Value	0.842		
5% Normality Test Result	NORMAL		Data are normal at 5% significance level
95% Student's-t UCL	4.504687		
<b>Gamma Statistics</b>			
k hat	4.67057		
k star (bias corrected)	3.336066		
Theta hat	0.754726		
Theta star	1.056634		
nu hat	93.41141		
nu star	66.72132		
5% Approximate Chi Square Value	48.92003		
Adjusted Level of Significance	0.0267		
Adjusted Chi Square Value	46.28076		
Anderson-Darling Test Statistic	0.226864		
Anderson-Darling 5% Critical Value	0.72943		
Anderson-Darling 5% Gamma Test Result	AD GAMMA		Data follow gamma distribution at 5% significance level.
Kolmogrov-Smirnov Test Statistic	0.126928		
Kolmogrov-Smirnov 5% Critical Value	0.267558		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA		Data follow gamma distribution at 5% significance level
5% Gamma Test Result	GAMMA		Data follow gamma distribution at 5% significance level
95% Approximate Gamma UCL	4.807696		
95% Adjusted Gamma UCL	5.081867		
<b>Lognormal Statistics</b>			
Minimum of log data	0.405465		
Maximum of log data	1.848455		
Mean of log data	1.149024		
Standard Deviation of log data	0.50858		
Variance of log data	0.258653		
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.943211		
Shapiro-Wilk 5% Critical Value	0.842		
5% Lognormality Test Result	LOGNORMAL		Data are lognormal at 5% significance level
MLE Mean	3.590713		
MLE Standard Deviation	1.950867		
MLE Coefficient of Variation	0.543309		
MLE Skewness	1.790304		
MLE Median	3.155112		
MLE 80% Quantile	4.849007		
MLE 90% Quantile	6.065088		
MLE 95% Quantile	7.283691		
MLE 99% Quantile	10.29832		
MVU Estimate of Median	3.114524		
MVU Estimate of Mean	3.540313		
MVU Estimate of Standard Deviation	1.8375		
MVU Estimate of SE of Mean	0.579881		
95% H-UCL	5.24219		
95% Chebyshev (MVUE) UCL	6.067955		
97.5% Chebyshev (MVUE) UCL	7.161668		
99% Chebyshev (MVUE) UCL	9.310055		
<b>Non-parametric Statistics</b>			
95% CLT UCL	4.404074		
95% Adjusted-CLT UCL	4.492571		
95% Modified-t UCL	4.518491		
95% Jackknife UCL	4.504687		
95% Chebyshev (Mean, Sd) UCL	5.854565		
97.5% Chebyshev (Mean, Sd) UCL	6.86257		
99% Chebyshev (Mean, Sd) UCL	8.8426		
<b>Bootstrap Statistics</b>			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	4.346559		
95% Bootstrap-t UCL	4.660451		
95% Hall's Bootstrap UCL	4.62748		
95% Percentile Bootstrap UCL	4.38		
95% BCA Bootstrap UCL	4.785		
<b>Recommendations</b>			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	4.504687		95% Student's-t UCL
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value			
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\July 2004\SW08base.xls		
Variable:	Manganese		
<b>Raw Statistics</b>			
Number of Observations	10		
Number of Missing Data	0		
Number of Valid Observations	10		
Number of Distinct Observations	10		
Minimum	147		
Maximum	425		
Mean	250.8		
Standard Deviation	78.97369		
Variance	6236.844		
Coefficient of Variation	0.314887		
Skewness	1.070407		
Too Few Distinct Observations?	NO		
<b>Normal Statistics</b>			
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.918897		
Shapiro-Wilk 5% Critical Value	0.842		
5% Normality Test Result	NORMAL		Data are normal at 5% significance level
95% Student's-t UCL	296.5796		
<b>Gamma Statistics</b>			
k hat	12.13838		
k star (bias corrected)	8.563531		
Theta hat	20.66174		
Theta star	29.28698		
nu hat	242.7676		
nu star	171.2706		
5% Approximate Chi Square Value	142.0007		
Adjusted Level of Significance	0.0267		
Adjusted Chi Square Value	137.3699		
Anderson-Darling Test Statistic	0.266873		
Anderson-Darling 5% Critical Value	0.724951		
Anderson-Darling 5% Gamma Test Result	AD GAMMA		Data follow gamma distribution at 5% significance level.
Kolmogrov-Smirnov Test Statistic	0.15376		
Kolmogrov-Smirnov 5% Critical Value	0.266532		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA		Data follow gamma distribution at 5% significance level
5% Gamma Test Result	GAMMA		Data follow gamma distribution at 5% significance level
95% Approximate Gamma UCL	302.4961		
95% Adjusted Gamma UCL	312.6935		
<b>Lognormal Statistics</b>			
Minimum of log data	4.990433		
Maximum of log data	6.052089		
Mean of log data	5.482899		
Standard Deviation of log data	0.301703		
Variance of log data	0.091025		
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.971388		
Shapiro-Wilk 5% Critical Value	0.842		
5% Lognormality Test Result	LOGNORMAL		Data are lognormal at 5% significance level
MLE Mean	251.7436		
MLE Standard Deviation	77.71335		
MLE Coefficient of Variation	0.3087		
MLE Skewness	0.955519		
MLE Median	240.543		
MLE 80% Quantile	310.3925		
MLE 90% Quantile	354.457		
MLE 95% Quantile	395.1241		
MLE 99% Quantile	485.2478		
MVU Estimate of Median	239.4503		
MVU Estimate of Mean	250.5626		
MVU Estimate of Standard Deviation	76.15231		
MVU Estimate of SE of Mean	24.07495		
95% H-UCL	307.1732		
95% Chebyshev (MVUE) UCL	355.5029		
97.5% Chebyshev (MVUE) UCL	400.9106		
99% Chebyshev (MVUE) UCL	490.1053		
<b>Non-parametric Statistics</b>			
95% CLT UCL	291.878		
95% Adjusted-CLT UCL	300.9106		
95% Modified-t UCL	297.9885		
95% Jackknife UCL	296.5796		
95% Chebyshev (Mean, Sd) UCL	359.6577		
97.5% Chebyshev (Mean, Sd) UCL	406.7606		
99% Chebyshev (Mean, Sd) UCL	499.2849		
<b>Bootstrap Statistics</b>			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	289.5913		
95% Bootstrap-t UCL	313.0346		
95% Hall's Bootstrap UCL	319.218		
95% Percentile Bootstrap UCL	289.05		
95% BCA Bootstrap UCL	285.45		
<b>Recommendations</b>			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	296.5796	95% Student's-t UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value			
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\July 2004\SW08storm.xls		
Variable:	Antimony		
<b>Raw Statistics</b>			
Number of Observations	6		
Number of Missing Data	0		
Number of Valid Observations	6		
Number of Distinct Observations	6		
Minimum	0.815973		
Maximum	1.835229		
Mean	1.16691		
Standard Deviation	0.353412		
Variance	0.1249		
Coefficient of Variation	0.302862		
Skewness	1.670852		
Too Few Distinct Observations?	NO		
<b>Normal Statistics</b>			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.841112		
Shapiro-Wilk 5% Critical Value	0.788		
5% Normality Test Result	NORMAL	Data are normal at 5% significance level	
95% Student's-t UCL	1.457641		
<b>Gamma Statistics</b>			
k hat	15.22054		
k star (bias corrected)	7.721379		
Theta hat	0.076667		
Theta star	0.151127		
nu hat	182.6464		
nu star	92.65655		
5% Approximate Chi Square Value	71.45438		
Adjusted Level of Significance	0.01222		
Adjusted Chi Square Value	64.75951		
Anderson-Darling Test Statistic	0.420259		
Anderson-Darling 5% Critical Value	0.697683		
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.	
Kolmogrov-Smirnov Test Statistic	0.251099		
Kolmogrov-Smirnov 5% Critical Value	0.332088		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level	
95% Approximate Gamma UCL	1.51316		
95% Adjusted Gamma UCL	1.669591		
<b>Lognormal Statistics</b>			
Minimum of log data	-0.203374		
Maximum of log data	0.607169		
Mean of log data	0.12115		
Standard Deviation of log data	0.273341		
Variance of log data	0.074716		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.917611		
Shapiro-Wilk 5% Critical Value	0.788		
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level	
MLE Mean	1.17176		
MLE Standard Deviation	0.326367		
MLE Coefficient of Variation	0.278527		
MLE Skewness	0.85719		
MLE Median	1.128794		
MLE 80% Quantile	1.422083		
MLE 90% Quantile	1.603828		
MLE 95% Quantile	1.769675		
MLE 99% Quantile	2.131747		
MVU Estimate of Median	1.121781		
MVU Estimate of Mean	1.164328		
MVU Estimate of Standard Deviation	0.318249		
MVU Estimate of SE of Mean	0.129912		
95% H-UCL	1.536189		
95% Chebyshev (MVUE) UCL	1.7306		
97.5% Chebyshev (MVUE) UCL	1.975627		
99% Chebyshev (MVUE) UCL	2.456934		
<b>Non-parametric Statistics</b>			
95% CLT UCL	1.40423		
95% Adjusted-CLT UCL	1.509389		
95% Modified-t UCL	1.474044		
95% Jackknife UCL	1.457641		
95% Chebyshev (Mean, Sd) UCL	1.795812		
97.5% Chebyshev (Mean, Sd) UCL	2.067939		
99% Chebyshev (Mean, Sd) UCL	2.602478		
<b>Bootstrap Statistics</b>			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	1.379542		
95% Bootstrap-t UCL	1.744622		
95% Hall's Bootstrap UCL	2.608309		
95% Percentile Bootstrap UCL	1.397239		
95% BCA Bootstrap UCL	1.499673		
<b>Recommendations</b>			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	1.457641	95% Student's-t UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value			
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\July 2004\SW08storm.xls		
Variable:	Arsenic		
Raw Statistics			
Number of Observations	6		
Number of Missing Data	0		
Number of Valid Observations	6		
Number of Distinct Observations	6		
Minimum	4.462236		
Maximum	29.86236		
Mean	10.57917		
Standard Deviation	9.553179		
Variance	91.26324		
Coefficient of Variation	0.903017		
Skewness	2.326688		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.642779		
Shapiro-Wilk 5% Critical Value	0.788		
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level	
95% Student's-t UCL	18.438		
Gamma Statistics			
k hat	2.372191		
k star (bias corrected)	1.297207		
Theta hat	4.459664		
Theta star	8.155351		
nu hat	28.46629		
nu star	15.56648		
5% Approximate Chi Square Value	7.655998		
Adjusted Level of Significance	0.01222		
Adjusted Chi Square Value	5.769294		
Anderson-Darling Test Statistic	0.820116		
Anderson-Darling 5% Critical Value	0.703138		
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level	
Kolmogrov-Smirnov Test Statistic	0.376213		
Kolmogrov-Smirnov 5% Critical Value	0.335354		
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level	
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level	
95% Approximate Gamma UCL	21.51		
95% Adjusted Gamma UCL	28.54431		
Lognormal Statistics			
Minimum of log data	1.49565		
Maximum of log data	3.396599		
Mean of log data	2.133547		
Standard Deviation of log data	0.659073		
Variance of log data	0.434377		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.817444		
Shapiro-Wilk 5% Critical Value	0.788		
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level	
MLE Mean	10.49329		
MLE Standard Deviation	7.739469		
MLE Coefficient of Variation	0.737564		
MLE Skewness	2.613927		
MLE Median	8.444768		
MLE 80% Quantile	14.73851		
MLE 90% Quantile	19.69679		
MLE 95% Quantile	24.97116		
MLE 99% Quantile	39.11673		
MVU Estimate of Median	8.14301		
MVU Estimate of Mean	10.07537		
MVU Estimate of Standard Deviation	6.63456		
MVU Estimate of SE of Mean	2.700593		
95% H-UCL	26.59712		
95% Chebyshev (MVUE) UCL	21.84698		
97.5% Chebyshev (MVUE) UCL	26.94056		
99% Chebyshev (MVUE) UCL	36.94593		
Non-parametric Statistics			
95% CLT UCL	16.99422		
95% Adjusted-CLT UCL	20.95258		
95% Modified-t UCL	19.05543		
95% Jackknife UCL	18.438		
95% Chebyshev (Mean, Sd) UCL	27.57918		
97.5% Chebyshev (Mean, Sd) UCL	34.9351		
99% Chebyshev (Mean, Sd) UCL	49.38437		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	16.26327		
95% Bootstrap-t UCL	45.75756		
95% Hall's Bootstrap UCL	52.50759		
95% Percentile Bootstrap UCL	17.79982		
95% BCA Bootstrap UCL	19.1685		
Recommendations			
Human Inspection Recommended?	NO		
Appropriate Distribution	LOGNORMAL		
1st Recommended UCL	26.59712	95% H-UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value			
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\July 2004\SW08storm.xls		
Variable:	Chromium		
Raw Statistics			
Number of Observations	6		
Number of Missing Data	0		
Number of Valid Observations	6		
Number of Distinct Observations	6		
Minimum	3.073702		
Maximum	59.10161		
Mean	15.11686		
Standard Deviation	21.74224		
Variance	472.7252		
Coefficient of Variation	1.438278		
Skewness	2.353336		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.617542		
Shapiro-Wilk 5% Critical Value	0.788		
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level	
95% Student's-t UCL	33.0029		
Gamma Statistics			
k hat	0.975518		
k star (bias corrected)	0.59887		
Theta hat	15.49623		
Theta star	25.2423		
nu hat	11.70622		
nu star	7.186444		
5% Approximate Chi Square Value	2.272834		
Adjusted Level of Significance	0.01222		
Adjusted Chi Square Value	1.40697		
Anderson-Darling Test Statistic	0.709589		
Anderson-Darling 5% Critical Value	0.715677		
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.	
Kolmogrov-Smirnov Test Statistic	0.313636		
Kolmogrov-Smirnov 5% Critical Value	0.341105		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level	
95% Approximate Gamma UCL	47.79779		
95% Adjusted Gamma UCL	77.21306		
Lognormal Statistics			
Minimum of log data	1.122883		
Maximum of log data	4.079258		
Mean of log data	2.122374		
Standard Deviation of log data	1.073807		
Variance of log data	1.153062		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.867445		
Shapiro-Wilk 5% Critical Value	0.788		
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level	
MLE Mean	14.86345		
MLE Standard Deviation	21.88452		
MLE Coefficient of Variation	1.472372		
MLE Skewness	7.609037		
MLE Median	8.350939		
MLE 80% Quantile	20.69188		
MLE 90% Quantile	33.18893		
MLE 95% Quantile	48.85159		
MLE 99% Quantile	101.4991		
MVU Estimate of Median	7.575563		
MVU Estimate of Mean	13.11624		
MVU Estimate of Standard Deviation	14.01622		
MVU Estimate of SE of Mean	5.628698		
95% H-UCL	133.1772		
95% Chebyshev (MVUE) UCL	37.65116		
97.5% Chebyshev (MVUE) UCL	48.26744		
99% Chebyshev (MVUE) UCL	69.12107		
Non-parametric Statistics			
95% CLT UCL	29.71697		
95% Adjusted-CLT UCL	38.82904		
95% Modified-t UCL	34.4242		
95% Jackknife UCL	33.0029		
95% Chebyshev (Mean, Sd) UCL	53.80747		
97.5% Chebyshev (Mean, Sd) UCL	70.54893		
99% Chebyshev (Mean, Sd) UCL	103.4343		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	28.51822		
95% Bootstrap-t UCL	121.843		
95% Hall's Bootstrap UCL	112.0693		
95% Percentile Bootstrap UCL	32.32697		
95% BCA Bootstrap UCL	40.48165		
Recommendations			
Human Inspection Recommended?	NO		
Appropriate Distribution	GAMMA		
1st Recommended UCL	47.79779	95% Approximate Gamma UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value			
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\July 2004\SW08storm.xls		
Variable:	Lead		
<b>Raw Statistics</b>			
Number of Observations	6		
Number of Missing Data	0		
Number of Valid Observations	6		
Number of Distinct Observations	6		
Minimum	3.859222		
Maximum	82.96712		
Mean	23.24625		
Standard Deviation	29.92947		
Variance	895.773		
Coefficient of Variation	1.287497		
Skewness	2.206387		
Too Few Distinct Observations?	NO		
<b>Normal Statistics</b>			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.683482		
Shapiro-Wilk 5% Critical Value	0.788		
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level	
95% Student's-t UCL	47.86742		
<b>Gamma Statistics</b>			
k hat	1.020425		
k star (bias corrected)	0.621323		
Theta hat	22.78096		
Theta star	37.41409		
nu hat	12.24509		
nu star	7.455881		
5% Approximate Chi Square Value	2.423484		
Adjusted Level of Significance	0.01222		
Adjusted Chi Square Value	1.518997		
Anderson-Darling Test Statistic	0.478456		
Anderson-Darling 5% Critical Value	0.714801		
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.	
Kolmogrov-Smirnov Test Statistic	0.289096		
Kolmogrov-Smirnov 5% Critical Value	0.340711		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level	
95% Approximate Gamma UCL	71.51739		
95% Adjusted Gamma UCL	114.1024		
<b>Lognormal Statistics</b>			
Minimum of log data	1.350466		
Maximum of log data	4.418444		
Mean of log data	2.581814		
Standard Deviation of log data	1.135777		
Variance of log data	1.28999		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.910577		
Shapiro-Wilk 5% Critical Value	0.788		
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level	
MLE Mean	25.19912		
MLE Standard Deviation	40.88748		
MLE Coefficient of Variation	1.622576		
MLE Skewness	9.139565		
MLE Median	13.2211		
MLE 80% Quantile	34.52024		
MLE 90% Quantile	56.89957		
MLE 95% Quantile	85.64131		
MLE 99% Quantile	185.6071		
MVU Estimate of Median	11.85333		
MVU Estimate of Mean	21.83596		
MVU Estimate of Standard Deviation	24.65714		
MVU Estimate of SE of Mean	9.868867		
95% H-UCL	287.2957		
95% Chebyshev (MVUE) UCL	64.85335		
97.5% Chebyshev (MVUE) UCL	83.46701		
99% Chebyshev (MVUE) UCL	120.0299		
<b>Non-parametric Statistics</b>			
95% CLT UCL	43.34414		
95% Adjusted-CLT UCL	55.10421		
95% Modified-t UCL	49.70176		
95% Jackknife UCL	47.86742		
95% Chebyshev (Mean, Sd) UCL	76.50612		
97.5% Chebyshev (Mean, Sd) UCL	99.55171		
99% Chebyshev (Mean, Sd) UCL	144.8203		
<b>Bootstrap Statistics</b>			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	41.51211		
95% Bootstrap-t UCL	97.71949		
95% Hall's Bootstrap UCL	139.4263		
95% Percentile Bootstrap UCL	45.75237		
95% BCA Bootstrap UCL	50.42883		
<b>Recommendations</b>			
Human Inspection Recommended?	NO		
Appropriate Distribution	GAMMA		
1st Recommended UCL	71.51739	95% Approximate Gamma UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value			
Recommendation Warning!	NONE		
Alternative UCL	NONE		

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Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\July 2004\SW08storm.xls		
Variable:	Manganese		
<b>Raw Statistics</b>			
Number of Observations	6		
Number of Missing Data	0		
Number of Valid Observations	6		
Number of Distinct Observations	6		
Minimum	154.5943		
Maximum	807.0306		
Mean	337.7472		
Standard Deviation	241.8932		
Variance	58512.3		
Coefficient of Variation	0.716196		
Skewness	1.93824		
Too Few Distinct Observations?	NO		
<b>Normal Statistics</b>			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.772499		
Shapiro-Wilk 5% Critical Value	0.788		
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level	
95% Student's-t UCL	536.7382		
<b>Gamma Statistics</b>			
k hat	3.136794		
k star (bias corrected)	1.679508		
Theta hat	107.6727		
Theta star	201.0989		
nu hat	37.64153		
nu star	20.1541		
5% Approximate Chi Square Value	10.96332		
Adjusted Level of Significance	0.01222		
Adjusted Chi Square Value	8.624137		
Anderson-Darling Test Statistic	0.420965		
Anderson-Darling 5% Critical Value	0.701145		
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.	
Kolmogrov-Smirnov Test Statistic	0.23789		
Kolmogrov-Smirnov 5% Critical Value	0.334412		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level	
95% Approximate Gamma UCL	620.8877		
95% Adjusted Gamma UCL	789.2952		
<b>Lognormal Statistics</b>			
Minimum of log data	5.040804		
Maximum of log data	6.693362		
Mean of log data	5.654512		
Standard Deviation of log data	0.601061		
Variance of log data	0.361274		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.916577		
Shapiro-Wilk 5% Critical Value	0.788		
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level	
MLE Mean	342.1158		
MLE Standard Deviation	225.6814		
MLE Coefficient of Variation	0.659664		
MLE Skewness	2.266049		
MLE Median	285.5771		
MLE 80% Quantile	474.5697		
MLE 90% Quantile	618.239		
MLE 95% Quantile	767.591		
MLE 99% Quantile	1155.836		
MVU Estimate of Median	277.0714		
MVU Estimate of Mean	330.9419		
MVU Estimate of Standard Deviation	198.7918		
MVU Estimate of SE of Mean	80.98712		
95% H-UCL	762.8059		
95% Chebyshev (MVUE) UCL	683.9566		
97.5% Chebyshev (MVUE) UCL	836.7064		
99% Chebyshev (MVUE) UCL	1136.754		
<b>Non-parametric Statistics</b>			
95% CLT UCL	500.1805		
95% Adjusted-CLT UCL	583.6755		
95% Modified-t UCL	549.7617		
95% Jackknife UCL	536.7382		
95% Chebyshev (Mean, Sd) UCL	768.1992		
97.5% Chebyshev (Mean, Sd) UCL	954.4561		
99% Chebyshev (Mean, Sd) UCL	1320.322		
<b>Bootstrap Statistics</b>			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	481.6879		
95% Bootstrap-t UCL	797.4899		
95% Hall's Bootstrap UCL	1163.99		
95% Percentile Bootstrap UCL	508.0128		
95% BCA Bootstrap UCL	604.5513		
<b>Recommendations</b>			
Human Inspection Recommended?	NO		
Appropriate Distribution	GAMMA		
1st Recommended UCL	620.8877	95% Approximate Gamma UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value			
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\July 2004\SW08storm.xls		
Variable:	Mercury		
Raw Statistics			
Number of Observations	6		
Number of Missing Data	0		
Number of Valid Observations	6		
Number of Distinct Observations	6		
Minimum	0.053619		
Maximum	0.241693		
Mean	0.094872		
Standard Deviation	0.072829		
Variance	0.005304		
Coefficient of Variation	0.767655		
Skewness	2.319657		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.634145		
Shapiro-Wilk 5% Critical Value	0.788		
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level	
95% Student's-t UCL	0.154784		
Gamma Statistics			
k hat	3.194082		
k star (bias corrected)	1.708152		
Theta hat	0.029702		
Theta star	0.055541		
nu hat	38.32898		
nu star	20.49783		
5% Approximate Chi Square Value	11.21743		
Adjusted Level of Significance	0.01222		
Adjusted Chi Square Value	8.846387		
Anderson-Darling Test Statistic	0.917001		
Anderson-Darling 5% Critical Value	0.701068		
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level	
Kolmogrov-Smirnov Test Statistic	0.328263		
Kolmogrov-Smirnov 5% Critical Value	0.334354		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	APPROX GAMMA	Data follow approximate gamma distribution at 5% significance level	
95% Approximate Gamma UCL	0.173362		
95% Adjusted Gamma UCL	0.219827		
Lognormal Statistics			
Minimum of log data	-2.92585		
Maximum of log data	-1.420087		
Mean of log data	-2.519856		
Standard Deviation of log data	0.56375		
Variance of log data	0.317814		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.751952		
Shapiro-Wilk 5% Critical Value	0.788		
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level	
MLE Mean	0.094331		
MLE Standard Deviation	0.057698		
MLE Coefficient of Variation	0.611654		
MLE Skewness	2.063793		
MLE Median	0.080471		
MLE 80% Quantile	0.129576		
MLE 90% Quantile	0.166055		
MLE 95% Quantile	0.203419		
MLE 99% Quantile	0.298623		
MVU Estimate of Median	0.07836		
MVU Estimate of Mean	0.091644		
MVU Estimate of Standard Deviation	0.051639		
MVU Estimate of SE of Mean	0.021047		
95% H-UCL	0.194818		
95% Chebyshev (MVUE) UCL	0.183385		
97.5% Chebyshev (MVUE) UCL	0.223082		
99% Chebyshev (MVUE) UCL	0.301058		
Non-parametric Statistics			
95% CLT UCL	0.143778		
95% Adjusted-CLT UCL	0.173863		
95% Modified-t UCL	0.159477		
95% Jackknife UCL	0.154784		
95% Chebyshev (Mean, Sd) UCL	0.224473		
97.5% Chebyshev (Mean, Sd) UCL	0.280551		
99% Chebyshev (Mean, Sd) UCL	0.390706		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	0.139269		
95% Bootstrap-t UCL	0.516601		
95% Hall's Bootstrap UCL	0.388616		
95% Percentile Bootstrap UCL	0.150243		
95% BCA Bootstrap UCL	0.180412		
Recommendations			
Human Inspection Recommended?	NO		
Appropriate Distribution	GAMMA		
1st Recommended UCL	0.173362	95% Approximate Gamma UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value			
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\July 2004\SW08storm.xls				
Variable:	Thallium				
Raw Statistics					
Number of Observations	6				
Number of Missing Data	0				
Number of Valid Observations	6				
Number of Distinct Observations	6				
Minimum	1.158016				
Maximum	2.152675				
Mean	1.516906				
Standard Deviation	0.387341				
Variance	0.150033				
Coefficient of Variation	0.255349				
Skewness	0.965846				
Too Few Distinct Observations?	NO				
Normal Statistics					
Lilliefors Test Statistic	N/R				
Lilliefors 5% Critical Value	N/R				
Shapiro-Wilk Test Statistic	0.898537				
Shapiro-Wilk 5% Critical Value	0.788				
5% Normality Test Result	NORMAL				
95% Student's-t UCL	1.835548				
Gamma Statistics					
k hat	19.79951				
k star (bias corrected)	10.01086				
Theta hat	0.076613				
Theta star	0.151526				
nu hat	237.5941				
nu star	120.1304				
5% Approximate Chi Square Value	95.81639				
Adjusted Level of Significance	0.01222				
Adjusted Chi Square Value	87.98262				
Anderson-Darling Test Statistic	0.327293				
Anderson-Darling 5% Critical Value	0.697115				
Anderson-Darling 5% Gamma Test Result	AD GAMMA				
Kolmogrov-Smirnov Test Statistic	0.223569				
Kolmogrov-Smirnov 5% Critical Value	0.331745				
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA				
5% Gamma Test Result	GAMMA				
95% Approximate Gamma UCL	1.90183				
95% Adjusted Gamma UCL	2.071164				
Lognormal Statistics					
Minimum of log data	0.146708				
Maximum of log data	0.766711				
Mean of log data	0.391207				
Standard Deviation of log data	0.243307				
Variance of log data	0.059198				
Lilliefors Test Statistic	N/R				
Lilliefors 5% Critical Value	N/R				
Shapiro-Wilk Test Statistic	0.922648				
Shapiro-Wilk 5% Critical Value	0.788				
5% Lognormality Test Result	LOGNORMAL				
MLE Mean	1.523189				
MLE Standard Deviation	0.376156				
MLE Coefficient of Variation	0.246953				
MLE Skewness	0.75592				
MLE Median	1.478765				
MLE 80% Quantile	1.8163				
MLE 90% Quantile	2.021535				
MLE 95% Quantile	2.206588				
MLE 99% Quantile	2.604237				
MVU Estimate of Median	1.471482				
MVU Estimate of Mean	1.515563				
MVU Estimate of Standard Deviation	0.368741				
MVU Estimate of SE of Mean	0.150528				
95% H-UCL	1.92755				
95% Chebyshev (MVUE) UCL	2.1717				
97.5% Chebyshev (MVUE) UCL	2.455611				
99% Chebyshev (MVUE) UCL	3.0133				
Non-parametric Statistics					
95% CLT UCL	1.777008				
95% Adjusted-CLT UCL	1.843632				
95% Modified-t UCL	1.84594				
95% Jackknife UCL	1.835548				
95% Chebyshev (Mean, Sd) UCL	2.206184				
97.5% Chebyshev (Mean, Sd) UCL	2.504435				
99% Chebyshev (Mean, Sd) UCL	3.090291				
Bootstrap Statistics					
Number of Bootstrap Runs	2000				
95% Standard Bootstrap UCL	1.751692				
95% Bootstrap-t UCL	2.018183				
95% Hall's Bootstrap UCL	2.075123				
95% Percentile Bootstrap UCL	1.772659				
95% BCA Bootstrap UCL	1.86845				
Recommendations					
Human Inspection Recommended?	NO				
Appropriate Distribution	NORMAL				
1st Recommended UCL	1.835548				
2nd Recommended UCL					
3rd Recommended UCL					
Recommended UCL > Max Data Value					
Recommendation Warning!	NONE				
Alternative UCL	NONE				

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\July 2004\SW09base.xls		
Variable:	Arsenic		
Raw Statistics			
Number of Observations	10		
Number of Missing Data	0		
Number of Valid Observations	10		
Number of Distinct Observations	7		
Minimum	0.95		
Maximum	3.8		
Mean	1.98		
Standard Deviation	1.010555		
Variance	1.021222		
Coefficient of Variation	0.510382		
Skewness	0.935048		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.815281		
Shapiro-Wilk 5% Critical Value	0.842		
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level	
95% Student's-t UCL	2.5658		
Gamma Statistics			
k hat	4.771988		
k star (bias corrected)	3.407058		
Theta hat	0.414921		
Theta star	0.581147		
nu hat	95.43976		
nu star	68.14116		
5% Approximate Chi Square Value	50.13806		
Adjusted Level of Significance	0.0267		
Adjusted Chi Square Value	47.46383		
Anderson-Darling Test Statistic	0.787296		
Anderson-Darling 5% Critical Value	0.729436		
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level	
Kolmogrov-Smirnov Test Statistic	0.267377		
Kolmogrov-Smirnov 5% Critical Value	0.267519		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	APPROX GAMMA	Data follow approximate gamma distribution at 5% significance level	
95% Approximate Gamma UCL	2.69096		
95% Adjusted Gamma UCL	2.842575		
Lognormal Statistics			
Minimum of log data	-0.051293		
Maximum of log data	1.335001		
Mean of log data	0.574675		
Standard Deviation of log data	0.482006		
Variance of log data	0.23233		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.874908		
Shapiro-Wilk 5% Critical Value	0.842		
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level	
MLE Mean	1.995391		
MLE Standard Deviation	1.020455		
MLE Coefficient of Variation	0.511406		
MLE Skewness	1.66797		
MLE Median	1.776553		
MLE 80% Quantile	2.669712		
MLE 90% Quantile	3.300432		
MLE 95% Quantile	3.925821		
MLE 99% Quantile	5.451125		
MVU Estimate of Median	1.756013		
MVU Estimate of Mean	1.970428		
MVU Estimate of Standard Deviation	0.967327		
MVU Estimate of SE of Mean	0.305386		
95% H-UCL	2.839172		
95% Chebyshev (MVUE) UCL	3.301574		
97.5% Chebyshev (MVUE) UCL	3.877562		
99% Chebyshev (MVUE) UCL	5.008979		
Non-parametric Statistics			
95% CLT UCL	2.505639		
95% Adjusted-CLT UCL	2.606605		
95% Modified-t UCL	2.581549		
95% Jackknife UCL	2.5658		
95% Chebyshev (Mean, Sd) UCL	3.372954		
97.5% Chebyshev (Mean, Sd) UCL	3.975687		
99% Chebyshev (Mean, Sd) UCL	5.159638		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	2.475156		
95% Bootstrap-t UCL	2.711353		
95% Hall's Bootstrap UCL	2.445962		
95% Percentile Bootstrap UCL	2.515		
95% BCA Bootstrap UCL	2.745		
Recommendations			
Human Inspection Recommended?	NO		
Appropriate Distribution	GAMMA		
1st Recommended UCL	2.69096	95% Approximate Gamma UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value			
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\July 2004\SW09base.xls		
Variable:	Manganese		
<b>Raw Statistics</b>			
Number of Observations	10		
Number of Missing Data	0		
Number of Valid Observations	10		
Number of Distinct Observations	10		
Minimum	15.7		
Maximum	98.4		
Mean	39.83		
Standard Deviation	24.94634		
Variance	622.3201		
Coefficient of Variation	0.62632		
Skewness	1.649675		
Too Few Distinct Observations?	NO		
<b>Normal Statistics</b>			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.839598		
Shapiro-Wilk 5% Critical Value	0.842		
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level	
95% Student's-t UCL	54.29093		
<b>Gamma Statistics</b>			
k hat	3.522953		
k star (bias corrected)	2.532734		
Theta hat	11.30586		
Theta star	15.72609		
nu hat	70.45906		
nu star	50.65468		
5% Approximate Chi Square Value	35.30835		
Adjusted Level of Significance	0.0267		
Adjusted Chi Square Value	33.09372		
Anderson-Darling Test Statistic	0.289727		
Anderson-Darling 5% Critical Value	0.730721		
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.	
Kolmogrov-Smirnov Test Statistic	0.156725		
Kolmogrov-Smirnov 5% Critical Value	0.268121		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level	
95% Approximate Gamma UCL	57.14161		
95% Adjusted Gamma UCL	60.96551		
<b>Lognormal Statistics</b>			
Minimum of log data	2.753661		
Maximum of log data	4.589041		
Mean of log data	3.536032		
Standard Deviation of log data	0.559449		
Variance of log data	0.312983		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.969829		
Shapiro-Wilk 5% Critical Value	0.842		
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level	
MLE Mean	40.14602		
MLE Standard Deviation	24.33718		
MLE Coefficient of Variation	0.606217		
MLE Skewness	2.041433		
MLE Median	34.33042		
MLE 80% Quantile	55.07887		
MLE 90% Quantile	70.45145		
MLE 95% Quantile	86.17029		
MLE 99% Quantile	126.1296		
MVU Estimate of Median	33.7966		
MVU Estimate of Mean	39.45344		
MVU Estimate of Standard Deviation	22.61726		
MVU Estimate of SE of Mean	7.131255		
95% H-UCL	61.71587		
95% Chebyshev (MVUE) UCL	70.53786		
97.5% Chebyshev (MVUE) UCL	83.98811		
99% Chebyshev (MVUE) UCL	110.4085		
<b>Non-parametric Statistics</b>			
95% CLT UCL	52.8058		
95% Adjusted-CLT UCL	57.2031		
95% Modified-t UCL	54.97682		
95% Jackknife UCL	54.29093		
95% Chebyshev (Mean, Sd) UCL	74.21616		
97.5% Chebyshev (Mean, Sd) UCL	89.09508		
99% Chebyshev (Mean, Sd) UCL	118.3218		
<b>Bootstrap Statistics</b>			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	52.14414		
95% Bootstrap-t UCL	67.17668		
95% Hall's Bootstrap UCL	126.8033		
95% Percentile Bootstrap UCL	52.43		
95% BCA Bootstrap UCL	61.2		
<b>Recommendations</b>			
Human Inspection Recommended?	NO		
Appropriate Distribution	GAMMA		
1st Recommended UCL	57.14161	95% Approximate Gamma UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value			
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\July 2004\SW09storm.xls		
Variable:	Antimony		
<b>Raw Statistics</b>			
Number of Observations	6		
Number of Missing Data	0		
Number of Valid Observations	6		
Number of Distinct Observations	5		
Minimum	0.6		
Maximum	2.5		
Mean	1.2		
Standard Deviation	0.695701		
Variance	0.484		
Coefficient of Variation	0.579751		
Skewness	1.657167		
Too Few Distinct Observations?	NO		
<b>Normal Statistics</b>			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.829121		
Shapiro-Wilk 5% Critical Value	0.788		
5% Normality Test Result	NORMAL	Data are normal at 5% significance level	
95% Student's-t UCL	1.772312		
<b>Gamma Statistics</b>			
k hat	4.427463		
k star (bias corrected)	2.324842		
Theta hat	0.271036		
Theta star	0.516164		
nu hat	53.12955		
nu star	27.89811		
5% Approximate Chi Square Value	16.84683		
Adjusted Level of Significance	0.01222		
Adjusted Chi Square Value	13.84232		
Anderson-Darling Test Statistic	0.370282		
Anderson-Darling 5% Critical Value	0.699155		
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.	
Kolmogrov-Smirnov Test Statistic	0.237364		
Kolmogrov-Smirnov 5% Critical Value	0.333219		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level	
95% Approximate Gamma UCL	1.987182		
95% Adjusted Gamma UCL	2.418506		
<b>Lognormal Statistics</b>			
Minimum of log data	-0.510826		
Maximum of log data	0.916291		
Mean of log data	0.06516		
Standard Deviation of log data	0.509302		
Variance of log data	0.259388		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.937502		
Shapiro-Wilk 5% Critical Value	0.788		
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level	
MLE Mean	1.215134		
MLE Standard Deviation	0.661257		
MLE Coefficient of Variation	0.544184		
MLE Skewness	1.793706		
MLE Median	1.06733		
MLE 80% Quantile	1.641351		
MLE 90% Quantile	2.053637		
MLE 95% Quantile	2.466897		
MLE 99% Quantile	3.489629		
MVU Estimate of Median	1.044436		
MVU Estimate of Mean	1.187228		
MVU Estimate of Standard Deviation	0.604455		
MVU Estimate of SE of Mean	0.246492		
95% H-UCL	2.262938		
95% Chebyshev (MVUE) UCL	2.261661		
97.5% Chebyshev (MVUE) UCL	2.726569		
99% Chebyshev (MVUE) UCL	3.639792		
<b>Non-parametric Statistics</b>			
95% CLT UCL	1.667169		
95% Adjusted-CLT UCL	1.872483		
95% Modified-t UCL	1.804336		
95% Jackknife UCL	1.772312		
95% Chebyshev (Mean, Sd) UCL	2.438009		
97.5% Chebyshev (Mean, Sd) UCL	2.973697		
99% Chebyshev (Mean, Sd) UCL	4.025951		
<b>Bootstrap Statistics</b>			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	1.630683		
95% Bootstrap-t UCL	2.547219		
95% Hall's Bootstrap UCL	3.69858		
95% Percentile Bootstrap UCL	1.7		
95% BCA Bootstrap UCL	1.983333		
<b>Recommendations</b>			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	1.772312	95% Student's-t UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value			
Recommendation Warning!	NONE		
Alternative UCL	NONE		

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Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\July 2004\SW09storm.xls				
Variable:	Arsenic				
<b>Raw Statistics</b>					
Number of Observations	6				
Number of Missing Data	0				
Number of Valid Observations	6				
Number of Distinct Observations	6				
Minimum	1				
Maximum	4.65				
Mean	2.608333				
Standard Deviation	1.484391				
Variance	2.203417				
Coefficient of Variation	0.569096				
Skewness	0.616233				
Too Few Distinct Observations?	NO				
<b>Normal Statistics</b>					
Lilliefors Test Statistic	N/R				
Lilliefors 5% Critical Value	N/R				
Shapiro-Wilk Test Statistic	0.8949				
Shapiro-Wilk 5% Critical Value	0.788				
5% Normality Test Result	NORMAL				
95% Student's-t UCL	3.829453				
<b>Gamma Statistics</b>					
k hat	3.676968				
k star (bias corrected)	1.949595				
Theta hat	0.709371				
Theta star	1.337885				
nu hat	44.12361				
nu star	23.39514				
5% Approximate Chi Square Value	13.38793				
Adjusted Level of Significance	0.01222				
Adjusted Chi Square Value	10.75768				
Anderson-Darling Test Statistic	0.286711				
Anderson-Darling 5% Critical Value	0.700416				
Anderson-Darling 5% Gamma Test Result	AD GAMMA				
Kolmogrov-Smirnov Test Statistic	0.210235				
Kolmogrov-Smirnov 5% Critical Value	0.333866				
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA				
5% Gamma Test Result	GAMMA				
95% Approximate Gamma UCL	4.558011				
95% Adjusted Gamma UCL	5.672443				
<b>Lognormal Statistics</b>					
Minimum of log data	0				
Maximum of log data	1.536867				
Mean of log data	0.81661				
Standard Deviation of log data	0.59342				
Variance of log data	0.352148				
Lilliefors Test Statistic	N/R				
Lilliefors 5% Critical Value	N/R				
Shapiro-Wilk Test Statistic	0.950393				
Shapiro-Wilk 5% Critical Value	0.788				
5% Lognormality Test Result	LOGNORMAL				
MLE Mean	2.698468				
MLE Standard Deviation	1.753212				
MLE Coefficient of Variation	0.649706				
MLE Skewness	2.223372				
MLE Median	2.262816				
MLE 80% Quantile	3.73613				
MLE 90% Quantile	4.850857				
MLE 95% Quantile	6.006166				
MLE 99% Quantile	8.997132				
MVU Estimate of Median	2.197105				
MVU Estimate of Mean	2.612715				
MVU Estimate of Standard Deviation	1.549514				
MVU Estimate of SE of Mean	0.631328				
95% H-UCL	5.920775				
95% Chebyshev (MVUE) UCL	5.364612				
97.5% Chebyshev (MVUE) UCL	6.55536				
99% Chebyshev (MVUE) UCL	8.894353				
<b>Non-parametric Statistics</b>					
95% CLT UCL	3.605115				
95% Adjusted-CLT UCL	3.768015				
95% Modified-t UCL	3.854862				
95% Jackknife UCL	3.829453				
95% Chebyshev (Mean, Sd) UCL	5.249826				
97.5% Chebyshev (Mean, Sd) UCL	6.392803				
99% Chebyshev (Mean, Sd) UCL	8.637958				
<b>Bootstrap Statistics</b>					
Number of Bootstrap Runs	2000				
95% Standard Bootstrap UCL	3.513964				
95% Bootstrap-t UCL	5.19941				
95% Hall's Bootstrap UCL	13.08493				
95% Percentile Bootstrap UCL	3.583333				
95% BCA Bootstrap UCL	3.975				
<b>Recommendations</b>					
Human Inspection Recommended?	NO				
Appropriate Distribution	NORMAL				
1st Recommended UCL	3.829453				
2nd Recommended UCL					
3rd Recommended UCL					
Recommended UCL > Max Data Value					
Recommendation Warning!	NONE				
Alternative UCL	NONE				

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Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\July 2004\SW10base.xls		
Variable:	Arsenic		
<b>Raw Statistics</b>			
Number of Observations	10		
Number of Missing Data	0		
Number of Valid Observations	10		
Number of Distinct Observations	7		
Minimum	0.6		
Maximum	2.9		
Mean	1.34		
Standard Deviation	0.77165		
Variance	0.595444		
Coefficient of Variation	0.575859		
Skewness	1.164381		
Too Few Distinct Observations?	NO		
<b>Normal Statistics</b>			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.86021		
Shapiro-Wilk 5% Critical Value	0.842		
5% Normality Test Result	NORMAL	Data are normal at 5% significance level	
95% Student's-t UCL	1.787311		
<b>Gamma Statistics</b>			
k hat	3.819925		
k star (bias corrected)	2.740614		
Theta hat	0.350792		
Theta star	0.488941		
nu hat	76.3985		
nu star	54.81228		
5% Approximate Chi Square Value	38.79697		
Adjusted Level of Significance	0.0267		
Adjusted Chi Square Value	36.46673		
Anderson-Darling Test Statistic	0.383449		
Anderson-Darling 5% Critical Value	0.729892		
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.	
Kolmogrov-Smirnov Test Statistic	0.160421		
Kolmogrov-Smirnov 5% Critical Value	0.267933		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level	
95% Approximate Gamma UCL	1.89315		
95% Adjusted Gamma UCL	2.014123		
<b>Lognormal Statistics</b>			
Minimum of log data	-0.510826		
Maximum of log data	1.064711		
Mean of log data	0.156104		
Standard Deviation of log data	0.542679		
Variance of log data	0.294501		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.930011		
Shapiro-Wilk 5% Critical Value	0.842		
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level	
MLE Mean	1.354394		
MLE Standard Deviation	0.792588		
MLE Coefficient of Variation	0.585197		
MLE Skewness	1.955996		
MLE Median	1.168948		
MLE 80% Quantile	1.849042		
MLE 90% Quantile	2.347725		
MLE 95% Quantile	2.854256		
MLE 99% Quantile	4.130406		
MVU Estimate of Median	1.151838		
MVU Estimate of Mean	1.332524		
MVU Estimate of Standard Deviation	0.73997		
MVU Estimate of SE of Mean	0.233388		
95% H-UCL	2.046205		
95% Chebyshev (MVUE) UCL	2.349838		
97.5% Chebyshev (MVUE) UCL	2.790031		
99% Chebyshev (MVUE) UCL	3.654704		
<b>Non-parametric Statistics</b>			
95% CLT UCL	1.741373		
95% Adjusted-CLT UCL	1.837378		
95% Modified-t UCL	1.802286		
95% Jackknife UCL	1.787311		
95% Chebyshev (Mean, Sd) UCL	2.403647		
97.5% Chebyshev (Mean, Sd) UCL	2.863888		
99% Chebyshev (Mean, Sd) UCL	3.767942		
<b>Bootstrap Statistics</b>			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	1.73008		
95% Bootstrap-t UCL	2.066405		
95% Hall's Bootstrap UCL	2.477916		
95% Percentile Bootstrap UCL	1.745		
95% BCA Bootstrap UCL	1.65		
<b>Recommendations</b>			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	1.787311	95% Student's-t UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value			
Recommendation Warning!	NONE		
Alternative UCL	NONE		

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Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\July 2004\SW10base.xls		
Variable:	Mercury		
<b>Raw Statistics</b>			
Number of Observations	10		
Number of Missing Data	0		
Number of Valid Observations	10		
Number of Distinct Observations	3		
Minimum	0.05		
Maximum	0.36		
Mean	0.0835		
Standard Deviation	0.097469		
Variance	0.0095		
Coefficient of Variation	1.167298		
Skewness	3.125447		
Too Few Distinct Observations?	NO		
<b>Normal Statistics</b>			
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.405214		
Shapiro-Wilk 5% Critical Value	0.842		
5% Normality Test Result	NOT NORMAL		Data not normal at 5% significance level
95% Student's-t UCL	0.140001		
<b>Gamma Statistics</b>			
k hat	1.969414		
k star (bias corrected)	1.445257		
Theta hat	0.042398		
Theta star	0.057775		
nu hat	39.38829		
nu star	28.90513		
5% Approximate Chi Square Value	17.63236		
Adjusted Level of Significance	0.0267		
Adjusted Chi Square Value	16.11899		
Anderson-Darling Test Statistic	2.817747		
Anderson-Darling 5% Critical Value	0.735803		
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA		Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.460919		
Kolmogrov-Smirnov 5% Critical Value	0.26989		
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA		Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA		Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	0.136883		
95% Adjusted Gamma UCL	0.149735		
<b>Lognormal Statistics</b>			
Minimum of log data	-2.995732		
Maximum of log data	-1.021651		
Mean of log data	-2.757778		
Standard Deviation of log data	0.623179		
Variance of log data	0.388353		
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.458826		
Shapiro-Wilk 5% Critical Value	0.842		
5% Lognormality Test Result	NOT LOGNORMAL		Data not lognormal at 5% significance level
MLE Mean	0.077027		
MLE Standard Deviation	0.053062		
MLE Coefficient of Variation	0.688876		
MLE Skewness	2.393533		
MLE Median	0.063433		
MLE 80% Quantile	0.1074		
MLE 90% Quantile	0.141283		
MLE 95% Quantile	0.176816		
MLE 99% Quantile	0.270289		
MVU Estimate of Median	0.062211		
MVU Estimate of Mean	0.075343		
MVU Estimate of Standard Deviation	0.048379		
MVU Estimate of SE of Mean	0.015232		
95% H-UCL	0.126932		
95% Chebyshev (MVUE) UCL	0.141737		
97.5% Chebyshev (MVUE) UCL	0.170466		
99% Chebyshev (MVUE) UCL	0.226899		
<b>Non-parametric Statistics</b>			
95% CLT UCL	0.134199		
95% Adjusted-CLT UCL	0.166749		
95% Modified-t UCL	0.145078		
95% Jackknife UCL	0.140001		
95% Chebyshev (Mean, Sd) UCL	0.217852		
97.5% Chebyshev (Mean, Sd) UCL	0.275987		
99% Chebyshev (Mean, Sd) UCL	0.39018		
<b>Bootstrap Statistics</b>			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	N/R		Not enough distinct data warning
95% Bootstrap-t UCL	N/R		Not enough distinct data warning
95% Hall's Bootstrap UCL	N/R		Not enough distinct data warning
95% Percentile Bootstrap UCL	N/R		Not enough distinct data warning
95% BCA Bootstrap UCL	N/R		Not enough distinct data warning
<b>Recommendations</b>			
Human Inspection Recommended?	YES		
Appropriate Distribution	NON-PARAMETRIC		
1st Recommended UCL	0.217852		95% Chebyshev (Mean, Sd) UCL
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	YES		Recommended UCL exceeds the maximum data value
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\July 2004\SW10storm.xls				
Variable:	Arsenic				
Raw Statistics					
Number of Observations	6				
Number of Missing Data	0				
Number of Valid Observations	6				
Number of Distinct Observations	5				
Minimum	0.65				
Maximum	2.775				
Mean	1.3625				
Standard Deviation	0.747956				
Variance	0.559438				
Coefficient of Variation	0.548958				
Skewness	1.693713				
Too Few Distinct Observations?	NO				
Normal Statistics					
Lilliefors Test Statistic	N/R				
Lilliefors 5% Critical Value	N/R				
Shapiro-Wilk Test Statistic	0.835523				
Shapiro-Wilk 5% Critical Value	0.788				
5% Normality Test Result	NORMAL				
95% Student's-t UCL	1.977798				
Gamma Statistics					
k hat	4.866747				
k star (bias corrected)	2.544485				
Theta hat	0.279961				
Theta star	0.535472				
nu hat	58.40096				
nu star	30.53381				
5% Approximate Chi Square Value	18.91093				
Adjusted Level of Significance	0.01222				
Adjusted Chi Square Value	15.70074				
Anderson-Darling Test Statistic	0.351427				
Anderson-Darling 5% Critical Value	0.698307				
Anderson-Darling 5% Gamma Test Result	AD GAMMA				
Kolmogrov-Smirnov Test Statistic	0.190471				
Kolmogrov-Smirnov 5% Critical Value	0.33289				
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA				
5% Gamma Test Result	GAMMA				
95% Approximate Gamma UCL	2.199909				
95% Adjusted Gamma UCL	2.649705				
Lognormal Statistics					
Minimum of log data	-0.430783				
Maximum of log data	1.020651				
Mean of log data	0.203079				
Standard Deviation of log data	0.488682				
Variance of log data	0.23881				
Lilliefors Test Statistic	N/R				
Lilliefors 5% Critical Value	N/R				
Shapiro-Wilk Test Statistic	0.952961				
Shapiro-Wilk 5% Critical Value	0.788				
5% Lognormality Test Result	LOGNORMAL				
MLE Mean	1.380553				
MLE Standard Deviation	0.717007				
MLE Coefficient of Variation	0.519362				
MLE Skewness	1.698178				
MLE Median	1.22517				
MLE 80% Quantile	1.851536				
MLE 90% Quantile	2.295695				
MLE 95% Quantile	2.73727				
MLE 99% Quantile	3.818101				
MVU Estimate of Median	1.200961				
MVU Estimate of Mean	1.351492				
MVU Estimate of Standard Deviation	0.660261				
MVU Estimate of SE of Mean	0.269293				
95% H-UCL	2.478226				
95% Chebyshev (MVUE) UCL	2.525314				
97.5% Chebyshev (MVUE) UCL	3.033227				
99% Chebyshev (MVUE) UCL	4.030925				
Non-parametric Statistics					
95% CLT UCL	1.864759				
95% Adjusted-CLT UCL	2.090362				
95% Modified-t UCL	2.012988				
95% Jackknife UCL	1.977798				
95% Chebyshev (Mean, Sd) UCL	2.693497				
97.5% Chebyshev (Mean, Sd) UCL	3.26942				
99% Chebyshev (Mean, Sd) UCL	4.40071				
Bootstrap Statistics					
Number of Bootstrap Runs	2000				
95% Standard Bootstrap UCL	1.823583				
95% Bootstrap-t UCL	2.760998				
95% Hall's Bootstrap UCL	4.494575				
95% Percentile Bootstrap UCL	1.870833				
95% BCA Bootstrap UCL	2.066667				
Recommendations					
Human Inspection Recommended?	NO				
Appropriate Distribution	NORMAL				
1st Recommended UCL	1.977798				
2nd Recommended UCL					
3rd Recommended UCL					
Recommended UCL > Max Data Value					
Recommendation Warning!	NONE				
Alternative UCL	NONE				

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\July 2004\SW10storm.xls		
Variable:	Mercury		
Raw Statistics			
Number of Observations	6		
Number of Missing Data	0		
Number of Valid Observations	6		
Number of Distinct Observations	2		
Minimum	0.05		
Maximum	0.1		
Mean	0.058333		
Standard Deviation	0.020412		
Variance	0.000417		
Coefficient of Variation	0.349927		
Skewness	2.44949		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.496293		
Shapiro-Wilk 5% Critical Value	0.788		
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level	
95% Student's-t UCL	0.075125		
Gamma Statistics			
k hat	13.10908		
k star (bias corrected)	6.66565		
Theta hat	0.00445		
Theta star	0.008751		
nu hat	157.3089		
nu star	79.9878		
5% Approximate Chi Square Value	60.37714		
Adjusted Level of Significance	0.01222		
Adjusted Chi Square Value	54.26399		
Anderson-Darling Test Statistic	1.721064		
Anderson-Darling 5% Critical Value	0.697944		
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level	
Kolmogrov-Smirnov Test Statistic	0.50726		
Kolmogrov-Smirnov 5% Critical Value	0.332247		
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level	
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level	
95% Approximate Gamma UCL	0.07728		
95% Adjusted Gamma UCL	0.085986		
Lognormal Statistics			
Minimum of log data	-2.995732		
Maximum of log data	-2.302585		
Mean of log data	-2.880208		
Standard Deviation of log data	0.282976		
Variance of log data	0.080076		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.496293		
Shapiro-Wilk 5% Critical Value	0.788		
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level	
MLE Mean	0.058416		
MLE Standard Deviation	0.016867		
MLE Coefficient of Variation	0.288737		
MLE Skewness	0.890282		
MLE Median	0.056123		
MLE 80% Quantile	0.071283		
MLE 90% Quantile	0.080735		
MLE 95% Quantile	0.089393		
MLE 99% Quantile	0.108392		
MVU Estimate of Median	0.055749		
MVU Estimate of Mean	0.058018		
MVU Estimate of Standard Deviation	0.016417		
MVU Estimate of SE of Mean	0.006702		
95% H-UCL	0.077486		
95% Chebyshev (MVUE) UCL	0.087229		
97.5% Chebyshev (MVUE) UCL	0.099869		
99% Chebyshev (MVUE) UCL	0.124697		
Non-parametric Statistics			
95% CLT UCL	0.07204		
95% Adjusted-CLT UCL	0.080945		
95% Modified-t UCL	0.076514		
95% Jackknife UCL	0.075125		
95% Chebyshev (Mean, Sd) UCL	0.094657		
97.5% Chebyshev (Mean, Sd) UCL	0.110375		
99% Chebyshev (Mean, Sd) UCL	0.141249		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	N/R	Not enough distinct data warning	
95% Bootstrap-t UCL	N/R	Not enough distinct data warning	
95% Hall's Bootstrap UCL	N/A	Not enough distinct data error	
95% Percentile Bootstrap UCL	N/R	Not enough distinct data warning	
95% BCA Bootstrap UCL	N/R	Not enough distinct data warning	
Recommendations			
Human Inspection Recommended?	YES	Users must select one of the recommended UCLS	
Appropriate Distribution	NON-PARAMETRIC		
1st Recommended UCL	0.075125	95% Student's-t UCL	
2nd Recommended UCL	0.076514	95% Modified-t UCL	
3rd Recommended UCL			
Recommended UCL > Max Data Value			
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\July 2004\Sed-SC05-f.xls		
Variable:	Antimony		
Raw Statistics			
Number of Observations	4		
Number of Missing Data	0		
Number of Valid Observations	4		
Number of Distinct Observations	3		
Minimum	4.1		
Maximum	13		
Mean	7.275		
Standard Deviation	3.920353		
Variance	15.36917		
Coefficient of Variation	0.53888		
Skewness	1.676157		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.811287		
Shapiro-Wilk 5% Critical Value	0.748		
5% Normality Test Result	NORMAL	Data are normal at 5% significance level	
95% Student's-t UCL	11.88801		
Gamma Statistics			
k hat	5.447729		
k star (bias corrected)	1.528599		
Theta hat	1.335419		
Theta star	4.75926		
nu hat	43.58183		
nu star	12.22879		
5% Approximate Chi Square Value	5.377081		
Adjusted Level of Significance	N/A		
Adjusted Chi Square Value	N/A		
Anderson-Darling Test Statistic	0.471305		
Anderson-Darling 5% Critical Value	0.658857		
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.	
Kolmogrov-Smirnov Test Statistic	0.364167		
Kolmogrov-Smirnov 5% Critical Value	0.395804		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level	
95% Approximate Gamma UCL	16.54512		
95% Adjusted Gamma UCL	N/A		
Lognormal Statistics			
Minimum of log data	1.410987		
Maximum of log data	2.564949		
Mean of log data	1.889864		
Standard Deviation of log data	0.484532		
Variance of log data	0.234771		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.892862		
Shapiro-Wilk 5% Critical Value	0.748		
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level	
MLE Mean	7.442816		
MLE Standard Deviation	3.828668		
MLE Coefficient of Variation	0.514411		
MLE Skewness	1.679357		
MLE Median	6.618467		
MLE 80% Quantile	9.967133		
MLE 90% Quantile	12.33557		
MLE 95% Quantile	14.68635		
MLE 99% Quantile	20.42754		
MVU Estimate of Median	6.425942		
MVU Estimate of Mean	7.216736		
MVU Estimate of Standard Deviation	3.437138		
MVU Estimate of SE of Mean	1.717864		
95% H-UCL	26.89668		
95% Chebyshev (MVUE) UCL	14.70473		
97.5% Chebyshev (MVUE) UCL	17.94479		
99% Chebyshev (MVUE) UCL	24.30926		
Non-parametric Statistics			
95% CLT UCL	10.4992		
95% Adjusted-CLT UCL	12.25454		
95% Modified-t UCL	12.1618		
95% Jackknife UCL	11.88801		
95% Chebyshev (Mean, Sd) UCL	15.81921		
97.5% Chebyshev (Mean, Sd) UCL	19.5163		
99% Chebyshev (Mean, Sd) UCL	26.77851		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	N/R	Not enough distinct data warning	
95% Bootstrap-t UCL	N/R	Not enough distinct data warning	
95% Hall's Bootstrap UCL	N/R	Not enough distinct data warning	
95% Percentile Bootstrap UCL	N/R	Not enough distinct data warning	
95% BCA Bootstrap UCL	N/R	Not enough distinct data warning	
Recommendations			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	11.88801	95% Student's-t UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value			
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\July 2004\Sed-SC05-f.xls		
Variable:	Arsenic		
Raw Statistics			
Number of Observations	4		
Number of Missing Data	0		
Number of Valid Observations	4		
Number of Distinct Observations	4		
Minimum	210		
Maximum	900		
Mean	535		
Standard Deviation	351.0461		
Variance	123233.3		
Coefficient of Variation	0.656161		
Skewness	0.09986		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.847332		
Shapiro-Wilk 5% Critical Value	0.748		
5% Normality Test Result	NORMAL	Data are normal at 5% significance level	
95% Student's-t UCL	948.0694		
Gamma Statistics			
k hat	2.744288		
k star (bias corrected)	0.852739		
Theta hat	194.9504		
Theta star	627.3904		
nu hat	21.9543		
nu star	6.821909		
5% Approximate Chi Square Value	2.072767		
Adjusted Level of Significance	N/A		
Adjusted Chi Square Value	N/A		
Anderson-Darling Test Statistic	0.485734		
Anderson-Darling 5% Critical Value	0.659702		
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.	
Kolmogrov-Smirnov Test Statistic	0.303694		
Kolmogrov-Smirnov 5% Critical Value	0.396903		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level	
95% Approximate Gamma UCL	1760.797		
95% Adjusted Gamma UCL	N/A		
Lognormal Statistics			
Minimum of log data	5.347108		
Maximum of log data	6.802395		
Mean of log data	6.089144		
Standard Deviation of log data	0.741427		
Variance of log data	0.549714		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.847393		
Shapiro-Wilk 5% Critical Value	0.748		
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level	
MLE Mean	580.5642		
MLE Standard Deviation	496.97		
MLE Coefficient of Variation	0.856012		
MLE Skewness	3.195285		
MLE Median	441.0435		
MLE 80% Quantile	825.2193		
MLE 90% Quantile	1143.532		
MLE 95% Quantile	1493.37		
MLE 99% Quantile	2474.274		
MVU Estimate of Median	411.3562		
MVU Estimate of Mean	537.7525		
MVU Estimate of Standard Deviation	383.4465		
MVU Estimate of SE of Mean	191.3313		
95% H-UCL	10412.88		
95% Chebyshev (MVUE) UCL	1371.746		
97.5% Chebyshev (MVUE) UCL	1732.616		
99% Chebyshev (MVUE) UCL	2441.474		
Non-parametric Statistics			
95% CLT UCL	823.7097		
95% Adjusted-CLT UCL	833.074		
95% Modified-t UCL	949.5301		
95% Jackknife UCL	948.0694		
95% Chebyshev (Mean, Sd) UCL	1300.087		
97.5% Chebyshev (Mean, Sd) UCL	1631.141		
99% Chebyshev (Mean, Sd) UCL	2281.432		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	N/R	Not enough distinct data warning	
95% Bootstrap-t UCL	N/R	Not enough distinct data warning	
95% Hall's Bootstrap UCL	N/R	Not enough distinct data warning	
95% Percentile Bootstrap UCL	N/R	Not enough distinct data warning	
95% BCA Bootstrap UCL	N/R	Not enough distinct data warning	
Recommendations			
Human Inspection Recommended?	YES		
Appropriate Distribution	NORMAL		
1st Recommended UCL	948.0694	95% Student's-t UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	YES	Recommended UCL exceeds the maximum data value	
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\July 2004\Sed-SC05-f.xls		
Variable:	Cadmium		
Raw Statistics			
Number of Observations	4		
Number of Missing Data	0		
Number of Valid Observations	4		
Number of Distinct Observations	4		
Minimum	4.2		
Maximum	24		
Mean	12.05		
Standard Deviation	9.033825		
Variance	81.61		
Coefficient of Variation	0.749695		
Skewness	0.912149		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.912664		
Shapiro-Wilk 5% Critical Value	0.748		
5% Normality Test Result	NORMAL	Data are normal at 5% significance level	
95% Student's-t UCL	22.67994		
Gamma Statistics			
k hat	2.345413		
k star (bias corrected)	0.75302		
Theta hat	5.137688		
Theta star	16.00223		
nu hat	18.7633		
nu star	6.024159		
5% Approximate Chi Square Value	1.651725		
Adjusted Level of Significance	N/A		
Adjusted Chi Square Value	N/A		
Anderson-Darling Test Statistic	0.286927		
Anderson-Darling 5% Critical Value	0.660156		
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.	
Kolmogrov-Smirnov Test Statistic	0.266501		
Kolmogrov-Smirnov 5% Critical Value	0.397437		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level	
95% Approximate Gamma UCL	43.94867		
95% Adjusted Gamma UCL	N/A		
Lognormal Statistics			
Minimum of log data	1.435085		
Maximum of log data	3.178054		
Mean of log data	2.260989		
Standard Deviation of log data	0.792935		
Variance of log data	0.628746		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.951749		
Shapiro-Wilk 5% Critical Value	0.748		
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level	
MLE Mean	13.13607		
MLE Standard Deviation	12.28948		
MLE Coefficient of Variation	0.935552		
MLE Skewness	3.625505		
MLE Median	9.59257		
MLE 80% Quantile	18.74672		
MLE 90% Quantile	26.57339		
MLE 95% Quantile	35.35243		
MLE 99% Quantile	60.66432		
MVU Estimate of Median	8.856236		
MVU Estimate of Mean	12.01978		
MVU Estimate of Standard Deviation	9.11799		
MVU Estimate of SE of Mean	4.547078		
95% H-UCL	352.4015		
95% Chebyshev (MVUE) UCL	31.84004		
97.5% Chebyshev (MVUE) UCL	40.41628		
99% Chebyshev (MVUE) UCL	57.26264		
Non-parametric Statistics			
95% CLT UCL	19.47966		
95% Adjusted-CLT UCL	21.68085		
95% Modified-t UCL	23.02328		
95% Jackknife UCL	22.67994		
95% Chebyshev (Mean, Sd) UCL	31.73877		
97.5% Chebyshev (Mean, Sd) UCL	40.25811		
99% Chebyshev (Mean, Sd) UCL	56.99271		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	N/R	Not enough distinct data warning	
95% Bootstrap-t UCL	N/R	Not enough distinct data warning	
95% Hall's Bootstrap UCL	N/R	Not enough distinct data warning	
95% Percentile Bootstrap UCL	N/R	Not enough distinct data warning	
95% BCA Bootstrap UCL	N/R	Not enough distinct data warning	
Recommendations			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	22.67994	95% Student's-t UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value			
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\July 2004\Sed-SC05-f.xls		
Variable:	Copper		
Raw Statistics			
Number of Observations	4		
Number of Missing Data	0		
Number of Valid Observations	4		
Number of Distinct Observations	4		
Minimum	450		
Maximum	1600		
Mean	990		
Standard Deviation	595.035		
Variance	354066.7		
Coefficient of Variation	0.601045		
Skewness	0.088114		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.831032		
Shapiro-Wilk 5% Critical Value	0.748		
5% Normality Test Result	NORMAL	Data are normal at 5% significance level	
95% Student's-t UCL	1690.167		
Gamma Statistics			
k hat	3.356596		
k star (bias corrected)	1.005816		
Theta hat	294.9417		
Theta star	984.2759		
nu hat	26.85276		
nu star	8.046525		
5% Approximate Chi Square Value	2.761306		
Adjusted Level of Significance	N/A		
Adjusted Chi Square Value	N/A		
Anderson-Darling Test Statistic	0.526696		
Anderson-Darling 5% Critical Value	0.659221		
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.	
Kolmogrov-Smirnov Test Statistic	0.31676		
Kolmogrov-Smirnov 5% Critical Value	0.396417		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level	
95% Approximate Gamma UCL	2884.888		
95% Adjusted Gamma UCL	N/A		
Lognormal Statistics			
Minimum of log data	6.109248		
Maximum of log data	7.377759		
Mean of log data	6.741411		
Standard Deviation of log data	0.661927		
Variance of log data	0.438148		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.824548		
Shapiro-Wilk 5% Critical Value	0.748		
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level	
MLE Mean	1054.145		
MLE Standard Deviation	781.6565		
MLE Coefficient of Variation	0.741508		
MLE Skewness	2.632229		
MLE Median	846.7548		
MLE 80% Quantile	1481.395		
MLE 90% Quantile	1982.25		
MLE 95% Quantile	2515.637		
MLE 99% Quantile	3948.353		
MVU Estimate of Median	801.1354		
MVU Estimate of Mean	992.9021		
MVU Estimate of Standard Deviation	636.8868		
MVU Estimate of SE of Mean	318.0158		
95% H-UCL	10713.73		
95% Chebyshev (MVUE) UCL	2379.101		
97.5% Chebyshev (MVUE) UCL	2978.91		
99% Chebyshev (MVUE) UCL	4157.119		
Non-parametric Statistics			
95% CLT UCL	1479.373		
95% Adjusted-CLT UCL	1493.379		
95% Modified-t UCL	1692.351		
95% Jackknife UCL	1690.167		
95% Chebyshev (Mean, Sd) UCL	2286.849		
97.5% Chebyshev (Mean, Sd) UCL	2847.996		
99% Chebyshev (Mean, Sd) UCL	3950.262		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	N/R	Not enough distinct data warning	
95% Bootstrap-t UCL	N/R	Not enough distinct data warning	
95% Hall's Bootstrap UCL	N/R	Not enough distinct data warning	
95% Percentile Bootstrap UCL	N/R	Not enough distinct data warning	
95% BCA Bootstrap UCL	N/R	Not enough distinct data warning	
Recommendations			
Human Inspection Recommended?	YES		
Appropriate Distribution	NORMAL		
1st Recommended UCL	1690.167	95% Student's-t UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	YES	Recommended UCL exceeds the maximum data value	
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\July 2004\Sed-SC05-f.xls		
Variable:	Lead		
Raw Statistics			
Number of Observations	4		
Number of Missing Data	0		
Number of Valid Observations	4		
Number of Distinct Observations	4		
Minimum	240		
Maximum	640		
Mean	397.5		
Standard Deviation	172.8921		
Variance	29891.67		
Coefficient of Variation	0.434949		
Skewness	1.275486		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.916091		
Shapiro-Wilk 5% Critical Value	0.748		
5% Normality Test Result	NORMAL	Data are normal at 5% significance level	
95% Student's-t UCL	600.9389		
Gamma Statistics			
k hat	7.732768		
k star (bias corrected)	2.099859		
Theta hat	51.40462		
Theta star	189.2985		
nu hat	61.86214		
nu star	16.79887		
5% Approximate Chi Square Value	8.52739		
Adjusted Level of Significance	N/A		
Adjusted Chi Square Value	N/A		
Anderson-Darling Test Statistic	0.262471		
Anderson-Darling 5% Critical Value	0.657975		
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.	
Kolmogrov-Smirnov Test Statistic	0.22305		
Kolmogrov-Smirnov 5% Critical Value	0.395365		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level	
95% Approximate Gamma UCL	783.0708		
95% Adjusted Gamma UCL	N/A		
Lognormal Statistics			
Minimum of log data	5.480639		
Maximum of log data	6.461468		
Mean of log data	5.919144		
Standard Deviation of log data	0.41286		
Variance of log data	0.170453		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.978048		
Shapiro-Wilk 5% Critical Value	0.748		
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level	
MLE Mean	405.1957		
MLE Standard Deviation	174.6774		
MLE Coefficient of Variation	0.431094		
MLE Skewness	1.373397		
MLE Median	372.093		
MLE 80% Quantile	527.4268		
MLE 90% Quantile	632.4924		
MLE 95% Quantile	733.8449		
MLE 99% Quantile	972.0965		
MVU Estimate of Median	364.2154		
MVU Estimate of Mean	396.3374		
MVU Estimate of Standard Deviation	161.5889		
MVU Estimate of SE of Mean	80.77661		
95% H-UCL	1059.045		
95% Chebyshev (MVUE) UCL	748.4344		
97.5% Chebyshev (MVUE) UCL	900.7871		
99% Chebyshev (MVUE) UCL	1200.054		
Non-parametric Statistics			
95% CLT UCL	539.6911		
95% Adjusted-CLT UCL	598.5986		
95% Modified-t UCL	610.1273		
95% Jackknife UCL	600.9389		
95% Chebyshev (Mean, Sd) UCL	774.3095		
97.5% Chebyshev (Mean, Sd) UCL	937.3553		
99% Chebyshev (Mean, Sd) UCL	1257.627		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	N/R	Not enough distinct data warning	
95% Bootstrap-t UCL	N/R	Not enough distinct data warning	
95% Hall's Bootstrap UCL	N/R	Not enough distinct data warning	
95% Percentile Bootstrap UCL	N/R	Not enough distinct data warning	
95% BCA Bootstrap UCL	N/R	Not enough distinct data warning	
Recommendations			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	600.9389	95% Student's-t UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value			
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\July 2004\Sed-SC05-f.xls		
Variable:	Manganese		
Raw Statistics			
Number of Observations	4		
Number of Missing Data	0		
Number of Valid Observations	4		
Number of Distinct Observations	2		
Minimum	250		
Maximum	390		
Mean	355		
Standard Deviation	70		
Variance	4900		
Coefficient of Variation	0.197183		
Skewness	-2		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.629658		
Shapiro-Wilk 5% Critical Value	0.748		
5% Normality Test Result	NOT NORMAL		Data not normal at 5% significance level
95% Student's-t UCL	437.3677		
Gamma Statistics			
k hat	29.33297		
k star (bias corrected)	7.499909		
Theta hat	12.10242		
Theta star	47.33391		
nu hat	234.6638		
nu star	59.99927		
5% Approximate Chi Square Value	43.18423		
Adjusted Level of Significance	N/A		
Adjusted Chi Square Value	N/A		
Anderson-Darling Test Statistic	0.960719		
Anderson-Darling 5% Critical Value	0.656732		
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA		Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.468528		
Kolmogrov-Smirnov 5% Critical Value	0.394109		
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA		Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA		Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	493.2296		
95% Adjusted Gamma UCL	N/A		
Lognormal Statistics			
Minimum of log data	5.521461		
Maximum of log data	5.966147		
Mean of log data	5.854975		
Standard Deviation of log data	0.222343		
Variance of log data	0.049436		
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.629658		
Shapiro-Wilk 5% Critical Value	0.748		
5% Lognormality Test Result	NOT LOGNORMAL		Data not lognormal at 5% significance level
MLE Mean	357.6996		
MLE Standard Deviation	80.52511		
MLE Coefficient of Variation	0.225119		
MLE Skewness	0.686767		
MLE Median	348.9663		
MLE 80% Quantile	421.0936		
MLE 90% Quantile	464.372		
MLE 95% Quantile	503.07		
MLE 99% Quantile	585.3119		
MVU Estimate of Median	346.8138		
MVU Estimate of Mean	355.4717		
MVU Estimate of Standard Deviation	78.7456		
MVU Estimate of SE of Mean	39.37204		
95% H-UCL	515.4981		
95% Chebyshev (MVUE) UCL	527.0904		
97.5% Chebyshev (MVUE) UCL	601.35		
99% Chebyshev (MVUE) UCL	747.2185		
Non-parametric Statistics			
95% CLT UCL	412.5699		
95% Adjusted-CLT UCL	375.1719		
95% Modified-t UCL	431.5344		
95% Jackknife UCL	437.3677		
95% Chebyshev (Mean, Sd) UCL	507.5615		
97.5% Chebyshev (Mean, Sd) UCL	573.5749		
99% Chebyshev (Mean, Sd) UCL	703.2456		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	N/R		Not enough distinct data warning
95% Bootstrap-t UCL	N/R		Not enough distinct data warning
95% Hall's Bootstrap UCL	N/A		Not enough distinct data error
95% Percentile Bootstrap UCL	N/R		Not enough distinct data warning
95% BCA Bootstrap UCL	N/R		Not enough distinct data warning
Recommendations			
Human Inspection Recommended?	YES		Users must select one of the recommended UCLS
Appropriate Distribution	NON-PARAMETRIC		
1st Recommended UCL	437.3677		95% Student's-t UCL
2nd Recommended UCL	431.5344		95% Modified-t UCL
3rd Recommended UCL			
Recommended UCL > Max Data Value	YES		Recommended UCL exceeds the maximum data value
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\July 2004\Sed-SC05-f.xls		
Variable:	Mercury		
<b>Raw Statistics</b>			
Number of Observations	4		
Number of Missing Data	0		
Number of Valid Observations	4		
Number of Distinct Observations	4		
Minimum	3.5		
Maximum	26		
Mean	11.325		
Standard Deviation	10.00612		
Variance	100.1225		
Coefficient of Variation	0.883543		
Skewness	1.728537		
Too Few Distinct Observations?	NO		
<b>Normal Statistics</b>			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.809809		
Shapiro-Wilk 5% Critical Value	0.748		
5% Normality Test Result	NORMAL	Data are normal at 5% significance level	
95% Student's-t UCL	23.09902		
<b>Gamma Statistics</b>			
k hat	2.026978		
k star (bias corrected)	0.673411		
Theta hat	5.587136		
Theta star	16.81737		
nu hat	16.21582		
nu star	5.387289		
5% Approximate Chi Square Value	1.334761		
Adjusted Level of Significance	N/A		
Adjusted Chi Square Value	N/A		
Anderson-Darling Test Statistic	0.377001		
Anderson-Darling 5% Critical Value	0.660519		
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.	
Kolmogrov-Smirnov Test Statistic	0.321088		
Kolmogrov-Smirnov 5% Critical Value	0.397864		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level	
95% Approximate Gamma UCL	45.70936		
95% Adjusted Gamma UCL	N/A		
<b>Lognormal Statistics</b>			
Minimum of log data	1.252763		
Maximum of log data	3.258097		
Mean of log data	2.160505		
Standard Deviation of log data	0.827015		
Variance of log data	0.683954		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.948504		
Shapiro-Wilk 5% Critical Value	0.748		
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level	
MLE Mean	12.21276		
MLE Standard Deviation	12.10048		
MLE Coefficient of Variation	0.990806		
MLE Skewness	3.94509		
MLE Median	8.675513		
MLE 80% Quantile	17.44987		
MLE 90% Quantile	25.10881		
MLE 95% Quantile	33.81633		
MLE 99% Quantile	59.3909		
MVU Estimate of Median	7.9526		
MVU Estimate of Mean	11.07825		
MVU Estimate of Standard Deviation	8.733146		
MVU Estimate of SE of Mean	4.35328		
95% H-UCL	434.0775		
95% Chebyshev (MVUE) UCL	30.05376		
97.5% Chebyshev (MVUE) UCL	38.26448		
99% Chebyshev (MVUE) UCL	54.39284		
<b>Non-parametric Statistics</b>			
95% CLT UCL	19.5543		
95% Adjusted-CLT UCL	24.17455		
95% Modified-t UCL	23.81969		
95% Jackknife UCL	23.09902		
95% Chebyshev (Mean, Sd) UCL	33.13284		
97.5% Chebyshev (Mean, Sd) UCL	42.56911		
99% Chebyshev (Mean, Sd) UCL	61.10483		
<b>Bootstrap Statistics</b>			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	N/R	Not enough distinct data warning	
95% Bootstrap-t UCL	N/R	Not enough distinct data warning	
95% Hall's Bootstrap UCL	N/R	Not enough distinct data warning	
95% Percentile Bootstrap UCL	N/R	Not enough distinct data warning	
95% BCA Bootstrap UCL	N/R	Not enough distinct data warning	
<b>Recommendations</b>			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	23.09902	95% Student's-t UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value			
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\July 2004\Sed-SC05-f.xls		
Variable:	Vanadium		
Raw Statistics			
Number of Observations	4		
Number of Missing Data	0		
Number of Valid Observations	4		
Number of Distinct Observations	4		
Minimum	34		
Maximum	61		
Mean	44.5		
Standard Deviation	11.61895		
Variance	135		
Coefficient of Variation	0.2611		
Skewness	1.377061		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.896761		
Shapiro-Wilk 5% Critical Value	0.748		
5% Normality Test Result	NORMAL	Data are normal at 5% significance level	
95% Student's-t UCL	58.17181		
Gamma Statistics			
k hat	21.29743		
k star (bias corrected)	5.491023		
Theta hat	2.089454		
Theta star	8.104137		
nu hat	170.3794		
nu star	43.92818		
5% Approximate Chi Square Value	29.72581		
Adjusted Level of Significance	N/A		
Adjusted Chi Square Value	N/A		
Anderson-Darling Test Statistic	0.333643		
Anderson-Darling 5% Critical Value	0.65704		
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.	
Kolmogrov-Smirnov Test Statistic	0.283801		
Kolmogrov-Smirnov 5% Critical Value	0.394222		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level	
95% Approximate Gamma UCL	65.76118		
95% Adjusted Gamma UCL	N/A		
Lognormal Statistics			
Minimum of log data	3.526361		
Maximum of log data	4.110874		
Mean of log data	3.771828		
Standard Deviation of log data	0.246441		
Variance of log data	0.060733		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.939821		
Shapiro-Wilk 5% Critical Value	0.748		
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level	
MLE Mean	44.79942		
MLE Standard Deviation	11.21019		
MLE Coefficient of Variation	0.250231		
MLE Skewness	0.766361		
MLE Median	43.45946		
MLE 80% Quantile	53.52085		
MLE 90% Quantile	59.65067		
MLE 95% Quantile	65.18467		
MLE 99% Quantile	77.09595		
MVU Estimate of Median	43.13028		
MVU Estimate of Mean	44.45603		
MVU Estimate of Standard Deviation	10.90632		
MVU Estimate of SE of Mean	5.453		
95% H-UCL	68.29701		
95% Chebyshev (MVUE) UCL	68.22511		
97.5% Chebyshev (MVUE) UCL	78.51001		
99% Chebyshev (MVUE) UCL	98.7127		
Non-parametric Statistics			
95% CLT UCL	54.05574		
95% Adjusted-CLT UCL	58.32979		
95% Modified-t UCL	58.83847		
95% Jackknife UCL	58.17181		
95% Chebyshev (Mean, Sd) UCL	69.82291		
97.5% Chebyshev (Mean, Sd) UCL	80.78016		
99% Chebyshev (Mean, Sd) UCL	102.3035		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	N/R	Not enough distinct data warning	
95% Bootstrap-t UCL	N/R	Not enough distinct data warning	
95% Hall's Bootstrap UCL	N/R	Not enough distinct data warning	
95% Percentile Bootstrap UCL	N/R	Not enough distinct data warning	
95% BCA Bootstrap UCL	N/R	Not enough distinct data warning	
Recommendations			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	58.17181	95% Student's-t UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value			
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\July 2004\Sed-SC06-f.xls		
Variable:	Arsenic		
Raw Statistics			
Number of Observations	4		
Number of Missing Data	0		
Number of Valid Observations	4		
Number of Distinct Observations	4		
Minimum	66		
Maximum	1700		
Mean	859		
Standard Deviation	768.0564		
Variance	589910.7		
Coefficient of Variation	0.894129		
Skewness	0.095614		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.924121		
Shapiro-Wilk 5% Critical Value	0.748		
5% Normality Test Result	NORMAL	Data are normal at 5% significance level	
95% Student's-t UCL	1762.758		
Gamma Statistics			
k hat	0.999012		
k star (bias corrected)	0.41642		
Theta hat	859.8498		
Theta star	2062.823		
nu hat	7.992094		
nu star	3.331357		
5% Approximate Chi Square Value	0.476783		
Adjusted Level of Significance	N/A		
Adjusted Chi Square Value	N/A		
Anderson-Darling Test Statistic	0.31202		
Anderson-Darling 5% Critical Value	0.666625		
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.	
Kolmogrov-Smirnov Test Statistic	0.279821		
Kolmogrov-Smirnov 5% Critical Value	0.40246		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level	
95% Approximate Gamma UCL	6001.962		
95% Adjusted Gamma UCL	N/A		
Lognormal Statistics			
Minimum of log data	4.189655		
Maximum of log data	7.438384		
Mean of log data	6.177915		
Standard Deviation of log data	1.482829		
Variance of log data	2.198781		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.904975		
Shapiro-Wilk 5% Critical Value	0.748		
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level	
MLE Mean	1447.084		
MLE Standard Deviation	4096.556		
MLE Coefficient of Variation	2.830904		
MLE Skewness	31.17964		
MLE Median	481.9861		
MLE 80% Quantile	1687.335		
MLE 90% Quantile	3240.07		
MLE 95% Quantile	5525.718		
MLE 99% Quantile	15168.48		
MVU Estimate of Median	360.0171		
MVU Estimate of Mean	990.1231		
MVU Estimate of Standard Deviation	1282.837		
MVU Estimate of SE of Mean	627.5988		
95% H-UCL	1.18E+08		
95% Chebyshev (MVUE) UCL	3725.763		
97.5% Chebyshev (MVUE) UCL	4909.476		
99% Chebyshev (MVUE) UCL	7234.652		
Non-parametric Statistics			
95% CLT UCL	1490.67		
95% Adjusted-CLT UCL	1510.287		
95% Modified-t UCL	1765.818		
95% Jackknife UCL	1762.758		
95% Chebyshev (Mean, Sd) UCL	2532.94		
97.5% Chebyshev (Mean, Sd) UCL	3257.255		
99% Chebyshev (Mean, Sd) UCL	4680.032		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	N/R	Not enough distinct data warning	
95% Bootstrap-t UCL	N/R	Not enough distinct data warning	
95% Hall's Bootstrap UCL	N/R	Not enough distinct data warning	
95% Percentile Bootstrap UCL	N/R	Not enough distinct data warning	
95% BCA Bootstrap UCL	N/R	Not enough distinct data warning	
Recommendations			
Human Inspection Recommended?	YES		
Appropriate Distribution	NORMAL		
1st Recommended UCL	1762.758	95% Student's-t UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	YES	Recommended UCL exceeds the maximum data value	
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\July 2004\Sed-SC06-f.xls		
Variable:	Cadmium		
<b>Raw Statistics</b>			
Number of Observations	4		
Number of Missing Data	0		
Number of Valid Observations	4		
Number of Distinct Observations	4		
Minimum	0.8		
Maximum	48		
Mean	18.675		
Standard Deviation	20.96209		
Variance	439.4092		
Coefficient of Variation	1.122468		
Skewness	1.2937		
Too Few Distinct Observations?	NO		
<b>Normal Statistics</b>			
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.901086		
Shapiro-Wilk 5% Critical Value	0.748		
5% Normality Test Result	NORMAL		Data are normal at 5% significance level
95% Student's-t UCL	43.3407		
<b>Gamma Statistics</b>			
k hat	0.751657		
k star (bias corrected)	0.354581		
Theta hat	24.84511		
Theta star	52.66782		
nu hat	6.013255		
nu star	2.836647		
5% Approximate Chi Square Value	0.325561		
Adjusted Level of Significance	N/A		
Adjusted Chi Square Value	N/A		
Anderson-Darling Test Statistic	0.19228		
Anderson-Darling 5% Critical Value	0.670276		
Anderson-Darling 5% Gamma Test Result	AD GAMMA		Data follow gamma distribution at 5% significance level.
Kolmogrov-Smirnov Test Statistic	0.168921		
Kolmogrov-Smirnov 5% Critical Value	0.404973		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA		Data follow gamma distribution at 5% significance level
5% Gamma Test Result	GAMMA		Data follow gamma distribution at 5% significance level
95% Approximate Gamma UCL	162.717		
95% Adjusted Gamma UCL	N/A		
<b>Lognormal Statistics</b>			
Minimum of log data	-0.223144		
Maximum of log data	3.871201		
Mean of log data	2.131004		
Standard Deviation of log data	1.758007		
Variance of log data	3.090589		
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.960041		
Shapiro-Wilk 5% Critical Value	0.748		
5% Lognormality Test Result	LOGNORMAL		Data are lognormal at 5% significance level
MLE Mean	39.49993		
MLE Standard Deviation	180.9684		
MLE Coefficient of Variation	4.581487		
MLE Skewness	109.91		
MLE Median	8.423323		
MLE 80% Quantile	37.20787		
MLE 90% Quantile	80.64393		
MLE 95% Quantile	151.855		
MLE 99% Quantile	502.768		
MVU Estimate of Median	5.526181		
MVU Estimate of Mean	22.19986		
MVU Estimate of Standard Deviation	32.69209		
MVU Estimate of SE of Mean	15.76753		
95% H-UCL	3.07E+08		
95% Chebyshev (MVUE) UCL	90.92891		
97.5% Chebyshev (MVUE) UCL	120.668		
99% Chebyshev (MVUE) UCL	179.0848		
<b>Non-parametric Statistics</b>			
95% CLT UCL	35.91478		
95% Adjusted-CLT UCL	43.15895		
95% Modified-t UCL	44.47065		
95% Jackknife UCL	43.3407		
95% Chebyshev (Mean, Sd) UCL	64.36081		
97.5% Chebyshev (Mean, Sd) UCL	84.1291		
99% Chebyshev (Mean, Sd) UCL	122.9601		
<b>Bootstrap Statistics</b>			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	N/R		Not enough distinct data warning
95% Bootstrap-t UCL	N/R		Not enough distinct data warning
95% Hall's Bootstrap UCL	N/R		Not enough distinct data warning
95% Percentile Bootstrap UCL	N/R		Not enough distinct data warning
95% BCA Bootstrap UCL	N/R		Not enough distinct data warning
<b>Recommendations</b>			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	43.3407		95% Student's-t UCL
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value			
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\July 2004\Sed-SC06-f.xls		
Variable:	Copper		
Raw Statistics			
Number of Observations	4		
Number of Missing Data	0		
Number of Valid Observations	4		
Number of Distinct Observations	4		
Minimum	41		
Maximum	950		
Mean	500.25		
Standard Deviation	429.6048		
Variance	184560.3		
Coefficient of Variation	0.85878		
Skewness	-0.032673		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.919569		
Shapiro-Wilk 5% Critical Value	0.748		
5% Normality Test Result	NORMAL		Data are normal at 5% significance level
95% Student's-t UCL	1005.758		
Gamma Statistics			
k hat	1.060093		
k star (bias corrected)	0.43169		
Theta hat	471.8926		
Theta star	1158.818		
nu hat	8.480743		
nu star	3.453519		
5% Approximate Chi Square Value	0.518339		
Adjusted Level of Significance	N/A		
Adjusted Chi Square Value	N/A		
Anderson-Darling Test Statistic	0.331465		
Anderson-Darling 5% Critical Value	0.6661		
Anderson-Darling 5% Gamma Test Result	AD GAMMA		Data follow gamma distribution at 5% significance level.
Kolmogrov-Smirnov Test Statistic	0.286688		
Kolmogrov-Smirnov 5% Critical Value	0.402094		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA		Data follow gamma distribution at 5% significance level
5% Gamma Test Result	GAMMA		Data follow gamma distribution at 5% significance level
95% Approximate Gamma UCL	3332.999		
95% Adjusted Gamma UCL	N/A		
Lognormal Statistics			
Minimum of log data	3.713572		
Maximum of log data	6.856462		
Mean of log data	5.674266		
Standard Deviation of log data	1.44042		
Variance of log data	2.074809		
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.89123		
Shapiro-Wilk 5% Critical Value	0.748		
5% Lognormality Test Result	LOGNORMAL		Data are lognormal at 5% significance level
MLE Mean	821.9422		
MLE Standard Deviation	2168.903		
MLE Coefficient of Variation	2.638754		
MLE Skewness	26.28996		
MLE Median	291.2744		
MLE 80% Quantile	983.7978		
MLE 90% Quantile	1854.193		
MLE 95% Quantile	3114.289		
MLE 99% Quantile	8305.571		
MVU Estimate of Median	221.3966		
MVU Estimate of Mean	577.0774		
MVU Estimate of Standard Deviation	730.906		
MVU Estimate of SE of Mean	358.2461		
95% H-UCL	35561456		
95% Chebyshev (MVUE) UCL	2138.636		
97.5% Chebyshev (MVUE) UCL	2814.324		
99% Chebyshev (MVUE) UCL	4141.581		
Non-parametric Statistics			
95% CLT UCL	853.5685		
95% Adjusted-CLT UCL	849.819		
95% Modified-t UCL	1005.173		
95% Jackknife UCL	1005.758		
95% Chebyshev (Mean, Sd) UCL	1436.552		
97.5% Chebyshev (Mean, Sd) UCL	1841.69		
99% Chebyshev (Mean, Sd) UCL	2637.507		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	N/R		Not enough distinct data warning
95% Bootstrap-t UCL	N/R		Not enough distinct data warning
95% Hall's Bootstrap UCL	N/R		Not enough distinct data warning
95% Percentile Bootstrap UCL	N/R		Not enough distinct data warning
95% BCA Bootstrap UCL	N/R		Not enough distinct data warning
Recommendations			
Human Inspection Recommended?	YES		
Appropriate Distribution	NORMAL		
1st Recommended UCL	1005.758		95% Student's-t UCL
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	YES		Recommended UCL exceeds the maximum data value
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\July 2004\Sed-SC06-f.xls		
Variable:	Lead		
Raw Statistics			
Number of Observations	4		
Number of Missing Data	0		
Number of Valid Observations	4		
Number of Distinct Observations	4		
Minimum	22		
Maximum	620		
Mean	343		
Standard Deviation	306.5877		
Variance	93996		
Coefficient of Variation	0.893842		
Skewness	-0.118408		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.839026		
Shapiro-Wilk 5% Critical Value	0.748		
5% Normality Test Result	NORMAL	Data are normal at 5% significance level	
95% Student's-t UCL	703.7561		
Gamma Statistics			
k hat	0.928651		
k star (bias corrected)	0.39883		
Theta hat	369.3528		
Theta star	860.0165		
nu hat	7.429212		
nu star	3.190636		
5% Approximate Chi Square Value	0.430868		
Adjusted Level of Significance	N/A		
Adjusted Chi Square Value	N/A		
Anderson-Darling Test Statistic	0.410417		
Anderson-Darling 5% Critical Value	0.667663		
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.	
Kolmogrov-Smirnov Test Statistic	0.318518		
Kolmogrov-Smirnov 5% Critical Value	0.403175		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level	
95% Approximate Gamma UCL	2539.965		
95% Adjusted Gamma UCL	N/A		
Lognormal Statistics			
Minimum of log data	3.091042		
Maximum of log data	6.429719		
Mean of log data	5.210632		
Standard Deviation of log data	1.572567		
Variance of log data	2.472966		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.866588		
Shapiro-Wilk 5% Critical Value	0.748		
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level	
MLE Mean	630.8794		
MLE Standard Deviation	2078.799		
MLE Coefficient of Variation	3.295082		
MLE Skewness	45.6618		
MLE Median	183.2098		
MLE 80% Quantile	691.9063		
MLE 90% Quantile	1382.128		
MLE 95% Quantile	2434.518		
MLE 99% Quantile	7104.06		
MVU Estimate of Median	131.6018		
MVU Estimate of Mean	407.1511		
MVU Estimate of Standard Deviation	551.9042		
MVU Estimate of SE of Mean	268.8636		
95% H-UCL	2.09E+08		
95% Chebyshev (MVUE) UCL	1579.1		
97.5% Chebyshev (MVUE) UCL	2086.204		
99% Chebyshev (MVUE) UCL	3082.31		
Non-parametric Statistics			
95% CLT UCL	595.1459		
95% Adjusted-CLT UCL	585.4485		
95% Modified-t UCL	702.2435		
95% Jackknife UCL	703.7561		
95% Chebyshev (Mean, Sd) UCL	1011.192		
97.5% Chebyshev (Mean, Sd) UCL	1300.32		
99% Chebyshev (Mean, Sd) UCL	1868.254		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	N/R	Not enough distinct data warning	
95% Bootstrap-t UCL	N/R	Not enough distinct data warning	
95% Hall's Bootstrap UCL	N/R	Not enough distinct data warning	
95% Percentile Bootstrap UCL	N/R	Not enough distinct data warning	
95% BCA Bootstrap UCL	N/R	Not enough distinct data warning	
Recommendations			
Human Inspection Recommended?	YES		
Appropriate Distribution	NORMAL		
1st Recommended UCL	703.7561	95% Student's-t UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	YES	Recommended UCL exceeds the maximum data value	
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\July 2004\Sed-SC06-f.xls		
Variable:	Manganese		
<b>Raw Statistics</b>			
Number of Observations	4		
Number of Missing Data	0		
Number of Valid Observations	4		
Number of Distinct Observations	4		
Minimum	110		
Maximum	1800		
Mean	775		
Standard Deviation	747.8191		
Variance	559233.3		
Coefficient of Variation	0.964928		
Skewness	1.125954		
Too Few Distinct Observations?	NO		
<b>Normal Statistics</b>			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.921735		
Shapiro-Wilk 5% Critical Value	0.748		
5% Normality Test Result	NORMAL	Data are normal at 5% significance level	
95% Student's-t UCL	1654.945		
<b>Gamma Statistics</b>			
k hat	1.236502		
k star (bias corrected)	0.475792		
Theta hat	626.7682		
Theta star	1628.863		
nu hat	9.892015		
nu star	3.806337		
5% Approximate Chi Square Value	0.646439		
Adjusted Level of Significance	N/A		
Adjusted Chi Square Value	N/A		
Anderson-Darling Test Statistic	0.197595		
Anderson-Darling 5% Critical Value	0.664604		
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.	
Kolmogrov-Smirnov Test Statistic	0.178378		
Kolmogrov-Smirnov 5% Critical Value	0.40105		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level	
95% Approximate Gamma UCL	4563.322		
95% Adjusted Gamma UCL	N/A		
<b>Lognormal Statistics</b>			
Minimum of log data	4.70048		
Maximum of log data	7.495542		
Mean of log data	6.196839		
Standard Deviation of log data	1.201177		
Variance of log data	1.442825		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.987622		
Shapiro-Wilk 5% Critical Value	0.748		
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level	
MLE Mean	1010.552		
MLE Standard Deviation	1816.925		
MLE Coefficient of Variation	1.797953		
MLE Skewness	11.20599		
MLE Median	491.1941		
MLE 80% Quantile	1355.375		
MLE 90% Quantile	2299.28		
MLE 95% Quantile	3543.162		
MLE 99% Quantile	8028.685		
MVU Estimate of Median	407.2772		
MVU Estimate of Mean	803.5869		
MVU Estimate of Standard Deviation	878.3515		
MVU Estimate of SE of Mean	434.3143		
95% H-UCL	1730435		
95% Chebyshev (MVUE) UCL	2696.719		
97.5% Chebyshev (MVUE) UCL	3515.879		
99% Chebyshev (MVUE) UCL	5124.96		
<b>Non-parametric Statistics</b>			
95% CLT UCL	1390.026		
95% Adjusted-CLT UCL	1614.951		
95% Modified-t UCL	1690.029		
95% Jackknife UCL	1654.945		
95% Chebyshev (Mean, Sd) UCL	2404.834		
97.5% Chebyshev (Mean, Sd) UCL	3110.064		
99% Chebyshev (Mean, Sd) UCL	4495.353		
<b>Bootstrap Statistics</b>			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	N/R	Not enough distinct data warning	
95% Bootstrap-t UCL	N/R	Not enough distinct data warning	
95% Hall's Bootstrap UCL	N/R	Not enough distinct data warning	
95% Percentile Bootstrap UCL	N/R	Not enough distinct data warning	
95% BCA Bootstrap UCL	N/R	Not enough distinct data warning	
<b>Recommendations</b>			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	1654.945	95% Student's-t UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value			
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\July 2004\Sed-SC06-f.xls		
Variable:	Mercury		
Raw Statistics			
Number of Observations	4		
Number of Missing Data	0		
Number of Valid Observations	4		
Number of Distinct Observations	4		
Minimum	0.31		
Maximum	8.2		
Mean	4.7775		
Standard Deviation	3.949602		
Variance	15.59936		
Coefficient of Variation	0.826709		
Skewness	-0.280641		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.855556		
Shapiro-Wilk 5% Critical Value	0.748		
5% Normality Test Result	NORMAL	Data are normal at 5% significance level	
95% Student's-t UCL	9.424924		
Gamma Statistics			
k hat	1.008252		
k star (bias corrected)	0.41873		
Theta hat	4.738401		
Theta star	11.40951		
nu hat	8.066012		
nu star	3.349836		
5% Approximate Chi Square Value	0.482971		
Adjusted Level of Significance	N/A		
Adjusted Chi Square Value	N/A		
Anderson-Darling Test Statistic	0.430224		
Anderson-Darling 5% Critical Value	0.66654		
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.	
Kolmogrov-Smirnov Test Statistic	0.312863		
Kolmogrov-Smirnov 5% Critical Value	0.402401		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level	
95% Approximate Gamma UCL	33.13625		
95% Adjusted Gamma UCL	N/A		
Lognormal Statistics			
Minimum of log data	-1.171183		
Maximum of log data	2.104134		
Mean of log data	0.991976		
Standard Deviation of log data	1.538404		
Variance of log data	2.366688		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.838034		
Shapiro-Wilk 5% Critical Value	0.748		
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level	
MLE Mean	8.805002		
MLE Standard Deviation	27.36928		
MLE Coefficient of Variation	3.108379		
MLE Skewness	39.35835		
MLE Median	2.696558		
MLE 80% Quantile	9.893992		
MLE 90% Quantile	19.46904		
MLE 95% Quantile	33.87411		
MLE 99% Quantile	96.57351		
MVU Estimate of Median	1.966699		
MVU Estimate of Mean	5.814037		
MVU Estimate of Standard Deviation	7.750005		
MVU Estimate of SE of Mean	3.781745		
95% H-UCL	1692138		
95% Chebyshev (MVUE) UCL	22.29828		
97.5% Chebyshev (MVUE) UCL	29.43103		
99% Chebyshev (MVUE) UCL	43.44192		
Non-parametric Statistics			
95% CLT UCL	8.025759		
95% Adjusted-CLT UCL	7.729668		
95% Modified-t UCL	9.37874		
95% Jackknife UCL	9.424924		
95% Chebyshev (Mean, Sd) UCL	13.38546		
97.5% Chebyshev (Mean, Sd) UCL	17.11013		
99% Chebyshev (Mean, Sd) UCL	24.42652		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	N/R	Not enough distinct data warning	
95% Bootstrap-t UCL	N/R	Not enough distinct data warning	
95% Hall's Bootstrap UCL	N/R	Not enough distinct data warning	
95% Percentile Bootstrap UCL	N/R	Not enough distinct data warning	
95% BCA Bootstrap UCL	N/R	Not enough distinct data warning	
Recommendations			
Human Inspection Recommended?	YES		
Appropriate Distribution	NORMAL		
1st Recommended UCL	9.424924	95% Student's-t UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	YES	Recommended UCL exceeds the maximum data value	
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\July 2004\Sed-SC06-f.xls		
Variable:	Vanadium		
Raw Statistics			
Number of Observations	4		
Number of Missing Data	0		
Number of Valid Observations	4		
Number of Distinct Observations	4		
Minimum	5.3		
Maximum	64		
Mean	35.325		
Standard Deviation	26.5623		
Variance	705.5558		
Coefficient of Variation	0.751941		
Skewness	-0.095866		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.958149		
Shapiro-Wilk 5% Critical Value	0.748		
5% Normality Test Result	NORMAL	Data are normal at 5% significance level	
95% Student's-t UCL	66.58037		
Gamma Statistics			
k hat	1.545434		
k star (bias corrected)	0.553025		
Theta hat	22.85766		
Theta star	63.87595		
nu hat	12.36347		
nu star	4.424201		
5% Approximate Chi Square Value	0.895758		
Adjusted Level of Significance	N/A		
Adjusted Chi Square Value	N/A		
Anderson-Darling Test Statistic	0.29972		
Anderson-Darling 5% Critical Value	0.62205		
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.	
Kolmogrov-Smirnov Test Statistic	0.264782		
Kolmogrov-Smirnov 5% Critical Value	0.399346		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level	
95% Approximate Gamma UCL	174.4722		
95% Adjusted Gamma UCL	N/A		
Lognormal Statistics			
Minimum of log data	1.667707		
Maximum of log data	4.158883		
Mean of log data	3.207414		
Standard Deviation of log data	1.123389		
Variance of log data	1.262003		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.90361		
Shapiro-Wilk 5% Critical Value	0.748		
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level	
MLE Mean	46.4518		
MLE Standard Deviation	73.92243		
MLE Coefficient of Variation	1.591379		
MLE Skewness	8.804289		
MLE Median	24.71509		
MLE 80% Quantile	63.859		
MLE 90% Quantile	104.6863		
MLE 95% Quantile	156.8655		
MLE 99% Quantile	337.1124		
MVU Estimate of Median	20.99668		
MVU Estimate of Mean	38.18894		
MVU Estimate of Standard Deviation	39.45075		
MVU Estimate of SE of Mean	19.55053		
95% H-UCL	31558.33		
95% Chebyshev (MVUE) UCL	123.4077		
97.5% Chebyshev (MVUE) UCL	160.282		
99% Chebyshev (MVUE) UCL	232.7142		
Non-parametric Statistics			
95% CLT UCL	57.17055		
95% Adjusted-CLT UCL	56.49033		
95% Modified-t UCL	66.47427		
95% Jackknife UCL	66.58037		
95% Chebyshev (Mean, Sd) UCL	93.21619		
97.5% Chebyshev (Mean, Sd) UCL	118.2658		
99% Chebyshev (Mean, Sd) UCL	167.4708		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	N/R	Not enough distinct data warning	
95% Bootstrap-t UCL	N/R	Not enough distinct data warning	
95% Hall's Bootstrap UCL	N/R	Not enough distinct data warning	
95% Percentile Bootstrap UCL	N/R	Not enough distinct data warning	
95% BCA Bootstrap UCL	N/R	Not enough distinct data warning	
Recommendations			
Human Inspection Recommended?	YES		
Appropriate Distribution	NORMAL		
1st Recommended UCL	66.58037	95% Student's-t UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	YES	Recommended UCL exceeds the maximum data value	
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\July 2004\Sed-SC06-f.xls		
Variable:	Zinc		
Raw Statistics			
Number of Observations	4		
Number of Missing Data	0		
Number of Valid Observations	4		
Number of Distinct Observations	4		
Minimum	200		
Maximum	4600		
Mean	1950		
Standard Deviation	1913.984		
Variance	3663333		
Coefficient of Variation	0.98153		
Skewness	1.17834		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.926743		
Shapiro-Wilk 5% Critical Value	0.748		
5% Normality Test Result	NORMAL	Data are normal at 5% significance level	
95% Student's-t UCL	4202.149		
Gamma Statistics			
k hat	1.107064		
k star (bias corrected)	0.443433		
Theta hat	1761.416		
Theta star	4397.512		
nu hat	8.856509		
nu star	3.54746		
5% Approximate Chi Square Value	0.55131		
Adjusted Level of Significance	N/A		
Adjusted Chi Square Value	N/A		
Anderson-Darling Test Statistic	0.191741		
Anderson-Darling 5% Critical Value	0.665702		
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.	
Kolmogrov-Smirnov Test Statistic	0.169258		
Kolmogrov-Smirnov 5% Critical Value	0.401816		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level	
95% Approximate Gamma UCL	12547.47		
95% Adjusted Gamma UCL	N/A		
Lognormal Statistics			
Minimum of log data	5.298317		
Maximum of log data	8.433812		
Mean of log data	7.060197		
Standard Deviation of log data	1.329992		
Variance of log data	1.768879		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.971844		
Shapiro-Wilk 5% Critical Value	0.748		
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level	
MLE Mean	2820.406		
MLE Standard Deviation	6220.437		
MLE Coefficient of Variation	2.205511		
MLE Skewness	17.34475		
MLE Median	1164.674		
MLE 80% Quantile	3583.302		
MLE 90% Quantile	6433.26		
MLE 95% Quantile	10384.13		
MLE 99% Quantile	25687.47		
MVU Estimate of Median	923.7056		
MVU Estimate of Mean	2106.38		
MVU Estimate of Standard Deviation	2503.455		
MVU Estimate of SE of Mean	1232.479		
95% H-UCL	25570202		
95% Chebyshev (MVUE) UCL	7478.633		
97.5% Chebyshev (MVUE) UCL	9803.211		
99% Chebyshev (MVUE) UCL	14369.39		
Non-parametric Statistics			
95% CLT UCL	3524.111		
95% Adjusted-CLT UCL	4126.573		
95% Modified-t UCL	4296.121		
95% Jackknife UCL	4202.149		
95% Chebyshev (Mean, Sd) UCL	6121.431		
97.5% Chebyshev (Mean, Sd) UCL	7926.412		
99% Chebyshev (Mean, Sd) UCL	11471.95		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	N/R	Not enough distinct data warning	
95% Bootstrap-t UCL	N/R	Not enough distinct data warning	
95% Hall's Bootstrap UCL	N/R	Not enough distinct data warning	
95% Percentile Bootstrap UCL	N/R	Not enough distinct data warning	
95% BCA Bootstrap UCL	N/R	Not enough distinct data warning	
Recommendations			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	4202.149	95% Student's-t UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value			
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\July 2004\Sed-SC07-f.xls		
Variable:	Arsenic		
Raw Statistics			
Number of Observations	4		
Number of Missing Data	0		
Number of Valid Observations	4		
Number of Distinct Observations	4		
Minimum	61		
Maximum	440		
Mean	207.75		
Standard Deviation	162.8709		
Variance	26526.92		
Coefficient of Variation	0.783975		
Skewness	1.41239		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.885635		
Shapiro-Wilk 5% Critical Value	0.748		
5% Normality Test Result	NORMAL	Data are normal at 5% significance level	
95% Student's-t UCL	399.3971		
Gamma Statistics			
k hat	2.2711		
k star (bias corrected)	0.734442		
Theta hat	91.47548		
Theta star	282.8679		
nu hat	18.1688		
nu star	5.875534		
5% Approximate Chi Square Value	1.576108		
Adjusted Level of Significance	N/A		
Adjusted Chi Square Value	N/A		
Anderson-Darling Test Statistic	0.266923		
Anderson-Darling 5% Critical Value	0.660241		
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.	
Kolmogrov-Smirnov Test Statistic	0.244255		
Kolmogrov-Smirnov 5% Critical Value	0.397537		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level	
95% Approximate Gamma UCL	774.4659		
95% Adjusted Gamma UCL	N/A		
Lognormal Statistics			
Minimum of log data	4.110874		
Maximum of log data	6.086775		
Mean of log data	5.10031		
Standard Deviation of log data	0.810087		
Variance of log data	0.656241		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.979161		
Shapiro-Wilk 5% Critical Value	0.748		
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level	
MLE Mean	227.7914		
MLE Standard Deviation	219.3824		
MLE Coefficient of Variation	0.963085		
MLE Skewness	3.782546		
MLE Median	164.0728		
MLE 80% Quantile	325.3279		
MLE 90% Quantile	464.644		
MLE 95% Quantile	621.9768		
MLE 99% Quantile	1079.844		
MVU Estimate of Median	150.9412		
MVU Estimate of Mean	207.5374		
MVU Estimate of Standard Deviation	160.5478		
MVU Estimate of SE of Mean	80.04714		
95% H-UCL	7030.094		
95% Chebyshev (MVUE) UCL	556.4548		
97.5% Chebyshev (MVUE) UCL	707.4316		
99% Chebyshev (MVUE) UCL	1003.996		
Non-parametric Statistics			
95% CLT UCL	341.6994		
95% Adjusted-CLT UCL	403.1489		
95% Modified-t UCL	408.982		
95% Jackknife UCL	399.3971		
95% Chebyshev (Mean, Sd) UCL	562.7188		
97.5% Chebyshev (Mean, Sd) UCL	716.3141		
99% Chebyshev (Mean, Sd) UCL	1018.022		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	N/R	Not enough distinct data warning	
95% Bootstrap-t UCL	N/R	Not enough distinct data warning	
95% Hall's Bootstrap UCL	N/R	Not enough distinct data warning	
95% Percentile Bootstrap UCL	N/R	Not enough distinct data warning	
95% BCA Bootstrap UCL	N/R	Not enough distinct data warning	
Recommendations			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	399.3971	95% Student's-t UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value			
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\July 2004\Sed-SC07-f.xls		
Variable:	Cadmium		
Raw Statistics			
Number of Observations	4		
Number of Missing Data	0		
Number of Valid Observations	4		
Number of Distinct Observations	4		
Minimum	2.7		
Maximum	25		
Mean	10.575		
Standard Deviation	9.870284		
Variance	97.4225		
Coefficient of Variation	0.93336		
Skewness	1.688779		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.82476		
Shapiro-Wilk 5% Critical Value	0.748		
5% Normality Test Result	NORMAL	Data are normal at 5% significance level	
95% Student's-t UCL	22.18918		
Gamma Statistics			
k hat	1.74444		
k star (bias corrected)	0.602777		
Theta hat	6.062117		
Theta star	17.54381		
nu hat	13.95552		
nu star	4.822213		
5% Approximate Chi Square Value	1.070567		
Adjusted Level of Significance	N/A		
Adjusted Chi Square Value	N/A		
Anderson-Darling Test Statistic	0.327444		
Anderson-Darling 5% Critical Value	0.66148		
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.	
Kolmogrov-Smirnov Test Statistic	0.292673		
Kolmogrov-Smirnov 5% Critical Value	0.398713		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level	
95% Approximate Gamma UCL	47.63355		
95% Adjusted Gamma UCL	N/A		
Lognormal Statistics			
Minimum of log data	0.993252		
Maximum of log data	3.218876		
Mean of log data	2.045274		
Standard Deviation of log data	0.913793		
Variance of log data	0.835018		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.96784		
Shapiro-Wilk 5% Critical Value	0.748		
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level	
MLE Mean	11.73744		
MLE Standard Deviation	13.40771		
MLE Coefficient of Variation	1.142303		
MLE Skewness	4.91745		
MLE Median	7.73128		
MLE 80% Quantile	16.73379		
MLE 90% Quantile	25.01558		
MLE 95% Quantile	34.7599		
MLE 99% Quantile	64.76451		
MVU Estimate of Median	6.949206		
MVU Estimate of Mean	10.39005		
MVU Estimate of Standard Deviation	8.962205		
MVU Estimate of SE of Mean	4.461617		
95% H-UCL	901.4		
95% Chebyshev (MVUE) UCL	29.83779		
97.5% Chebyshev (MVUE) UCL	38.25284		
99% Chebyshev (MVUE) UCL	54.78258		
Non-parametric Statistics			
95% CLT UCL	18.69259		
95% Adjusted-CLT UCL	23.14528		
95% Modified-t UCL	22.88371		
95% Jackknife UCL	22.18918		
95% Chebyshev (Mean, Sd) UCL	32.08678		
97.5% Chebyshev (Mean, Sd) UCL	41.39495		
99% Chebyshev (Mean, Sd) UCL	59.67904		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	N/R	Not enough distinct data warning	
95% Bootstrap-t UCL	N/R	Not enough distinct data warning	
95% Hall's Bootstrap UCL	N/R	Not enough distinct data warning	
95% Percentile Bootstrap UCL	N/R	Not enough distinct data warning	
95% BCA Bootstrap UCL	N/R	Not enough distinct data warning	
Recommendations			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	22.18918	95% Student's-t UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value			
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\July 2004\Sed-SC07-f.xls		
Variable:	Copper		
Raw Statistics			
Number of Observations	4		
Number of Missing Data	0		
Number of Valid Observations	4		
Number of Distinct Observations	4		
Minimum	77		
Maximum	910		
Mean	401.75		
Standard Deviation	357.0326		
Variance	127472.3		
Coefficient of Variation	0.888693		
Skewness	1.391597		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.887267		
Shapiro-Wilk 5% Critical Value	0.748		
5% Normality Test Result	NORMAL	Data are normal at 5% significance level	
95% Student's-t UCL	821.8637		
Gamma Statistics			
k hat	1.614589		
k star (bias corrected)	0.570314		
Theta hat	248.825		
Theta star	704.4367		
nu hat	12.91671		
nu star	4.562511		
5% Approximate Chi Square Value	0.955352		
Adjusted Level of Significance	N/A		
Adjusted Chi Square Value	N/A		
Anderson-Darling Test Statistic	0.25864		
Anderson-Darling 5% Critical Value	0.661953		
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.	
Kolmogrov-Smirnov Test Statistic	0.225307		
Kolmogrov-Smirnov 5% Critical Value	0.399126		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level	
95% Approximate Gamma UCL	1918.653		
95% Adjusted Gamma UCL	N/A		
Lognormal Statistics			
Minimum of log data	4.343805		
Maximum of log data	6.813445		
Mean of log data	5.655246		
Standard Deviation of log data	1.0152		
Variance of log data	1.03063		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.967644		
Shapiro-Wilk 5% Critical Value	0.748		
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level	
MLE Mean	478.4546		
MLE Standard Deviation	642.4189		
MLE Coefficient of Variation	1.342696		
MLE Skewness	6.448741		
MLE Median	285.7869		
MLE 80% Quantile	673.9055		
MLE 90% Quantile	1053.399		
MLE 95% Quantile	1518.153		
MLE 99% Quantile	3030.856		
MVU Estimate of Median	250.3663		
MVU Estimate of Mean	409.7765		
MVU Estimate of Standard Deviation	387.9126		
MVU Estimate of SE of Mean	192.7381		
95% H-UCL	99715.36		
95% Chebyshev (MVUE) UCL	1249.902		
97.5% Chebyshev (MVUE) UCL	1613.426		
99% Chebyshev (MVUE) UCL	2327.497		
Non-parametric Statistics			
95% CLT UCL	695.3832		
95% Adjusted-CLT UCL	828.1048		
95% Modified-t UCL	842.5656		
95% Jackknife UCL	821.8637		
95% Chebyshev (Mean, Sd) UCL	1179.884		
97.5% Chebyshev (Mean, Sd) UCL	1516.584		
99% Chebyshev (Mean, Sd) UCL	2177.965		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	N/R	Not enough distinct data warning	
95% Bootstrap-t UCL	N/R	Not enough distinct data warning	
95% Hall's Bootstrap UCL	N/R	Not enough distinct data warning	
95% Percentile Bootstrap UCL	N/R	Not enough distinct data warning	
95% BCA Bootstrap UCL	N/R	Not enough distinct data warning	
Recommendations			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	821.8637	95% Student's-t UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value			
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\July 2004\Sed-SC07-f.xls		
Variable:	Lead		
Raw Statistics			
Number of Observations	4		
Number of Missing Data	0		
Number of Valid Observations	4		
Number of Distinct Observations	4		
Minimum	36		
Maximum	570		
Mean	236.5		
Standard Deviation	231.7089		
Variance	53689		
Coefficient of Variation	0.979742		
Skewness	1.515767		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.866915		
Shapiro-Wilk 5% Critical Value	0.748		
5% Normality Test Result	NORMAL	Data are normal at 5% significance level	
95% Student's-t UCL	509.1476		
Gamma Statistics			
k hat	1.334699		
k star (bias corrected)	0.500341		
Theta hat	177.1936		
Theta star	472.6773		
nu hat	10.67759		
nu star	4.002731		
5% Approximate Chi Square Value	0.722484		
Adjusted Level of Significance	N/A		
Adjusted Chi Square Value	N/A		
Anderson-Darling Test Statistic	0.256608		
Anderson-Darling 5% Critical Value	0.663772		
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.	
Kolmogrov-Smirnov Test Statistic	0.22916		
Kolmogrov-Smirnov 5% Critical Value	0.400469		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level	
95% Approximate Gamma UCL	1310.266		
95% Adjusted Gamma UCL	N/A		
Lognormal Statistics			
Minimum of log data	3.583519		
Maximum of log data	6.345636		
Mean of log data	5.046704		
Standard Deviation of log data	1.135718		
Variance of log data	1.289855		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.970381		
Shapiro-Wilk 5% Critical Value	0.748		
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level	
MLE Mean	296.3767		
MLE Standard Deviation	480.8486		
MLE Coefficient of Variation	1.622424		
MLE Skewness	9.137913		
MLE Median	155.509		
MLE 80% Quantile	406.013		
MLE 90% Quantile	669.2121		
MLE 95% Quantile	1007.23		
MLE 99% Quantile	2182.843		
MVU Estimate of Median	131.6212		
MVU Estimate of Mean	242.4284		
MVU Estimate of Standard Deviation	252.7725		
MVU Estimate of SE of Mean	125.2243		
95% H-UCL	232151.2		
95% Chebyshev (MVUE) UCL	788.2684		
97.5% Chebyshev (MVUE) UCL	1024.454		
99% Chebyshev (MVUE) UCL	1488.394		
Non-parametric Statistics			
95% CLT UCL	427.0636		
95% Adjusted-CLT UCL	520.8836		
95% Modified-t UCL	523.7816		
95% Jackknife UCL	509.1476		
95% Chebyshev (Mean, Sd) UCL	741.4978		
97.5% Chebyshev (Mean, Sd) UCL	960.0107		
99% Chebyshev (Mean, Sd) UCL	1389.237		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	N/R	Not enough distinct data warning	
95% Bootstrap-t UCL	N/R	Not enough distinct data warning	
95% Hall's Bootstrap UCL	N/R	Not enough distinct data warning	
95% Percentile Bootstrap UCL	N/R	Not enough distinct data warning	
95% BCA Bootstrap UCL	N/R	Not enough distinct data warning	
Recommendations			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	509.1476	95% Student's-t UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value			
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\July 2004\Sed-SC07-f.xls		
Variable:	Manganese		
Raw Statistics			
Number of Observations	4		
Number of Missing Data	0		
Number of Valid Observations	4		
Number of Distinct Observations	4		
Minimum	270		
Maximum	2600		
Mean	1060		
Standard Deviation	1045.785		
Variance	1093667		
Coefficient of Variation	0.98659		
Skewness	1.777326		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.796198		
Shapiro-Wilk 5% Critical Value	0.748		
5% Normality Test Result	NORMAL	Data are normal at 5% significance level	
95% Student's-t UCL	2290.556		
Gamma Statistics			
k hat	1.630524		
k star (bias corrected)	0.574298		
Theta hat	650.0978		
Theta star	1845.733		
nu hat	13.04419		
nu star	4.594381		
5% Approximate Chi Square Value	0.969262		
Adjusted Level of Significance	N/A		
Adjusted Chi Square Value	N/A		
Anderson-Darling Test Statistic	0.375355		
Anderson-Darling 5% Critical Value	0.661895		
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.	
Kolmogrov-Smirnov Test Statistic	0.320587		
Kolmogrov-Smirnov 5% Critical Value	0.399075		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level	
95% Approximate Gamma UCL	5024.484		
95% Adjusted Gamma UCL	N/A		
Lognormal Statistics			
Minimum of log data	5.598422		
Maximum of log data	7.863267		
Mean of log data	6.62905		
Standard Deviation of log data	0.933607		
Variance of log data	0.871622		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.952843		
Shapiro-Wilk 5% Critical Value	0.748		
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level	
MLE Mean	1170.12		
MLE Standard Deviation	1379.94		
MLE Coefficient of Variation	1.179315		
MLE Skewness	5.17812		
MLE Median	756.7632		
MLE 80% Quantile	1665.612		
MLE 90% Quantile	2511.75		
MLE 95% Quantile	3515.136		
MLE 99% Quantile	6638.357		
MVU Estimate of Median	676.9652		
MVU Estimate of Mean	1029.536		
MVU Estimate of Standard Deviation	905.203		
MVU Estimate of SE of Mean	450.4786		
95% H-UCL	108310.2		
95% Chebyshev (MVUE) UCL	2993.127		
97.5% Chebyshev (MVUE) UCL	3842.774		
99% Chebyshev (MVUE) UCL	5511.742		
Non-parametric Statistics			
95% CLT UCL	1920.082		
95% Adjusted-CLT UCL	2416.594		
95% Modified-t UCL	2368.002		
95% Jackknife UCL	2290.556		
95% Chebyshev (Mean, Sd) UCL	3339.236		
97.5% Chebyshev (Mean, Sd) UCL	4325.463		
99% Chebyshev (Mean, Sd) UCL	6262.716		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	N/R	Not enough distinct data warning	
95% Bootstrap-t UCL	N/R	Not enough distinct data warning	
95% Hall's Bootstrap UCL	N/R	Not enough distinct data warning	
95% Percentile Bootstrap UCL	N/R	Not enough distinct data warning	
95% BCA Bootstrap UCL	N/R	Not enough distinct data warning	
Recommendations			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	2290.556	95% Student's-t UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value			
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\July 2004\Sed-SC07-f.xls		
Variable:	Mercury		
<b>Raw Statistics</b>			
Number of Observations	4		
Number of Missing Data	0		
Number of Valid Observations	4		
Number of Distinct Observations	4		
Minimum	0.41		
Maximum	3.7		
Mean	1.6425		
Standard Deviation	1.456763		
Variance	2.122158		
Coefficient of Variation	0.886918		
Skewness	1.371205		
Too Few Distinct Observations?	NO		
<b>Normal Statistics</b>			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.893455		
Shapiro-Wilk 5% Critical Value	0.748		
5% Normality Test Result	NORMAL	Data are normal at 5% significance level	
95% Student's-t UCL	3.356646		
<b>Gamma Statistics</b>			
k hat	1.749495		
k star (bias corrected)	0.60404		
Theta hat	0.938842		
Theta star	2.719189		
nu hat	13.99596		
nu star	4.832324		
5% Approximate Chi Square Value	1.075136		
Adjusted Level of Significance	N/A		
Adjusted Chi Square Value	N/A		
Anderson-Darling Test Statistic	0.221442		
Anderson-Darling 5% Critical Value	0.661462		
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.	
Kolmogrov-Smirnov Test Statistic	0.194075		
Kolmogrov-Smirnov 5% Critical Value	0.398697		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level	
95% Approximate Gamma UCL	7.382406		
95% Adjusted Gamma UCL	N/A		
<b>Lognormal Statistics</b>			
Minimum of log data	-0.891598		
Maximum of log data	1.308333		
Mean of log data	0.183979		
Standard Deviation of log data	0.93362		
Variance of log data	0.871647		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.99855		
Shapiro-Wilk 5% Critical Value	0.748		
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level	
MLE Mean	1.85856		
MLE Standard Deviation	2.191876		
MLE Coefficient of Variation	1.179341		
MLE Skewness	5.178302		
MLE Median	1.20199		
MLE 80% Quantile	2.645574		
MLE 90% Quantile	3.989559		
MLE 95% Quantile	5.583323		
MLE 99% Quantile	10.54424		
MVU Estimate of Median	1.075241		
MVU Estimate of Mean	1.635258		
MVU Estimate of Standard Deviation	1.437792		
MVU Estimate of SE of Mean	0.715524		
95% H-UCL	172.0565		
95% Chebyshev (MVUE) UCL	4.754155		
97.5% Chebyshev (MVUE) UCL	6.103704		
99% Chebyshev (MVUE) UCL	8.754633		
<b>Non-parametric Statistics</b>			
95% CLT UCL	2.840581		
95% Adjusted-CLT UCL	3.374176		
95% Modified-t UCL	3.439876		
95% Jackknife UCL	3.356646		
95% Chebyshev (Mean, Sd) UCL	4.817441		
97.5% Chebyshev (Mean, Sd) UCL	6.191241		
99% Chebyshev (Mean, Sd) UCL	8.889804		
<b>Bootstrap Statistics</b>			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	N/R	Not enough distinct data warning	
95% Bootstrap-t UCL	N/R	Not enough distinct data warning	
95% Hall's Bootstrap UCL	N/R	Not enough distinct data warning	
95% Percentile Bootstrap UCL	N/R	Not enough distinct data warning	
95% BCA Bootstrap UCL	N/R	Not enough distinct data warning	
<b>Recommendations</b>			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	3.356646	95% Student's-t UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value			
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\July 2004\Sed-SC07-f.xls		
Variable:	Vanadium		
<b>Raw Statistics</b>			
Number of Observations	4		
Number of Missing Data	0		
Number of Valid Observations	4		
Number of Distinct Observations	4		
Minimum	30		
Maximum	72		
Mean	44.25		
Standard Deviation	18.87459		
Variance	356.25		
Coefficient of Variation	0.426544		
Skewness	1.761767		
Too Few Distinct Observations?	NO		
<b>Normal Statistics</b>			
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.806861		
Shapiro-Wilk 5% Critical Value	0.748		
5% Normality Test Result	NORMAL		Data are normal at 5% significance level
95% Student's-t UCL	66.45938		
<b>Gamma Statistics</b>			
k hat	8.692927		
k star (bias corrected)	2.339898		
Theta hat	5.090345		
Theta star	18.91108		
nu hat	69.54342		
nu star	18.71919		
5% Approximate Chi Square Value	9.911188		
Adjusted Level of Significance	N/A		
Adjusted Chi Square Value	N/A		
Anderson-Darling Test Statistic	0.479171		
Anderson-Darling 5% Critical Value	0.657605		
Anderson-Darling 5% Gamma Test Result	AD GAMMA		Data follow gamma distribution at 5% significance level.
Kolmogrov-Smirnov Test Statistic	0.348779		
Kolmogrov-Smirnov 5% Critical Value	0.395181		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA		Data follow gamma distribution at 5% significance level
5% Gamma Test Result	GAMMA		Data follow gamma distribution at 5% significance level
95% Approximate Gamma UCL	83.57465		
95% Adjusted Gamma UCL	N/A		
<b>Lognormal Statistics</b>			
Minimum of log data	3.401197		
Maximum of log data	4.276666		
Mean of log data	3.731236		
Standard Deviation of log data	0.379833		
Variance of log data	0.144273		
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.873991		
Shapiro-Wilk 5% Critical Value	0.748		
5% Lognormality Test Result	LOGNORMAL		Data are lognormal at 5% significance level
MLE Mean	44.8522		
MLE Standard Deviation	17.6697		
MLE Coefficient of Variation	0.393954		
MLE Skewness	1.243003		
MLE Median	41.73066		
MLE 80% Quantile	57.52358		
MLE 90% Quantile	67.98735		
MLE 95% Quantile	77.94953		
MLE 99% Quantile	100.9604		
MVU Estimate of Median	40.98214		
MVU Estimate of Mean	44.02532		
MVU Estimate of Standard Deviation	16.54494		
MVU Estimate of SE of Mean	8.271149		
95% H-UCL	102.8553		
95% Chebyshev (MVUE) UCL	80.07842		
97.5% Chebyshev (MVUE) UCL	95.67863		
99% Chebyshev (MVUE) UCL	126.3222		
<b>Non-parametric Statistics</b>			
95% CLT UCL	59.77297		
95% Adjusted-CLT UCL	68.6557		
95% Modified-t UCL	67.84491		
95% Jackknife UCL	66.45938		
95% Chebyshev (Mean, Sd) UCL	85.38621		
97.5% Chebyshev (Mean, Sd) UCL	103.1859		
99% Chebyshev (Mean, Sd) UCL	138.1499		
<b>Bootstrap Statistics</b>			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	N/R		Not enough distinct data warning
95% Bootstrap-t UCL	N/R		Not enough distinct data warning
95% Hall's Bootstrap UCL	N/R		Not enough distinct data warning
95% Percentile Bootstrap UCL	N/R		Not enough distinct data warning
95% BCA Bootstrap UCL	N/R		Not enough distinct data warning
<b>Recommendations</b>			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	66.45938		95% Student's-t UCL
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value			
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\July 2004\Sed-SC07-f.xls		
Variable:	Zinc		
Raw Statistics			
Number of Observations	4		
Number of Missing Data	0		
Number of Valid Observations	4		
Number of Distinct Observations	4		
Minimum	460		
Maximum	4800		
Mean	2115		
Standard Deviation	1884.914		
Variance	3552900		
Coefficient of Variation	0.891212		
Skewness	1.420795		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.891789		
Shapiro-Wilk 5% Critical Value	0.748		
5% Normality Test Result	NORMAL	Data are normal at 5% significance level	
95% Student's-t UCL	4332.943		
Gamma Statistics			
k hat	1.685987		
k star (bias corrected)	0.588164		
Theta hat	1254.458		
Theta star	3595.939		
nu hat	13.4879		
nu star	4.705308		
5% Approximate Chi Square Value	1.018184		
Adjusted Level of Significance	N/A		
Adjusted Chi Square Value	N/A		
Anderson-Darling Test Statistic	0.222833		
Anderson-Darling 5% Critical Value	0.661693		
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.	
Kolmogrov-Smirnov Test Statistic	0.200418		
Kolmogrov-Smirnov 5% Critical Value	0.398899		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level	
95% Approximate Gamma UCL	9773.998		
95% Adjusted Gamma UCL	N/A		
Lognormal Statistics			
Minimum of log data	6.131226		
Maximum of log data	8.476371		
Mean of log data	7.331832		
Standard Deviation of log data	0.970395		
Variance of log data	0.941667		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.993407		
Shapiro-Wilk 5% Critical Value	0.748		
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level	
MLE Mean	2447.115		
MLE Standard Deviation	3060.609		
MLE Coefficient of Variation	1.250701		
MLE Skewness	5.708515		
MLE Median	1528.178		
MLE 80% Quantile	3469.673		
MLE 90% Quantile	5317.665		
MLE 95% Quantile	7541.165		
MLE 99% Quantile	14602.84		
MVU Estimate of Median	1354.545		
MVU Estimate of Mean	2127.955		
MVU Estimate of Standard Deviation	1936.153		
MVU Estimate of SE of Mean	962.8775		
95% H-UCL	323841.3		
95% Chebyshev (MVUE) UCL	6325.04		
97.5% Chebyshev (MVUE) UCL	8141.123		
99% Chebyshev (MVUE) UCL	11708.46		
Non-parametric Statistics			
95% CLT UCL	3665.204		
95% Adjusted-CLT UCL	4380.594		
95% Modified-t UCL	4444.53		
95% Jackknife UCL	4332.943		
95% Chebyshev (Mean, Sd) UCL	6223.074		
97.5% Chebyshev (Mean, Sd) UCL	8000.641		
99% Chebyshev (Mean, Sd) UCL	11492.33		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	N/R	Not enough distinct data warning	
95% Bootstrap-t UCL	N/R	Not enough distinct data warning	
95% Hall's Bootstrap UCL	N/R	Not enough distinct data warning	
95% Percentile Bootstrap UCL	N/R	Not enough distinct data warning	
95% BCA Bootstrap UCL	N/R	Not enough distinct data warning	
Recommendations			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	4332.943	95% Student's-t UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value			
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\July 2004\Sed-SC08-f.xls		
Variable:	Arsenic		
Raw Statistics			
Number of Observations	4		
Number of Missing Data	0		
Number of Valid Observations	4		
Number of Distinct Observations	3		
Minimum	10		
Maximum	1250		
Mean	352.5		
Standard Deviation	601.4635		
Variance	361758.3		
Coefficient of Variation	1.706279		
Skewness	1.939451		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.70374		
Shapiro-Wilk 5% Critical Value	0.748		
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level	
95% Student's-t UCL	1060.231		
Gamma Statistics			
k hat	0.389715		
k star (bias corrected)	0.264095		
Theta hat	904.5079		
Theta star	1334.745		
nu hat	3.117717		
nu star	2.112763		
5% Approximate Chi Square Value	0.166799		
Adjusted Level of Significance	N/A		
Adjusted Chi Square Value	N/A		
Anderson-Darling Test Statistic	0.446558		
Anderson-Darling 5% Critical Value	0.693714		
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.	
Kolmogrov-Smirnov Test Statistic	0.305973		
Kolmogrov-Smirnov 5% Critical Value	0.414567		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level	
95% Approximate Gamma UCL	4464.949		
95% Adjusted Gamma UCL	N/A		
Lognormal Statistics			
Minimum of log data	2.302585		
Maximum of log data	7.130899		
Mean of log data	4.169428		
Standard Deviation of log data	2.333583		
Variance of log data	5.44561		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.865652		
Shapiro-Wilk 5% Critical Value	0.748		
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level	
MLE Mean	984.5973		
MLE Standard Deviation	14956.11		
MLE Coefficient of Variation	15.19008		
MLE Skewness	3550.508		
MLE Median	64.67844		
MLE 80% Quantile	464.6598		
MLE 90% Quantile	1297.354		
MLE 95% Quantile	3005.418		
MLE 99% Quantile	14725.59		
MVU Estimate of Median	28.81597		
MVU Estimate of Mean	305.7824		
MVU Estimate of Standard Deviation	546.2951		
MVU Estimate of SE of Mean	253.0794		
95% H-UCL	1.29E+15		
95% Chebyshev (MVUE) UCL	1408.93		
97.5% Chebyshev (MVUE) UCL	1886.263		
99% Chebyshev (MVUE) UCL	2823.891		
Non-parametric Statistics			
95% CLT UCL	847.1597		
95% Adjusted-CLT UCL	1158.768		
95% Modified-t UCL	1108.836		
95% Jackknife UCL	1060.231		
95% Chebyshev (Mean, Sd) UCL	1663.359		
97.5% Chebyshev (Mean, Sd) UCL	2230.569		
99% Chebyshev (Mean, Sd) UCL	3344.743		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	N/R	Not enough distinct data warning	
95% Bootstrap-t UCL	N/R	Not enough distinct data warning	
95% Hall's Bootstrap UCL	N/R	Not enough distinct data warning	
95% Percentile Bootstrap UCL	N/R	Not enough distinct data warning	
95% BCA Bootstrap UCL	N/R	Not enough distinct data warning	
Recommendations			
Human Inspection Recommended?	YES		
Appropriate Distribution	GAMMA		
1st Recommended UCL	4464.949	95% Approximate Gamma UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	YES	Recommended UCL exceeds the maximum data value	
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\July 2004\Sed-SC08-f.xls		
Variable:	Cadmium		
Raw Statistics			
Number of Observations	4		
Number of Missing Data	0		
Number of Valid Observations	4		
Number of Distinct Observations	4		
Minimum	0.7		
Maximum	22.4		
Mean	6.8625		
Standard Deviation	10.44664		
Variance	109.1323		
Coefficient of Variation	1.522279		
Skewness	1.902717		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.723458		
Shapiro-Wilk 5% Critical Value	0.748		
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level	
95% Student's-t UCL	19.15487		
Gamma Statistics			
k hat	0.621163		
k star (bias corrected)	0.321958		
Theta hat	11.04782		
Theta star	21.31492		
nu hat	4.969307		
nu star	2.57566		
5% Approximate Chi Square Value	0.258544		
Adjusted Level of Significance	N/A		
Adjusted Chi Square Value	N/A		
Anderson-Darling Test Statistic	0.46771		
Anderson-Darling 5% Critical Value	0.675768		
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.	
Kolmogrov-Smirnov Test Statistic	0.295451		
Kolmogrov-Smirnov 5% Critical Value	0.407706		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level	
95% Approximate Gamma UCL	68.36548		
95% Adjusted Gamma UCL	N/A		
Lognormal Statistics			
Minimum of log data	-0.356675		
Maximum of log data	3.109061		
Mean of log data	0.936409		
Standard Deviation of log data	1.633971		
Variance of log data	2.66986		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.873266		
Shapiro-Wilk 5% Critical Value	0.748		
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level	
MLE Mean	9.692373		
MLE Standard Deviation	35.53011		
MLE Coefficient of Variation	3.66578		
MLE Skewness	60.25788		
MLE Median	2.550806		
MLE 80% Quantile	10.14636		
MLE 90% Quantile	20.82307		
MLE 95% Quantile	37.49813		
MLE 99% Quantile	114.0943		
MVU Estimate of Median	1.780797		
MVU Estimate of Mean	5.991129		
MVU Estimate of Standard Deviation	8.359269		
MVU Estimate of SE of Mean	4.059534		
95% H-UCL	8765574		
95% Chebyshev (MVUE) UCL	23.68623		
97.5% Chebyshev (MVUE) UCL	31.34291		
99% Chebyshev (MVUE) UCL	46.38298		
Non-parametric Statistics			
95% CLT UCL	15.4541		
95% Adjusted-CLT UCL	20.76381		
95% Modified-t UCL	19.98308		
95% Jackknife UCL	19.15487		
95% Chebyshev (Mean, Sd) UCL	29.63042		
97.5% Chebyshev (Mean, Sd) UCL	39.48212		
99% Chebyshev (Mean, Sd) UCL	58.83388		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	N/R	Not enough distinct data warning	
95% Bootstrap-t UCL	N/R	Not enough distinct data warning	
95% Hall's Bootstrap UCL	N/R	Not enough distinct data warning	
95% Percentile Bootstrap UCL	N/R	Not enough distinct data warning	
95% BCA Bootstrap UCL	N/R	Not enough distinct data warning	
Recommendations			
Human Inspection Recommended?	YES		
Appropriate Distribution	GAMMA		
1st Recommended UCL	68.36548	95% Approximate Gamma UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	YES	Recommended UCL exceeds the maximum data value	
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\July 2004\Sed-SC08-f.xls		
Variable:	Copper		
Raw Statistics			
Number of Observations	4		
Number of Missing Data	0		
Number of Valid Observations	4		
Number of Distinct Observations	4		
Minimum	1.45		
Maximum	1410		
Mean	385.7375		
Standard Deviation	685.5243		
Variance	469943.6		
Coefficient of Variation	1.777178		
Skewness	1.954247		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.694495		
Shapiro-Wilk 5% Critical Value	0.748		
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level	
95% Student's-t UCL	1192.381		
Gamma Statistics			
k hat	0.258643		
k star (bias corrected)	0.231327		
Theta hat	1491.389		
Theta star	1667.496		
nu hat	2.069145		
nu star	1.850619		
5% Approximate Chi Square Value	0.133718		
Adjusted Level of Significance	N/A		
Adjusted Chi Square Value	N/A		
Anderson-Darling Test Statistic	0.413062		
Anderson-Darling 5% Critical Value	0.715871		
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.	
Kolmogrov-Smirnov Test Statistic	0.314587		
Kolmogrov-Smirnov 5% Critical Value	0.420684		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level	
95% Approximate Gamma UCL	5338.499		
95% Adjusted Gamma UCL	N/A		
Lognormal Statistics			
Minimum of log data	0.371564		
Maximum of log data	7.251345		
Mean of log data	3.223977		
Standard Deviation of log data	3.415711		
Variance of log data	11.66708		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.856752		
Shapiro-Wilk 5% Critical Value	0.748		
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level	
MLE Mean	8582.821		
MLE Standard Deviation	2931587		
MLE Coefficient of Variation	341.5645		
MLE Skewness	39850109		
MLE Median	25.12786		
MLE 80% Quantile	450.4526		
MLE 90% Quantile	2024.678		
MLE 95% Quantile	6924.504		
MLE 99% Quantile	70892.57		
MVU Estimate of Median	1.55003		
MVU Estimate of Mean	411.7886		
MVU Estimate of Standard Deviation	921.4483		
MVU Estimate of SE of Mean	387.0048		
95% H-UCL	7.29E+29		
95% Chebyshev (MVUE) UCL	2098.703		
97.5% Chebyshev (MVUE) UCL	2828.633		
99% Chebyshev (MVUE) UCL	4262.438		
Non-parametric Statistics			
95% CLT UCL	949.5311		
95% Adjusted-CLT UCL	1307.399		
95% Modified-t UCL	1248.201		
95% Jackknife UCL	1192.381		
95% Chebyshev (Mean, Sd) UCL	1879.803		
97.5% Chebyshev (Mean, Sd) UCL	2526.286		
99% Chebyshev (Mean, Sd) UCL	3796.178		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	N/R	Not enough distinct data warning	
95% Bootstrap-t UCL	N/R	Not enough distinct data warning	
95% Hall's Bootstrap UCL	N/R	Not enough distinct data warning	
95% Percentile Bootstrap UCL	N/R	Not enough distinct data warning	
95% BCA Bootstrap UCL	N/R	Not enough distinct data warning	
Recommendations			
Human Inspection Recommended?	YES		
Appropriate Distribution	GAMMA		
1st Recommended UCL	5338.499	95% Approximate Gamma UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	YES	Recommended UCL exceeds the maximum data value	
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\July 2004\Sed-SC08-f.xls		
Variable:	Lead		
Raw Statistics			
Number of Observations	4		
Number of Missing Data	0		
Number of Valid Observations	4		
Number of Distinct Observations	4		
Minimum	4.9		
Maximum	676		
Mean	185.475		
Standard Deviation	327.901		
Variance	107519		
Coefficient of Variation	1.767898		
Skewness	1.968306		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.684061		
Shapiro-Wilk 5% Critical Value	0.748		
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level	
95% Student's-t UCL	571.31		
Gamma Statistics			
k hat	0.372346		
k star (bias corrected)	0.259753		
Theta hat	498.1251		
Theta star	714.0431		
nu hat	2.97877		
nu star	2.078026		
5% Approximate Chi Square Value	0.161543		
Adjusted Level of Significance	N/A		
Adjusted Chi Square Value	N/A		
Anderson-Darling Test Statistic	0.474912		
Anderson-Darling 5% Critical Value	0.695731		
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.	
Kolmogrov-Smirnov Test Statistic	0.297804		
Kolmogrov-Smirnov 5% Critical Value	0.415245		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level	
95% Approximate Gamma UCL	2385.871		
95% Adjusted Gamma UCL	N/A		
Lognormal Statistics			
Minimum of log data	1.589235		
Maximum of log data	6.516193		
Mean of log data	3.435054		
Standard Deviation of log data	2.351013		
Variance of log data	5.527263		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.866694		
Shapiro-Wilk 5% Critical Value	0.748		
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level	
MLE Mean	492.1021		
MLE Standard Deviation	7787.893		
MLE Coefficient of Variation	15.82577		
MLE Skewness	4011.117		
MLE Median	31.0331		
MLE 80% Quantile	226.2546		
MLE 90% Quantile	636.5777		
MLE 95% Quantile	1483.963		
MLE 99% Quantile	7357.764		
MVU Estimate of Median	13.6219		
MVU Estimate of Mean	149.4931		
MVU Estimate of Standard Deviation	268.3487		
MVU Estimate of SE of Mean	124.1427		
95% H-UCL	9.78E+14		
95% Chebyshev (MVUE) UCL	690.6188		
97.5% Chebyshev (MVUE) UCL	924.7643		
99% Chebyshev (MVUE) UCL	1384.698		
Non-parametric Statistics			
95% CLT UCL	455.1495		
95% Adjusted-CLT UCL	627.5569		
95% Modified-t UCL	598.2021		
95% Jackknife UCL	571.31		
95% Chebyshev (Mean, Sd) UCL	900.1186		
97.5% Chebyshev (Mean, Sd) UCL	1209.345		
99% Chebyshev (Mean, Sd) UCL	1816.762		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	N/R	Not enough distinct data warning	
95% Bootstrap-t UCL	N/R	Not enough distinct data warning	
95% Hall's Bootstrap UCL	N/R	Not enough distinct data warning	
95% Percentile Bootstrap UCL	N/R	Not enough distinct data warning	
95% BCA Bootstrap UCL	N/R	Not enough distinct data warning	
Recommendations			
Human Inspection Recommended?	YES		
Appropriate Distribution	GAMMA		
1st Recommended UCL	2385.871	95% Approximate Gamma UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	YES	Recommended UCL exceeds the maximum data value	
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\July 2004\Sed-SC08-f.xls		
Variable:	Manganese		
Raw Statistics			
Number of Observations	4		
Number of Missing Data	0		
Number of Valid Observations	4		
Number of Distinct Observations	4		
Minimum	25		
Maximum	591		
Mean	205.25		
Standard Deviation	265.5314		
Variance	70506.92		
Coefficient of Variation	1.293697		
Skewness	1.658172		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.800915		
Shapiro-Wilk 5% Critical Value	0.748		
5% Normality Test Result	NORMAL	Data are normal at 5% significance level	
95% Student's-t UCL	517.6959		
Gamma Statistics			
k hat	0.791148		
k star (bias corrected)	0.364454		
Theta hat	259.4333		
Theta star	563.1719		
nu hat	6.32918		
nu star	2.915628		
5% Approximate Chi Square Value	0.347704		
Adjusted Level of Significance	N/A		
Adjusted Chi Square Value	N/A		
Anderson-Darling Test Statistic	0.356377		
Anderson-Darling 5% Critical Value	0.669693		
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.	
Kolmogrov-Smirnov Test Statistic	0.291954		
Kolmogrov-Smirnov 5% Critical Value	0.404572		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level	
95% Approximate Gamma UCL	1721.099		
95% Adjusted Gamma UCL	N/A		
Lognormal Statistics			
Minimum of log data	3.218876		
Maximum of log data	6.381816		
Mean of log data	4.57296		
Standard Deviation of log data	1.467177		
Variance of log data	2.152608		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.920873		
Shapiro-Wilk 5% Critical Value	0.748		
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level	
MLE Mean	284.0822		
MLE Standard Deviation	783.5357		
MLE Coefficient of Variation	2.75813		
MLE Skewness	29.25626		
MLE Median	96.83026		
MLE 80% Quantile	334.5292		
MLE 90% Quantile	637.9641		
MLE 95% Quantile	1081.891		
MLE 99% Quantile	2938.379		
MVU Estimate of Median	72.79971		
MVU Estimate of Mean	196.2596		
MVU Estimate of Standard Deviation	252.1864		
MVU Estimate of SE of Mean	123.4627		
95% H-UCL	18289049		
95% Chebyshev (MVUE) UCL	734.4209		
97.5% Chebyshev (MVUE) UCL	967.2837		
99% Chebyshev (MVUE) UCL	1424.698		
Non-parametric Statistics			
95% CLT UCL	423.6301		
95% Adjusted-CLT UCL	541.246		
95% Modified-t UCL	536.0416		
95% Jackknife UCL	517.6959		
95% Chebyshev (Mean, Sd) UCL	783.9622		
97.5% Chebyshev (Mean, Sd) UCL	1034.371		
99% Chebyshev (Mean, Sd) UCL	1526.252		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	N/R	Not enough distinct data warning	
95% Bootstrap-t UCL	N/R	Not enough distinct data warning	
95% Hall's Bootstrap UCL	N/R	Not enough distinct data warning	
95% Percentile Bootstrap UCL	N/R	Not enough distinct data warning	
95% BCA Bootstrap UCL	N/R	Not enough distinct data warning	
Recommendations			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	517.6959	95% Student's-t UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value			
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\July 2004\Sed-SC08-f.xls		
Variable:	Mercury		
Raw Statistics			
Number of Observations	4		
Number of Missing Data	0		
Number of Valid Observations	4		
Number of Distinct Observations	3		
Minimum	0.0125		
Maximum	14		
Mean	3.75625		
Standard Deviation	6.845014		
Variance	46.85422		
Coefficient of Variation	1.8223		
Skewness	1.972743		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.680164		
Shapiro-Wilk 5% Critical Value	0.748		
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level	
95% Student's-t UCL	11.81065		
Gamma Statistics			
k hat	0.248981		
k star (bias corrected)	0.228912		
Theta hat	15.08651		
Theta star	16.40916		
nu hat	1.991846		
nu star	1.831295		
5% Approximate Chi Square Value	0.131916		
Adjusted Level of Significance	N/A		
Adjusted Chi Square Value	N/A		
Anderson-Darling Test Statistic	0.42267		
Anderson-Darling 5% Critical Value	0.718614		
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.	
Kolmogrov-Smirnov Test Statistic	0.311536		
Kolmogrov-Smirnov 5% Critical Value	0.421294		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level	
95% Approximate Gamma UCL	52.14549		
95% Adjusted Gamma UCL	N/A		
Lognormal Statistics			
Minimum of log data	-4.382027		
Maximum of log data	2.639057		
Mean of log data	-1.531249		
Standard Deviation of log data	3.463623		
Variance of log data	11.99668		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.858873		
Shapiro-Wilk 5% Critical Value	0.748		
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level	
MLE Mean	87.10304		
MLE Standard Deviation	35081.51		
MLE Coefficient of Variation	402.7587		
MLE Skewness	65334551		
MLE Median	0.216265		
MLE 80% Quantile	4.037041		
MLE 90% Quantile	18.53213		
MLE 95% Quantile	64.48355		
MLE 99% Quantile	682.0733		
MVU Estimate of Median	0.010204		
MVU Estimate of Mean	3.75552		
MVU Estimate of Standard Deviation	8.468132		
MVU Estimate of SE of Mean	3.540147		
95% H-UCL	3.99E+28		
95% Chebyshev (MVUE) UCL	19.18666		
97.5% Chebyshev (MVUE) UCL	25.86373		
99% Chebyshev (MVUE) UCL	38.97954		
Non-parametric Statistics			
95% CLT UCL	9.385773		
95% Adjusted-CLT UCL	12.99293		
95% Modified-t UCL	12.3733		
95% Jackknife UCL	11.81065		
95% Chebyshev (Mean, Sd) UCL	18.67461		
97.5% Chebyshev (Mean, Sd) UCL	25.1298		
99% Chebyshev (Mean, Sd) UCL	37.80977		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	N/R	Not enough distinct data warning	
95% Bootstrap-t UCL	N/R	Not enough distinct data warning	
95% Hall's Bootstrap UCL	N/R	Not enough distinct data warning	
95% Percentile Bootstrap UCL	N/R	Not enough distinct data warning	
95% BCA Bootstrap UCL	N/R	Not enough distinct data warning	
Recommendations			
Human Inspection Recommended?	YES		
Appropriate Distribution	GAMMA		
1st Recommended UCL	52.14549	95% Approximate Gamma UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	YES	Recommended UCL exceeds the maximum data value	
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\July 2004\Sed-SC08-f.xls		
Variable:	Vanadium		
Raw Statistics			
Number of Observations	4		
Number of Missing Data	0		
Number of Valid Observations	4		
Number of Distinct Observations	4		
Minimum	1.45		
Maximum	66.9		
Mean	20.4625		
Standard Deviation	31.3534		
Variance	983.0356		
Coefficient of Variation	1.532237		
Skewness	1.856771		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.740715		
Shapiro-Wilk 5% Critical Value	0.748		
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level	
95% Student's-t UCL	57.35547		
Gamma Statistics			
k hat	0.544115		
k star (bias corrected)	0.302695		
Theta hat	37.60694		
Theta star	67.60096		
nu hat	4.352919		
nu star	2.421563		
5% Approximate Chi Square Value	0.223832		
Adjusted Level of Significance	N/A		
Adjusted Chi Square Value	N/A		
Anderson-Darling Test Statistic	0.434376		
Anderson-Darling 5% Critical Value	0.679038		
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.	
Kolmogrov-Smirnov Test Statistic	0.3077		
Kolmogrov-Smirnov 5% Critical Value	0.40933		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level	
95% Approximate Gamma UCL	221.3768		
95% Adjusted Gamma UCL	N/A		
Lognormal Statistics			
Minimum of log data	0.371564		
Maximum of log data	4.203199		
Mean of log data	1.866284		
Standard Deviation of log data	1.844997		
Variance of log data	3.404016		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.870664		
Shapiro-Wilk 5% Critical Value	0.748		
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level	
MLE Mean	35.45596		
MLE Standard Deviation	191.2147		
MLE Coefficient of Variation	5.39302		
MLE Skewness	173.0332		
MLE Median	6.464228		
MLE 80% Quantile	30.73206		
MLE 90% Quantile	69.20723		
MLE 95% Quantile	134.4651		
MLE 99% Quantile	472.3629		
MVU Estimate of Median	4.044192		
MVU Estimate of Mean	18.51786		
MVU Estimate of Standard Deviation	28.23291		
MVU Estimate of SE of Mean	13.54562		
95% H-UCL	1.37E+09		
95% Chebyshev (MVUE) UCL	77.56184		
97.5% Chebyshev (MVUE) UCL	103.1102		
99% Chebyshev (MVUE) UCL	153.2951		
Non-parametric Statistics			
95% CLT UCL	46.24838		
95% Adjusted-CLT UCL	61.79955		
95% Modified-t UCL	59.78114		
95% Jackknife UCL	57.35547		
95% Chebyshev (Mean, Sd) UCL	88.79565		
97.5% Chebyshev (Mean, Sd) UCL	118.3635		
99% Chebyshev (Mean, Sd) UCL	176.4437		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	N/R	Not enough distinct data warning	
95% Bootstrap-t UCL	N/R	Not enough distinct data warning	
95% Hall's Bootstrap UCL	N/R	Not enough distinct data warning	
95% Percentile Bootstrap UCL	N/R	Not enough distinct data warning	
95% BCA Bootstrap UCL	N/R	Not enough distinct data warning	
Recommendations			
Human Inspection Recommended?	YES		
Appropriate Distribution	GAMMA		
1st Recommended UCL	221.3768	95% Approximate Gamma UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	YES	Recommended UCL exceeds the maximum data value	
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\July 2004\Sed-SC08-f.xls		
Variable:	Zinc		
Raw Statistics			
Number of Observations	4		
Number of Missing Data	0		
Number of Valid Observations	4		
Number of Distinct Observations	4		
Minimum	43		
Maximum	2650		
Mean	859.25		
Standard Deviation	1229.851		
Variance	1512534		
Coefficient of Variation	1.431308		
Skewness	1.680837		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.791254		
Shapiro-Wilk 5% Critical Value	0.748		
5% Normality Test Result	NORMAL	Data are normal at 5% significance level	
95% Student's-t UCL	2306.393		
Gamma Statistics			
k hat	0.535009		
k star (bias corrected)	0.300419		
Theta hat	1606.048		
Theta star	2860.173		
nu hat	4.280072		
nu star	2.403351		
5% Approximate Chi Square Value	0.219989		
Adjusted Level of Significance	N/A		
Adjusted Chi Square Value	N/A		
Anderson-Darling Test Statistic	0.359423		
Anderson-Darling 5% Critical Value	0.679424		
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.	
Kolmogrov-Smirnov Test Statistic	0.301909		
Kolmogrov-Smirnov 5% Critical Value	0.409522		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level	
95% Approximate Gamma UCL	9387.216		
95% Adjusted Gamma UCL	N/A		
Lognormal Statistics			
Minimum of log data	3.7612		
Maximum of log data	7.882315		
Mean of log data	5.581123		
Standard Deviation of log data	1.959234		
Variance of log data	3.838598		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.905034		
Shapiro-Wilk 5% Critical Value	0.748		
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level	
MLE Mean	1808.805		
MLE Standard Deviation	12195.73		
MLE Coefficient of Variation	6.742425		
MLE Skewness	326.7399		
MLE Median	265.3694		
MLE 80% Quantile	1389.467		
MLE 90% Quantile	3290.315		
MLE 95% Quantile	6661.252		
MLE 99% Quantile	25293.46		
MVU Estimate of Median	155.1601		
MVU Estimate of Mean	850.6517		
MVU Estimate of Standard Deviation	1352.77		
MVU Estimate of SE of Mean	644.259		
95% H-UCL	6.42E+11		
95% Chebyshev (MVUE) UCL	3658.912		
97.5% Chebyshev (MVUE) UCL	4874.048		
99% Chebyshev (MVUE) UCL	7260.948		
Non-parametric Statistics			
95% CLT UCL	1870.713		
95% Adjusted-CLT UCL	2422.916		
95% Modified-t UCL	2392.526		
95% Jackknife UCL	2306.393		
95% Chebyshev (Mean, Sd) UCL	3539.649		
97.5% Chebyshev (Mean, Sd) UCL	4699.459		
99% Chebyshev (Mean, Sd) UCL	6977.683		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	N/R	Not enough distinct data warning	
95% Bootstrap-t UCL	N/R	Not enough distinct data warning	
95% Hall's Bootstrap UCL	N/R	Not enough distinct data warning	
95% Percentile Bootstrap UCL	N/R	Not enough distinct data warning	
95% BCA Bootstrap UCL	N/R	Not enough distinct data warning	
Recommendations			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	2306.393	95% Student's-t UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value			
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\July 2004\Sed-SC09-f.xls		
Variable:	Arsenic		
Raw Statistics			
Number of Observations	4		
Number of Missing Data	0		
Number of Valid Observations	4		
Number of Distinct Observations	4		
Minimum	31		
Maximum	89		
Mean	48		
Standard Deviation	27.62849		
Variance	763.3333		
Coefficient of Variation	0.575593		
Skewness	1.87769		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.741211		
Shapiro-Wilk 5% Critical Value	0.748		
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level	
95% Student's-t UCL	80.50993		
Gamma Statistics			
k hat	5.067954		
k star (bias corrected)	1.433655		
Theta hat	9.471278		
Theta star	33.48085		
nu hat	40.54363		
nu star	11.46924		
5% Approximate Chi Square Value	4.878582		
Adjusted Level of Significance	N/A		
Adjusted Chi Square Value	N/A		
Anderson-Darling Test Statistic	0.605446		
Anderson-Darling 5% Critical Value	0.659004		
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.	
Kolmogrov-Smirnov Test Statistic	0.347748		
Kolmogrov-Smirnov 5% Critical Value	0.395877		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level	
95% Approximate Gamma UCL	112.845		
95% Adjusted Gamma UCL	N/A		
Lognormal Statistics			
Minimum of log data	3.433987		
Maximum of log data	4.488636		
Mean of log data	3.76931		
Standard Deviation of log data	0.492781		
Variance of log data	0.242833		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.797411		
Shapiro-Wilk 5% Critical Value	0.748		
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level	
MLE Mean	48.94641		
MLE Standard Deviation	25.66096		
MLE Coefficient of Variation	0.524266		
MLE Skewness	1.716897		
MLE Median	43.35013		
MLE 80% Quantile	65.74012		
MLE 90% Quantile	81.65743		
MLE 95% Quantile	97.50794		
MLE 99% Quantile	136.3899		
MVU Estimate of Median	42.04621		
MVU Estimate of Mean	47.40695		
MVU Estimate of Standard Deviation	22.94984		
MVU Estimate of SE of Mean	11.46989		
95% H-UCL	184.3331		
95% Chebyshev (MVUE) UCL	97.40305		
97.5% Chebyshev (MVUE) UCL	119.0364		
99% Chebyshev (MVUE) UCL	161.5309		
Non-parametric Statistics			
95% CLT UCL	70.72241		
95% Adjusted-CLT UCL	84.58044		
95% Modified-t UCL	82.67151		
95% Jackknife UCL	80.50993		
95% Chebyshev (Mean, Sd) UCL	108.2149		
97.5% Chebyshev (Mean, Sd) UCL	134.2699		
99% Chebyshev (Mean, Sd) UCL	185.45		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	N/R	Not enough distinct data warning	
95% Bootstrap-t UCL	N/R	Not enough distinct data warning	
95% Hall's Bootstrap UCL	N/R	Not enough distinct data warning	
95% Percentile Bootstrap UCL	N/R	Not enough distinct data warning	
95% BCA Bootstrap UCL	N/R	Not enough distinct data warning	
Recommendations			
Human Inspection Recommended?	YES		
Appropriate Distribution	GAMMA		
1st Recommended UCL	112.845	95% Approximate Gamma UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	YES	Recommended UCL exceeds the maximum data value	
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\July 2004\Sed-SC09-f.xls		
Variable:	Mercury		
Raw Statistics			
Number of Observations	4		
Number of Missing Data	0		
Number of Valid Observations	4		
Number of Distinct Observations	4		
Minimum	0.28		
Maximum	1.2		
Mean	0.5625		
Standard Deviation	0.428048		
Variance	0.183225		
Coefficient of Variation	0.760974		
Skewness	1.913528		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.738789		
Shapiro-Wilk 5% Critical Value	0.748		
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level	
95% Student's-t UCL	1.066176		
Gamma Statistics			
k hat	3.014608		
k star (bias corrected)	0.920319		
Theta hat	0.186591		
Theta star	0.611201		
nu hat	24.11687		
nu star	7.36255		
5% Approximate Chi Square Value	2.371043		
Adjusted Level of Significance	N/A		
Adjusted Chi Square Value	N/A		
Anderson-Darling Test Statistic	0.588899		
Anderson-Darling 5% Critical Value	0.659402		
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.	
Kolmogrov-Smirnov Test Statistic	0.391328		
Kolmogrov-Smirnov 5% Critical Value	0.396554		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level	
95% Approximate Gamma UCL	1.746672		
95% Adjusted Gamma UCL	N/A		
Lognormal Statistics			
Minimum of log data	-1.272966		
Maximum of log data	0.182322		
Mean of log data	-0.750297		
Standard Deviation of log data	0.64032		
Variance of log data	0.410009		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.834508		
Shapiro-Wilk 5% Critical Value	0.748		
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level	
MLE Mean	0.579672		
MLE Standard Deviation	0.412681		
MLE Coefficient of Variation	0.711921		
MLE Skewness	2.496588		
MLE Median	0.472226		
MLE 80% Quantile	0.811211		
MLE 90% Quantile	1.075208		
MLE 95% Quantile	1.353954		
MLE 99% Quantile	2.094023		
MVU Estimate of Median	0.448394		
MVU Estimate of Mean	0.548256		
MVU Estimate of Standard Deviation	0.340853		
MVU Estimate of SE of Mean	0.170225		
95% H-UCL	5.105791		
95% Chebyshev (MVUE) UCL	1.290248		
97.5% Chebyshev (MVUE) UCL	1.611309		
99% Chebyshev (MVUE) UCL	2.24197		
Non-parametric Statistics			
95% CLT UCL	0.914538		
95% Adjusted-CLT UCL	1.133338		
95% Modified-t UCL	1.100304		
95% Jackknife UCL	1.066176		
95% Chebyshev (Mean, Sd) UCL	1.495409		
97.5% Chebyshev (Mean, Sd) UCL	1.899079		
99% Chebyshev (Mean, Sd) UCL	2.692011		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	N/R	Not enough distinct data warning	
95% Bootstrap-t UCL	N/R	Not enough distinct data warning	
95% Hall's Bootstrap UCL	N/R	Not enough distinct data warning	
95% Percentile Bootstrap UCL	N/R	Not enough distinct data warning	
95% BCA Bootstrap UCL	N/R	Not enough distinct data warning	
Recommendations			
Human Inspection Recommended?	YES		
Appropriate Distribution	GAMMA		
1st Recommended UCL	1.746672	95% Approximate Gamma UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	YES	Recommended UCL exceeds the maximum data value	
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\July 2004\Sed-SC10-f.xls		
Variable:	Arsenic		
Raw Statistics			
Number of Observations	4		
Number of Missing Data	0		
Number of Valid Observations	4		
Number of Distinct Observations	4		
Minimum	9.5		
Maximum	67		
Mean	26.875		
Standard Deviation	27.2714		
Variance	743.7292		
Coefficient of Variation	1.01475		
Skewness	1.786375		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.766651		
Shapiro-Wilk 5% Critical Value	0.748		
5% Normality Test Result	NORMAL		Data are normal at 5% significance level
95% Student's-t UCL	58.96475		
Gamma Statistics			
k hat	1.615289		
k star (bias corrected)	0.570489		
Theta hat	16.63789		
Theta star	47.10872		
nu hat	12.92231		
nu star	4.563911		
5% Approximate Chi Square Value	0.955962		
Adjusted Level of Significance	N/A		
Adjusted Chi Square Value	N/A		
Anderson-Darling Test Statistic	0.480124		
Anderson-Darling 5% Critical Value	0.66195		
Anderson-Darling 5% Gamma Test Result	AD GAMMA		Data follow gamma distribution at 5% significance level.
Kolmogrov-Smirnov Test Statistic	0.287856		
Kolmogrov-Smirnov 5% Critical Value	0.399123		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA		Data follow gamma distribution at 5% significance level
5% Gamma Test Result	GAMMA		Data follow gamma distribution at 5% significance level
95% Approximate Gamma UCL	128.3055		
95% Adjusted Gamma UCL	N/A		
Lognormal Statistics			
Minimum of log data	2.251292		
Maximum of log data	4.204693		
Mean of log data	2.950773		
Standard Deviation of log data	0.911139		
Variance of log data	0.830175		
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.863875		
Shapiro-Wilk 5% Critical Value	0.748		
5% Lognormality Test Result	LOGNORMAL		Data are lognormal at 5% significance level
MLE Mean	28.9584		
MLE Standard Deviation	32.93781		
MLE Coefficient of Variation	1.137418		
MLE Skewness	4.883755		
MLE Median	19.12073		
MLE 80% Quantile	41.2927		
MLE 90% Quantile	61.65702		
MLE 95% Quantile	85.59247		
MLE 99% Quantile	159.1876		
MVU Estimate of Median	17.1974		
MVU Estimate of Mean	25.65463		
MVU Estimate of Standard Deviation	22.07159		
MVU Estimate of SE of Mean	10.9883		
95% H-UCL	2169.651		
95% Chebyshev (MVUE) UCL	73.55151		
97.5% Chebyshev (MVUE) UCL	94.27652		
99% Chebyshev (MVUE) UCL	134.9868		
Non-parametric Statistics			
95% CLT UCL	49.30373		
95% Adjusted-CLT UCL	62.31742		
95% Modified-t UCL	60.99463		
95% Jackknife UCL	58.96475		
95% Chebyshev (Mean, Sd) UCL	86.31163		
97.5% Chebyshev (Mean, Sd) UCL	112.0299		
99% Chebyshev (Mean, Sd) UCL	162.5485		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	N/R		Not enough distinct data warning
95% Bootstrap-t UCL	N/R		Not enough distinct data warning
95% Hall's Bootstrap UCL	N/R		Not enough distinct data warning
95% Percentile Bootstrap UCL	N/R		Not enough distinct data warning
95% BCA Bootstrap UCL	N/R		Not enough distinct data warning
Recommendations			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	58.96475		95% Student's-t UCL
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value			
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\July 2004\Sed-SC11-f.xls		
Variable:	Arsenic		
Raw Statistics			
Number of Observations	4		
Number of Missing Data	0		
Number of Valid Observations	4		
Number of Distinct Observations	3		
Minimum	97		
Maximum	110		
Mean	100.75		
Standard Deviation	6.238322		
Variance	38.91667		
Coefficient of Variation	0.061919		
Skewness	1.869017		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.735883		
Shapiro-Wilk 5% Critical Value	0.748		
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level	
95% Student's-t UCL	108.0905		
Gamma Statistics			
k hat	360.7459		
k star (bias corrected)	90.35313		
Theta hat	0.279282		
Theta star	1.115069		
nu hat	2885.967		
nu star	722.8251		
5% Approximate Chi Square Value	661.4296		
Adjusted Level of Significance	N/A		
Adjusted Chi Square Value	N/A		
Anderson-Darling Test Statistic	0.686216		
Anderson-Darling 5% Critical Value	0.65652		
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level	
Kolmogrov-Smirnov Test Statistic	0.373339		
Kolmogrov-Smirnov 5% Critical Value	0.39399		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	APPROX GAMMA	Data follow approximate gamma distribution at 5% significance level	
95% Approximate Gamma UCL	110.1019		
95% Adjusted Gamma UCL	N/A		
Lognormal Statistics			
Minimum of log data	4.574711		
Maximum of log data	4.70048		
Mean of log data	4.611256		
Standard Deviation of log data	0.060256		
Variance of log data	0.003631		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.74118		
Shapiro-Wilk 5% Critical Value	0.748		
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level	
MLE Mean	100.7932		
MLE Standard Deviation	6.078936		
MLE Coefficient of Variation	0.060311		
MLE Skewness	0.181152		
MLE Median	100.6104		
MLE 80% Quantile	105.8658		
MLE 90% Quantile	108.7101		
MLE 95% Quantile	111.094		
MLE 99% Quantile	115.7476		
MVU Estimate of Median	100.5647		
MVU Estimate of Mean	100.7474		
MVU Estimate of Standard Deviation	6.069008		
MVU Estimate of SE of Mean	3.034504		
95% H-UCL	N/A		
95% Chebyshev (MVUE) UCL	113.9745		
97.5% Chebyshev (MVUE) UCL	119.6979		
99% Chebyshev (MVUE) UCL	130.9404		
Non-parametric Statistics			
95% CLT UCL	105.8806		
95% Adjusted-CLT UCL	108.9952		
95% Modified-t UCL	108.5763		
95% Jackknife UCL	108.0905		
95% Chebyshev (Mean, Sd) UCL	114.3461		
97.5% Chebyshev (Mean, Sd) UCL	120.2292		
99% Chebyshev (Mean, Sd) UCL	131.7853		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	N/R	Not enough distinct data warning	
95% Bootstrap-t UCL	N/R	Not enough distinct data warning	
95% Hall's Bootstrap UCL	N/R	Not enough distinct data warning	
95% Percentile Bootstrap UCL	N/R	Not enough distinct data warning	
95% BCA Bootstrap UCL	N/R	Not enough distinct data warning	
Recommendations			
Human Inspection Recommended?	YES		
Appropriate Distribution	GAMMA		
1st Recommended UCL	110.1019	95% Approximate Gamma UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	YES	Recommended UCL exceeds the maximum data value	
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\July 2004\Sed-SC11-f.xls		
Variable:	Cadmium		
Raw Statistics			
Number of Observations	4		
Number of Missing Data	0		
Number of Valid Observations	4		
Number of Distinct Observations	4		
Minimum	4.2		
Maximum	7.2		
Mean	5.9		
Standard Deviation	1.249		
Variance	1.56		
Coefficient of Variation	0.211695		
Skewness	-0.91971		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.937951		
Shapiro-Wilk 5% Critical Value	0.748		
5% Normality Test Result	NORMAL	Data are normal at 5% significance level	
95% Student's-t UCL	7.369675		
Gamma Statistics			
k hat	27.07082		
k star (bias corrected)	6.934371		
Theta hat	0.217947		
Theta star	0.850834		
nu hat	216.5665		
nu star	55.47497		
5% Approximate Chi Square Value	39.35541		
Adjusted Level of Significance	N/A		
Adjusted Chi Square Value	N/A		
Anderson-Darling Test Statistic	0.365317		
Anderson-Darling 5% Critical Value	0.656819		
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.	
Kolmogrov-Smirnov Test Statistic	0.310298		
Kolmogrov-Smirnov 5% Critical Value	0.394141		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level	
95% Approximate Gamma UCL	8.316577		
95% Adjusted Gamma UCL	N/A		
Lognormal Statistics			
Minimum of log data	1.435085		
Maximum of log data	1.974081		
Mean of log data	1.756369		
Standard Deviation of log data	0.228417		
Variance of log data	0.052174		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.902733		
Shapiro-Wilk 5% Critical Value	0.748		
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level	
MLE Mean	5.944437		
MLE Standard Deviation	1.375717		
MLE Coefficient of Variation	0.231429		
MLE Skewness	0.706683		
MLE Median	5.791368		
MLE 80% Quantile	7.024339		
MLE 90% Quantile	7.767006		
MLE 95% Quantile	8.432682		
MLE 99% Quantile	9.851927		
MVU Estimate of Median	5.753672		
MVU Estimate of Mean	5.905346		
MVU Estimate of Standard Deviation	1.343643		
MVU Estimate of SE of Mean	0.671807		
95% H-UCL	8.685469		
95% Chebyshev (MVUE) UCL	8.833685		
97.5% Chebyshev (MVUE) UCL	10.10078		
99% Chebyshev (MVUE) UCL	12.58974		
Non-parametric Statistics			
95% CLT UCL	6.927211		
95% Adjusted-CLT UCL	6.620355		
95% Modified-t UCL	7.321812		
95% Jackknife UCL	7.369675		
95% Chebyshev (Mean, Sd) UCL	8.622132		
97.5% Chebyshev (Mean, Sd) UCL	9.8		
99% Chebyshev (Mean, Sd) UCL	12.11369		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	N/R	Not enough distinct data warning	
95% Bootstrap-t UCL	N/R	Not enough distinct data warning	
95% Hall's Bootstrap UCL	N/R	Not enough distinct data warning	
95% Percentile Bootstrap UCL	N/R	Not enough distinct data warning	
95% BCA Bootstrap UCL	N/R	Not enough distinct data warning	
Recommendations			
Human Inspection Recommended?	YES		
Appropriate Distribution	NORMAL		
1st Recommended UCL	7.369675	95% Student's-t UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	YES	Recommended UCL exceeds the maximum data value	
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\July 2004\Sed-SC11-f.xls		
Variable:	Copper		
Raw Statistics			
Number of Observations	4		
Number of Missing Data	0		
Number of Valid Observations	4		
Number of Distinct Observations	4		
Minimum	215		
Maximum	340		
Mean	261.25		
Standard Deviation	54.52446		
Variance	2972.917		
Coefficient of Variation	0.208706		
Skewness	1.556363		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.859956		
Shapiro-Wilk 5% Critical Value	0.748		
5% Normality Test Result	NORMAL	Data are normal at 5% significance level	
95% Student's-t UCL	325.4079		
Gamma Statistics			
k hat	33.37312		
k star (bias corrected)	8.509947		
Theta hat	7.828156		
Theta star	30.69937		
nu hat	266.985		
nu star	68.07957		
5% Approximate Chi Square Value	50.08518		
Adjusted Level of Significance	N/A		
Adjusted Chi Square Value	N/A		
Anderson-Darling Test Statistic	0.417104		
Anderson-Darling 5% Critical Value	0.656577		
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.	
Kolmogrov-Smirnov Test Statistic	0.3271		
Kolmogrov-Smirnov 5% Critical Value	0.394053		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level	
95% Approximate Gamma UCL	355.1108		
95% Adjusted Gamma UCL	N/A		
Lognormal Statistics			
Minimum of log data	5.370638		
Maximum of log data	5.828946		
Mean of log data	5.550421		
Standard Deviation of log data	0.196304		
Variance of log data	0.038535		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.89573		
Shapiro-Wilk 5% Critical Value	0.748		
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level	
MLE Mean	262.3524		
MLE Standard Deviation	52.00105		
MLE Coefficient of Variation	0.198211		
MLE Skewness	0.602419		
MLE Median	257.3458		
MLE 80% Quantile	303.7782		
MLE 90% Quantile	331.1833		
MLE 95% Quantile	355.4346		
MLE 99% Quantile	406.2727		
MVU Estimate of Median	256.108		
MVU Estimate of Mean	261.0808		
MVU Estimate of Standard Deviation	51.10396		
MVU Estimate of SE of Mean	25.55168		
95% H-UCL	357.5129		
95% Chebyshev (MVUE) UCL	372.458		
97.5% Chebyshev (MVUE) UCL	420.651		
99% Chebyshev (MVUE) UCL	515.3168		
Non-parametric Statistics			
95% CLT UCL	306.0924		
95% Adjusted-CLT UCL	328.7609		
95% Modified-t UCL	328.9438		
95% Jackknife UCL	325.4079		
95% Chebyshev (Mean, Sd) UCL	380.0833		
97.5% Chebyshev (Mean, Sd) UCL	431.5026		
99% Chebyshev (Mean, Sd) UCL	532.5058		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	N/R	Not enough distinct data warning	
95% Bootstrap-t UCL	N/R	Not enough distinct data warning	
95% Hall's Bootstrap UCL	N/R	Not enough distinct data warning	
95% Percentile Bootstrap UCL	N/R	Not enough distinct data warning	
95% BCA Bootstrap UCL	N/R	Not enough distinct data warning	
Recommendations			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	325.4079	95% Student's-t UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value			
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\July 2004\Sed-SC11-f.xls		
Variable:	Lead		
Raw Statistics			
Number of Observations	4		
Number of Missing Data	0		
Number of Valid Observations	4		
Number of Distinct Observations	4		
Minimum	250		
Maximum	1200		
Mean	577.5		
Standard Deviation	424.2935		
Variance	180025		
Coefficient of Variation	0.734707		
Skewness	1.735818		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.813663		
Shapiro-Wilk 5% Critical Value	0.748		
5% Normality Test Result	NORMAL	Data are normal at 5% significance level	
95% Student's-t UCL	1076.758		
Gamma Statistics			
k hat	3.011028		
k star (bias corrected)	0.919424		
Theta hat	191.795		
Theta star	628.1109		
nu hat	24.08822		
nu star	7.355389		
5% Approximate Chi Square Value	2.367031		
Adjusted Level of Significance	N/A		
Adjusted Chi Square Value	N/A		
Anderson-Darling Test Statistic	0.396842		
Anderson-Darling 5% Critical Value	0.659404		
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.	
Kolmogrov-Smirnov Test Statistic	0.322842		
Kolmogrov-Smirnov 5% Critical Value	0.396556		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level	
95% Approximate Gamma UCL	1794.542		
95% Adjusted Gamma UCL	N/A		
Lognormal Statistics			
Minimum of log data	5.521461		
Maximum of log data	7.090077		
Mean of log data	6.183557		
Standard Deviation of log data	0.658227		
Variance of log data	0.433262		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.933277		
Shapiro-Wilk 5% Critical Value	0.748		
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level	
MLE Mean	601.9585		
MLE Standard Deviation	443.2806		
MLE Coefficient of Variation	0.736397		
MLE Skewness	2.608526		
MLE Median	484.7131		
MLE 80% Quantile	845.3568		
MLE 90% Quantile	1129.329		
MLE 95% Quantile	1431.303		
MLE 99% Quantile	2240.81		
MVU Estimate of Median	458.8853		
MVU Estimate of Mean	567.395		
MVU Estimate of Standard Deviation	362.0365		
MVU Estimate of SE of Mean	180.7802		
95% H-UCL	5967.76		
95% Chebyshev (MVUE) UCL	1355.398		
97.5% Chebyshev (MVUE) UCL	1696.367		
99% Chebyshev (MVUE) UCL	2366.135		
Non-parametric Statistics			
95% CLT UCL	926.4504		
95% Adjusted-CLT UCL	1123.19		
95% Modified-t UCL	1107.446		
95% Jackknife UCL	1076.758		
95% Chebyshev (Mean, Sd) UCL	1502.226		
97.5% Chebyshev (Mean, Sd) UCL	1902.356		
99% Chebyshev (Mean, Sd) UCL	2688.334		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	N/R	Not enough distinct data warning	
95% Bootstrap-t UCL	N/R	Not enough distinct data warning	
95% Hall's Bootstrap UCL	N/R	Not enough distinct data warning	
95% Percentile Bootstrap UCL	N/R	Not enough distinct data warning	
95% BCA Bootstrap UCL	N/R	Not enough distinct data warning	
Recommendations			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	1076.758	95% Student's-t UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value			
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\July 2004\Sed-SC11-f.xls		
Variable:	Manganese		
<b>Raw Statistics</b>			
Number of Observations	4		
Number of Missing Data	0		
Number of Valid Observations	4		
Number of Distinct Observations	4		
Minimum	440		
Maximum	630		
Mean	518.75		
Standard Deviation	81.8917		
Variance	6706.25		
Coefficient of Variation	0.157864		
Skewness	1.008253		
Too Few Distinct Observations?	NO		
<b>Normal Statistics</b>			
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.948151		
Shapiro-Wilk 5% Critical Value	0.748		
5% Normality Test Result	NORMAL		Data are normal at 5% significance level
95% Student's-t UCL	615.1105		
<b>Gamma Statistics</b>			
k hat	55.70726		
k star (bias corrected)	14.09348		
Theta hat	9.312072		
Theta star	36.8078		
nu hat	445.6581		
nu star	112.7479		
5% Approximate Chi Square Value	89.23143		
Adjusted Level of Significance	N/A		
Adjusted Chi Square Value	N/A		
Anderson-Darling Test Statistic	0.255556		
Anderson-Darling 5% Critical Value	0.656006		
Anderson-Darling 5% Gamma Test Result	AD GAMMA		Data follow gamma distribution at 5% significance level.
Kolmogrov-Smirnov Test Statistic	0.200934		
Kolmogrov-Smirnov 5% Critical Value	0.393839		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA		Data follow gamma distribution at 5% significance level
5% Gamma Test Result	GAMMA		Data follow gamma distribution at 5% significance level
95% Approximate Gamma UCL	655.4635		
95% Adjusted Gamma UCL	N/A		
<b>Lognormal Statistics</b>			
Minimum of log data	6.086775		
Maximum of log data	6.44572		
Mean of log data	6.24242		
Standard Deviation of log data	0.153522		
Variance of log data	0.023569		
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.968565		
Shapiro-Wilk 5% Critical Value	0.748		
5% Lognormality Test Result	LOGNORMAL		Data are lognormal at 5% significance level
MLE Mean	520.1953		
MLE Standard Deviation	80.33427		
MLE Coefficient of Variation	0.154431		
MLE Skewness	0.466976		
MLE Median	514.101		
MLE 80% Quantile	585.3124		
MLE 90% Quantile	626.216		
MLE 95% Quantile	661.8		
MLE 99% Quantile	734.7364		
MVU Estimate of Median	512.5877		
MVU Estimate of Mean	518.6569		
MVU Estimate of Standard Deviation	79.48493		
MVU Estimate of SE of Mean	39.74229		
95% H-UCL	652.8521		
95% Chebyshev (MVUE) UCL	691.8895		
97.5% Chebyshev (MVUE) UCL	766.8474		
99% Chebyshev (MVUE) UCL	914.0876		
<b>Non-parametric Statistics</b>			
95% CLT UCL	586.0999		
95% Adjusted-CLT UCL	608.1561		
95% Modified-t UCL	618.5508		
95% Jackknife UCL	615.1105		
95% Chebyshev (Mean, Sd) UCL	697.2288		
97.5% Chebyshev (Mean, Sd) UCL	774.4567		
99% Chebyshev (Mean, Sd) UCL	926.156		
<b>Bootstrap Statistics</b>			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	N/R		Not enough distinct data warning
95% Bootstrap-t UCL	N/R		Not enough distinct data warning
95% Hall's Bootstrap UCL	N/R		Not enough distinct data warning
95% Percentile Bootstrap UCL	N/R		Not enough distinct data warning
95% BCA Bootstrap UCL	N/R		Not enough distinct data warning
<b>Recommendations</b>			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	615.1105		95% Student's-t UCL
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value			
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\July 2004\Sed-SC11-f.xls		
Variable:	Mercury		
Raw Statistics			
Number of Observations	4		
Number of Missing Data	0		
Number of Valid Observations	4		
Number of Distinct Observations	3		
Minimum	1.7		
Maximum	2.2		
Mean	1.85		
Standard Deviation	0.238048		
Variance	0.056667		
Coefficient of Variation	0.128674		
Skewness	1.779179		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.763921		
Shapiro-Wilk 5% Critical Value	0.748		
5% Normality Test Result	NORMAL	Data are normal at 5% significance level	
95% Student's-t UCL	2.130106		
Gamma Statistics			
k hat	86.21735		
k star (bias corrected)	21.721		
Theta hat	0.021457		
Theta star	0.085171		
nu hat	689.7388		
nu star	173.768		
5% Approximate Chi Square Value	144.2766		
Adjusted Level of Significance	N/A		
Adjusted Chi Square Value	N/A		
Anderson-Darling Test Statistic	0.611537		
Anderson-Darling 5% Critical Value	0.65636		
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.	
Kolmogrov-Smirnov Test Statistic	0.335998		
Kolmogrov-Smirnov 5% Critical Value	0.393943		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level	
95% Approximate Gamma UCL	2.228156		
95% Adjusted Gamma UCL	N/A		
Lognormal Statistics			
Minimum of log data	0.530628		
Maximum of log data	0.788457		
Mean of log data	0.609375		
Standard Deviation of log data	0.122391		
Variance of log data	0.01498		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.7762		
Shapiro-Wilk 5% Critical Value	0.748		
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level	
MLE Mean	1.853109		
MLE Standard Deviation	0.227656		
MLE Coefficient of Variation	0.122851		
MLE Skewness	0.370406		
MLE Median	1.839282		
MLE 80% Quantile	2.039685		
MLE 90% Quantile	2.152538		
MLE 95% Quantile	2.249501		
MLE 99% Quantile	2.445028		
MVU Estimate of Median	1.83584		
MVU Estimate of Mean	1.849631		
MVU Estimate of Standard Deviation	0.226124		
MVU Estimate of SE of Mean	0.113062		
95% H-UCL	2.204662		
95% Chebyshev (MVUE) UCL	2.342457		
97.5% Chebyshev (MVUE) UCL	2.555703		
99% Chebyshev (MVUE) UCL	2.974583		
Non-parametric Statistics			
95% CLT UCL	2.045777		
95% Adjusted-CLT UCL	2.158914		
95% Modified-t UCL	2.147753		
95% Jackknife UCL	2.130106		
95% Chebyshev (Mean, Sd) UCL	2.368813		
97.5% Chebyshev (Mean, Sd) UCL	2.593303		
99% Chebyshev (Mean, Sd) UCL	3.034272		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	N/R	Not enough distinct data warning	
95% Bootstrap-t UCL	N/R	Not enough distinct data warning	
95% Hall's Bootstrap UCL	N/R	Not enough distinct data warning	
95% Percentile Bootstrap UCL	N/R	Not enough distinct data warning	
95% BCA Bootstrap UCL	N/R	Not enough distinct data warning	
Recommendations			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	2.130106	95% Student's-t UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value			
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\July 2004\Sed-SC11-f.xls		
Variable:	Vanadium		
Raw Statistics			
Number of Observations	4		
Number of Missing Data	0		
Number of Valid Observations	4		
Number of Distinct Observations	4		
Minimum	47.5		
Maximum	71		
Mean	58.125		
Standard Deviation	9.715752		
Variance	94.39583		
Coefficient of Variation	0.167153		
Skewness	0.672515		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.959583		
Shapiro-Wilk 5% Critical Value	0.748		
5% Normality Test Result	NORMAL	Data are normal at 5% significance level	
95% Student's-t UCL	69.55735		
Gamma Statistics			
k hat	48.73434		
k star (bias corrected)	12.35025		
Theta hat	1.192691		
Theta star	4.706382		
nu hat	389.8747		
nu star	98.80201		
5% Approximate Chi Square Value	76.86732		
Adjusted Level of Significance	N/A		
Adjusted Chi Square Value	N/A		
Anderson-Darling Test Statistic	0.263462		
Anderson-Darling 5% Critical Value	0.655989		
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.	
Kolmogrov-Smirnov Test Statistic	0.236934		
Kolmogrov-Smirnov 5% Critical Value	0.393838		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level	
95% Approximate Gamma UCL	74.71143		
95% Adjusted Gamma UCL	N/A		
Lognormal Statistics			
Minimum of log data	3.86073		
Maximum of log data	4.26268		
Mean of log data	4.052301		
Standard Deviation of log data	0.165077		
Variance of log data	0.02725		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.973478		
Shapiro-Wilk 5% Critical Value	0.748		
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level	
MLE Mean	58.3189		
MLE Standard Deviation	9.693078		
MLE Coefficient of Variation	0.166208		
MLE Skewness	0.503216		
MLE Median	57.52968		
MLE 80% Quantile	66.14116		
MLE 90% Quantile	71.12403		
MLE 95% Quantile	75.47889		
MLE 99% Quantile	84.45936		
MVU Estimate of Median	57.33392		
MVU Estimate of Mean	58.11938		
MVU Estimate of Standard Deviation	9.574648		
MVU Estimate of SE of Mean	4.787296		
95% H-UCL	74.75579		
95% Chebyshev (MVUE) UCL	78.98672		
97.5% Chebyshev (MVUE) UCL	88.01603		
99% Chebyshev (MVUE) UCL	105.7524		
Non-parametric Statistics			
95% CLT UCL	66.11549		
95% Adjusted-CLT UCL	67.86091		
95% Modified-t UCL	69.8296		
95% Jackknife UCL	69.55735		
95% Chebyshev (Mean, Sd) UCL	79.29999		
97.5% Chebyshev (Mean, Sd) UCL	88.46243		
99% Chebyshev (Mean, Sd) UCL	106.4603		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	N/R	Not enough distinct data warning	
95% Bootstrap-t UCL	N/R	Not enough distinct data warning	
95% Hall's Bootstrap UCL	N/R	Not enough distinct data warning	
95% Percentile Bootstrap UCL	N/R	Not enough distinct data warning	
95% BCA Bootstrap UCL	N/R	Not enough distinct data warning	
Recommendations			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	69.55735	95% Student's-t UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value			
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\July 2004\Sed-SC12-f.xls		
Variable:	Arsenic		
<b>Raw Statistics</b>			
Number of Observations	4		
Number of Missing Data	0		
Number of Valid Observations	4		
Number of Distinct Observations	3		
Minimum	100		
Maximum	130		
Mean	112.5		
Standard Deviation	15		
Variance	225		
Coefficient of Variation	0.133333		
Skewness	0.37037		
Too Few Distinct Observations?	NO		
<b>Normal Statistics</b>			
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.851201		
Shapiro-Wilk 5% Critical Value	0.748		
5% Normality Test Result	NORMAL		Data are normal at 5% significance level
95% Student's-t UCL	130.1502		
<b>Gamma Statistics</b>			
k hat	75.79118		
k star (bias corrected)	19.11446		
Theta hat	1.484342		
Theta star	5.88596		
nu hat	606.3295		
nu star	152.9157		
5% Approximate Chi Square Value	125.326		
Adjusted Level of Significance	N/A		
Adjusted Chi Square Value	N/A		
Anderson-Darling Test Statistic	0.476766		
Anderson-Darling 5% Critical Value	0.656239		
Anderson-Darling 5% Gamma Test Result	AD GAMMA		Data follow gamma distribution at 5% significance level.
Kolmogrov-Smirnov Test Statistic	0.333225		
Kolmogrov-Smirnov 5% Critical Value	0.393908		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA		Data follow gamma distribution at 5% significance level
5% Gamma Test Result	GAMMA		Data follow gamma distribution at 5% significance level
95% Approximate Gamma UCL	137.2661		
95% Adjusted Gamma UCL	N/A		
<b>Lognormal Statistics</b>			
Minimum of log data	4.60517		
Maximum of log data	4.867534		
Mean of log data	4.716342		
Standard Deviation of log data	0.132464		
Variance of log data	0.017547		
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.844742		
Shapiro-Wilk 5% Critical Value	0.748		
5% Lognormality Test Result	LOGNORMAL		Data are lognormal at 5% significance level
MLE Mean	112.7435		
MLE Standard Deviation	15.00015		
MLE Coefficient of Variation	0.133047		
MLE Skewness	0.401495		
MLE Median	111.7587		
MLE 80% Quantile	124.995		
MLE 90% Quantile	132.4966		
MLE 95% Quantile	138.9681		
MLE 99% Quantile	152.0869		
MVU Estimate of Median	111.5137		
MVU Estimate of Mean	112.4955		
MVU Estimate of Standard Deviation	14.88199		
MVU Estimate of SE of Mean	7.440976		
95% H-UCL	136.3981		
95% Chebyshev (MVUE) UCL	144.9299		
97.5% Chebyshev (MVUE) UCL	158.9644		
99% Chebyshev (MVUE) UCL	186.5323		
<b>Non-parametric Statistics</b>			
95% CLT UCL	124.8364		
95% Adjusted-CLT UCL	126.3205		
95% Modified-t UCL	130.3817		
95% Jackknife UCL	130.1502		
95% Chebyshev (Mean, Sd) UCL	145.1917		
97.5% Chebyshev (Mean, Sd) UCL	159.3375		
99% Chebyshev (Mean, Sd) UCL	187.1241		
<b>Bootstrap Statistics</b>			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	N/R		Not enough distinct data warning
95% Bootstrap-t UCL	N/R		Not enough distinct data warning
95% Hall's Bootstrap UCL	N/R		Not enough distinct data warning
95% Percentile Bootstrap UCL	N/R		Not enough distinct data warning
95% BCA Bootstrap UCL	N/R		Not enough distinct data warning
<b>Recommendations</b>			
Human Inspection Recommended?	YES		
Appropriate Distribution	NORMAL		
1st Recommended UCL	130.1502		95% Student's-t UCL
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	YES		Recommended UCL exceeds the maximum data value
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\July 2004\Sed-SC12-f.xls		
Variable:	Cadmium		
Raw Statistics			
Number of Observations	4		
Number of Missing Data	0		
Number of Valid Observations	4		
Number of Distinct Observations	3		
Minimum	9.3		
Maximum	11		
Mean	10.325		
Standard Deviation	0.830161		
Variance	0.689167		
Coefficient of Variation	0.080403		
Skewness	-0.578114		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.863234		
Shapiro-Wilk 5% Critical Value	0.748		
5% Normality Test Result	NORMAL	Data are normal at 5% significance level	
95% Student's-t UCL	11.30183		
Gamma Statistics			
k hat	202.5441		
k star (bias corrected)	50.8027		
Theta hat	0.050977		
Theta star	0.203237		
nu hat	1620.353		
nu star	406.4216		
5% Approximate Chi Square Value	360.681		
Adjusted Level of Significance	N/A		
Adjusted Chi Square Value	N/A		
Anderson-Darling Test Statistic	0.434322		
Anderson-Darling 5% Critical Value	0.65652		
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.	
Kolmogrov-Smirnov Test Statistic	0.324892		
Kolmogrov-Smirnov 5% Critical Value	0.39399		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level	
95% Approximate Gamma UCL	11.63439		
95% Adjusted Gamma UCL	N/A		
Lognormal Statistics			
Minimum of log data	2.230014		
Maximum of log data	2.397895		
Mean of log data	2.332098		
Standard Deviation of log data	0.081549		
Variance of log data	0.00665		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.864792		
Shapiro-Wilk 5% Critical Value	0.748		
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level	
MLE Mean	10.33383		
MLE Standard Deviation	0.844114		
MLE Coefficient of Variation	0.081685		
MLE Skewness	0.245599		
MLE Median	10.29952		
MLE 80% Quantile	11.03427		
MLE 90% Quantile	11.43739		
MLE 95% Quantile	11.77814		
MLE 99% Quantile	12.45074		
MVU Estimate of Median	10.29096		
MVU Estimate of Mean	10.32523		
MVU Estimate of Standard Deviation	0.841591		
MVU Estimate of SE of Mean	0.420795		
95% H-UCL	N/A		
95% Chebyshev (MVUE) UCL	12.15943		
97.5% Chebyshev (MVUE) UCL	12.95309		
99% Chebyshev (MVUE) UCL	14.51209		
Non-parametric Statistics			
95% CLT UCL	11.00775		
95% Adjusted-CLT UCL	10.87954		
95% Modified-t UCL	11.28184		
95% Jackknife UCL	11.30183		
95% Chebyshev (Mean, Sd) UCL	12.13429		
97.5% Chebyshev (Mean, Sd) UCL	12.91718		
99% Chebyshev (Mean, Sd) UCL	14.455		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	N/R	Not enough distinct data warning	
95% Bootstrap-t UCL	N/R	Not enough distinct data warning	
95% Hall's Bootstrap UCL	N/R	Not enough distinct data warning	
95% Percentile Bootstrap UCL	N/R	Not enough distinct data warning	
95% BCA Bootstrap UCL	N/R	Not enough distinct data warning	
Recommendations			
Human Inspection Recommended?	YES		
Appropriate Distribution	NORMAL		
1st Recommended UCL	11.30183	95% Student's-t UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	YES	Recommended UCL exceeds the maximum data value	
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\July 2004\Sed-SC12-f.xls		
Variable:	Copper		
Raw Statistics			
Number of Observations	4		
Number of Missing Data	0		
Number of Valid Observations	4		
Number of Distinct Observations	3		
Minimum	370		
Maximum	460		
Mean	397.5		
Standard Deviation	41.93249		
Variance	1758.333		
Coefficient of Variation	0.105491		
Skewness	1.922522		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.725152		
Shapiro-Wilk 5% Critical Value	0.748		
5% Normality Test Result	NOT NORMAL		Data not normal at 5% significance level
95% Student's-t UCL	446.8412		
Gamma Statistics			
k hat	127.4922		
k star (bias corrected)	32.03973		
Theta hat	3.117837		
Theta star	12.40647		
nu hat	1019.938		
nu star	256.3178		
5% Approximate Chi Square Value	220.2398		
Adjusted Level of Significance	N/A		
Adjusted Chi Square Value	N/A		
Anderson-Darling Test Statistic	0.737209		
Anderson-Darling 5% Critical Value	0.65652		
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA		Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.432589		
Kolmogrov-Smirnov 5% Critical Value	0.39399		
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA		Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA		Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	462.6154		
95% Adjusted Gamma UCL	N/A		
Lognormal Statistics			
Minimum of log data	5.913503		
Maximum of log data	6.131226		
Mean of log data	5.981268		
Standard Deviation of log data	0.10076		
Variance of log data	0.010153		
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.734991		
Shapiro-Wilk 5% Critical Value	0.748		
5% Lognormality Test Result	NOT LOGNORMAL		Data not lognormal at 5% significance level
MLE Mean	397.9571		
MLE Standard Deviation	40.20001		
MLE Coefficient of Variation	0.101016		
MLE Skewness	0.304079		
MLE Median	395.9421		
MLE 80% Quantile	431.1301		
MLE 90% Quantile	450.674		
MLE 95% Quantile	467.3216		
MLE 99% Quantile	500.5137		
MVU Estimate of Median	395.4398		
MVU Estimate of Mean	397.4513		
MVU Estimate of Standard Deviation	40.0166		
MVU Estimate of SE of Mean	20.00829		
95% H-UCL	457.4406		
95% Chebyshev (MVUE) UCL	484.6653		
97.5% Chebyshev (MVUE) UCL	522.403		
99% Chebyshev (MVUE) UCL	596.5312		
Non-parametric Statistics			
95% CLT UCL	431.9864		
95% Adjusted-CLT UCL	453.5213		
95% Modified-t UCL	450.2002		
95% Jackknife UCL	446.8412		
95% Chebyshev (Mean, Sd) UCL	488.8897		
97.5% Chebyshev (Mean, Sd) UCL	528.4341		
99% Chebyshev (Mean, Sd) UCL	606.1115		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	N/R		Not enough distinct data warning
95% Bootstrap-t UCL	N/R		Not enough distinct data warning
95% Hall's Bootstrap UCL	N/R		Not enough distinct data warning
95% Percentile Bootstrap UCL	N/R		Not enough distinct data warning
95% BCA Bootstrap UCL	N/R		Not enough distinct data warning
Recommendations			
Human Inspection Recommended?	YES		Users must select one of the recommended UCLS
Appropriate Distribution	NON-PARAMETRIC		
1st Recommended UCL	446.8412		95% Student's-t UCL
2nd Recommended UCL	450.2002		95% Modified-t UCL
3rd Recommended UCL			
Recommended UCL > Max Data Value			
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\July 2004\Sed-SC12-f.xls		
Variable:	Lead		
Raw Statistics			
Number of Observations	4		
Number of Missing Data	0		
Number of Valid Observations	4		
Number of Distinct Observations	4		
Minimum	520		
Maximum	1300		
Mean	955		
Standard Deviation	361.6167		
Variance	130766.7		
Coefficient of Variation	0.378656		
Skewness	-0.42671		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.92716		
Shapiro-Wilk 5% Critical Value	0.748		
5% Normality Test Result	NORMAL	Data are normal at 5% significance level	
95% Student's-t UCL	1380.508		
Gamma Statistics			
k hat	8.220863		
k star (bias corrected)	2.221882		
Theta hat	116.1678		
Theta star	429.8157		
nu hat	65.76691		
nu star	17.77506		
5% Approximate Chi Square Value	9.22714		
Adjusted Level of Significance	N/A		
Adjusted Chi Square Value	N/A		
Anderson-Darling Test Statistic	0.330166		
Anderson-Darling 5% Critical Value	0.657787		
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.	
Kolmogrov-Smirnov Test Statistic	0.286684		
Kolmogrov-Smirnov 5% Critical Value	0.395272		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level	
95% Approximate Gamma UCL	1839.701		
95% Adjusted Gamma UCL	N/A		
Lognormal Statistics			
Minimum of log data	6.253829		
Maximum of log data	7.17012		
Mean of log data	6.799659		
Standard Deviation of log data	0.421406		
Variance of log data	0.177583		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.913647		
Shapiro-Wilk 5% Critical Value	0.748		
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level	
MLE Mean	980.8808		
MLE Standard Deviation	432.3978		
MLE Coefficient of Variation	0.440826		
MLE Skewness	1.408143		
MLE Median	897.5414		
MLE 80% Quantile	1281.45		
MLE 90% Quantile	1542.51		
MLE 95% Quantile	1795.202		
MLE 99% Quantile	2391.917		
MVU Estimate of Median	877.7501		
MVU Estimate of Mean	958.5176		
MVU Estimate of Standard Deviation	398.677		
MVU Estimate of SE of Mean	199.2908		
95% H-UCL	2656.342		
95% Chebyshev (MVUE) UCL	1827.206		
97.5% Chebyshev (MVUE) UCL	2203.088		
99% Chebyshev (MVUE) UCL	2941.436		
Non-parametric Statistics			
95% CLT UCL	1252.403		
95% Adjusted-CLT UCL	1211.184		
95% Modified-t UCL	1374.078		
95% Jackknife UCL	1380.508		
95% Chebyshev (Mean, Sd) UCL	1743.125		
97.5% Chebyshev (Mean, Sd) UCL	2084.148		
99% Chebyshev (Mean, Sd) UCL	2754.021		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	N/R	Not enough distinct data warning	
95% Bootstrap-t UCL	N/R	Not enough distinct data warning	
95% Hall's Bootstrap UCL	N/R	Not enough distinct data warning	
95% Percentile Bootstrap UCL	N/R	Not enough distinct data warning	
95% BCA Bootstrap UCL	N/R	Not enough distinct data warning	
Recommendations			
Human Inspection Recommended?	YES		
Appropriate Distribution	NORMAL		
1st Recommended UCL	1380.508	95% Student's-t UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	YES	Recommended UCL exceeds the maximum data value	
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\July 2004\Sed-SC12-f.xls		
Variable:	Manganese		
Raw Statistics			
Number of Observations	4		
Number of Missing Data	0		
Number of Valid Observations	4		
Number of Distinct Observations	4		
Minimum	470		
Maximum	960		
Mean	642.5		
Standard Deviation	224.258		
Variance	50291.67		
Coefficient of Variation	0.34904		
Skewness	1.417433		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.859973		
Shapiro-Wilk 5% Critical Value	0.748		
5% Normality Test Result	NORMAL		Data are normal at 5% significance level
95% Student's-t UCL	906.3803		
Gamma Statistics			
k hat	12.2325		
k star (bias corrected)	3.224792		
Theta hat	52.524		
Theta star	199.2376		
nu hat	97.86002		
nu star	25.79834		
5% Approximate Chi Square Value	15.22235		
Adjusted Level of Significance	N/A		
Adjusted Chi Square Value	N/A		
Anderson-Darling Test Statistic	0.384657		
Anderson-Darling 5% Critical Value	0.657098		
Anderson-Darling 5% Gamma Test Result	AD GAMMA		Data follow gamma distribution at 5% significance level.
Kolmogrov-Smirnov Test Statistic	0.271711		
Kolmogrov-Smirnov 5% Critical Value	0.394776		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA		Data follow gamma distribution at 5% significance level
5% Gamma Test Result	GAMMA		Data follow gamma distribution at 5% significance level
95% Approximate Gamma UCL	1088.888		
95% Adjusted Gamma UCL	N/A		
Lognormal Statistics			
Minimum of log data	6.152733		
Maximum of log data	6.866933		
Mean of log data	6.423936		
Standard Deviation of log data	0.32405		
Variance of log data	0.105008		
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.899084		
Shapiro-Wilk 5% Critical Value	0.748		
5% Lognormality Test Result	LOGNORMAL		Data are lognormal at 5% significance level
MLE Mean	649.6538		
MLE Standard Deviation	216.1696		
MLE Coefficient of Variation	0.332746		
MLE Skewness	1.035079		
MLE Median	616.4243		
MLE 80% Quantile	810.5861		
MLE 90% Quantile	934.8064		
MLE 95% Quantile	1050.475		
MLE 99% Quantile	1309.86		
MVU Estimate of Median	608.3649		
MVU Estimate of Mean	640.9863		
MVU Estimate of Standard Deviation	206.0994		
MVU Estimate of SE of Mean	103.0409		
95% H-UCL	1228.054		
95% Chebyshev (MVUE) UCL	1090.131		
97.5% Chebyshev (MVUE) UCL	1284.477		
99% Chebyshev (MVUE) UCL	1666.23		
Non-parametric Statistics			
95% CLT UCL	826.9358		
95% Adjusted-CLT UCL	911.8482		
95% Modified-t UCL	919.6249		
95% Jackknife UCL	906.3803		
95% Chebyshev (Mean, Sd) UCL	1131.259		
97.5% Chebyshev (Mean, Sd) UCL	1342.745		
99% Chebyshev (Mean, Sd) UCL	1758.17		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	N/R		Not enough distinct data warning
95% Bootstrap-t UCL	N/R		Not enough distinct data warning
95% Hall's Bootstrap UCL	N/R		Not enough distinct data warning
95% Percentile Bootstrap UCL	N/R		Not enough distinct data warning
95% BCA Bootstrap UCL	N/R		Not enough distinct data warning
Recommendations			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	906.3803		95% Student's-t UCL
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value			
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\July 2004\Sed-SC12-f.xls		
Variable:	Mercury		
<b>Raw Statistics</b>			
Number of Observations	4		
Number of Missing Data	0		
Number of Valid Observations	4		
Number of Distinct Observations	4		
Minimum	2.4		
Maximum	2.7		
Mean	2.55		
Standard Deviation	0.129099		
Variance	0.016667		
Coefficient of Variation	0.050627		
Skewness	1.03E-14		
Too Few Distinct Observations?	NO		
<b>Normal Statistics</b>			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.993956		
Shapiro-Wilk 5% Critical Value	0.748		
5% Normality Test Result	NORMAL	Data are normal at 5% significance level	
95% Student's-t UCL	2.701909		
<b>Gamma Statistics</b>			
k hat	519.546		
k star (bias corrected)	130.0532		
Theta hat	0.004908		
Theta star	0.019607		
nu hat	4156.368		
nu star	1040.425		
5% Approximate Chi Square Value	966.5318		
Adjusted Level of Significance	N/A		
Adjusted Chi Square Value	N/A		
Anderson-Darling Test Statistic	0.200882		
Anderson-Darling 5% Critical Value	0.65652		
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.	
Kolmogrov-Smirnov Test Statistic	0.176756		
Kolmogrov-Smirnov 5% Critical Value	0.39399		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level	
95% Approximate Gamma UCL	2.744954		
95% Adjusted Gamma UCL	N/A		
<b>Lognormal Statistics</b>			
Minimum of log data	0.875469		
Maximum of log data	0.993252		
Mean of log data	0.935131		
Standard Deviation of log data	0.050688		
Variance of log data	0.002569		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.9937		
Shapiro-Wilk 5% Critical Value	0.748		
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level	
MLE Mean	2.550821		
MLE Standard Deviation	0.12938		
MLE Coefficient of Variation	0.050721		
MLE Skewness	0.152293		
MLE Median	2.547546		
MLE 80% Quantile	2.659032		
MLE 90% Quantile	2.719003		
MLE 95% Quantile	2.769074		
MLE 99% Quantile	2.866328		
MVU Estimate of Median	2.546728		
MVU Estimate of Mean	2.550002		
MVU Estimate of Standard Deviation	0.12923		
MVU Estimate of SE of Mean	0.064615		
95% H-UCL	N/A		
95% Chebyshev (MVUE) UCL	2.831653		
97.5% Chebyshev (MVUE) UCL	2.953524		
99% Chebyshev (MVUE) UCL	3.192915		
<b>Non-parametric Statistics</b>			
95% CLT UCL	2.656175		
95% Adjusted-CLT UCL	2.656175		
95% Modified-t UCL	2.701909		
95% Jackknife UCL	2.701909		
95% Chebyshev (Mean, Sd) UCL	2.831366		
97.5% Chebyshev (Mean, Sd) UCL	2.953113		
99% Chebyshev (Mean, Sd) UCL	3.192262		
<b>Bootstrap Statistics</b>			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	N/R	Not enough distinct data warning	
95% Bootstrap-t UCL	N/R	Not enough distinct data warning	
95% Hall's Bootstrap UCL	N/R	Not enough distinct data warning	
95% Percentile Bootstrap UCL	N/R	Not enough distinct data warning	
95% BCA Bootstrap UCL	N/R	Not enough distinct data warning	
<b>Recommendations</b>			
Human Inspection Recommended?	YES		
Appropriate Distribution	NORMAL		
1st Recommended UCL	2.701909	95% Student's-t UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	YES	Recommended UCL exceeds the maximum data value	
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\July 2004\Sed-SC12-f.xls		
Variable:	Vanadium		
Raw Statistics			
Number of Observations	4		
Number of Missing Data	0		
Number of Valid Observations	4		
Number of Distinct Observations	4		
Minimum	64		
Maximum	86		
Mean	71.25		
Standard Deviation	9.979145		
Variance	99.58333		
Coefficient of Variation	0.140058		
Skewness	1.82263		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.782142		
Shapiro-Wilk 5% Critical Value	0.748		
5% Normality Test Result	NORMAL	Data are normal at 5% significance level	
95% Student's-t UCL	82.99228		
Gamma Statistics			
k hat	73.29625		
k star (bias corrected)	18.49073		
Theta hat	0.972083		
Theta star	3.853283		
nu hat	586.37		
nu star	147.9258		
5% Approximate Chi Square Value	120.8102		
Adjusted Level of Significance	N/A		
Adjusted Chi Square Value	N/A		
Anderson-Darling Test Statistic	0.59567		
Anderson-Darling 5% Critical Value	0.65621		
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.	
Kolmogrov-Smirnov Test Statistic	0.389649		
Kolmogrov-Smirnov 5% Critical Value	0.393899		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level	
95% Approximate Gamma UCL	87.24193		
95% Adjusted Gamma UCL	N/A		
Lognormal Statistics			
Minimum of log data	4.158883		
Maximum of log data	4.454347		
Mean of log data	4.259358		
Standard Deviation of log data	0.13253		
Variance of log data	0.017564		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.801663		
Shapiro-Wilk 5% Critical Value	0.748		
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level	
MLE Mean	71.38871		
MLE Standard Deviation	9.502823		
MLE Coefficient of Variation	0.133114		
MLE Skewness	0.4017		
MLE Median	70.76452		
MLE 80% Quantile	79.15004		
MLE 90% Quantile	83.90275		
MLE 95% Quantile	88.00284		
MLE 99% Quantile	96.31478		
MVU Estimate of Median	70.60925		
MVU Estimate of Mean	71.23153		
MVU Estimate of Standard Deviation	9.42789		
MVU Estimate of SE of Mean	4.713933		
95% H-UCL	86.37637		
95% Chebyshev (MVUE) UCL	91.77909		
97.5% Chebyshev (MVUE) UCL	100.67		
99% Chebyshev (MVUE) UCL	118.1346		
Non-parametric Statistics			
95% CLT UCL	79.45712		
95% Adjusted-CLT UCL	84.31573		
95% Modified-t UCL	83.75012		
95% Jackknife UCL	82.99228		
95% Chebyshev (Mean, Sd) UCL	92.99904		
97.5% Chebyshev (Mean, Sd) UCL	102.4099		
99% Chebyshev (Mean, Sd) UCL	120.8956		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	N/R	Not enough distinct data warning	
95% Bootstrap-t UCL	N/R	Not enough distinct data warning	
95% Hall's Bootstrap UCL	N/R	Not enough distinct data warning	
95% Percentile Bootstrap UCL	N/R	Not enough distinct data warning	
95% BCA Bootstrap UCL	N/R	Not enough distinct data warning	
Recommendations			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	82.99228	95% Student's-t UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value			
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\July 2004\Sed-SC13-f.xls		
Variable:	Arsenic		
Raw Statistics			
Number of Observations	4		
Number of Missing Data	0		
Number of Valid Observations	4		
Number of Distinct Observations	4		
Minimum	45		
Maximum	120		
Mean	78.25		
Standard Deviation	33.34042		
Variance	1111.583		
Coefficient of Variation	0.426076		
Skewness	0.541848		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.959676		
Shapiro-Wilk 5% Critical Value	0.748		
5% Normality Test Result	NORMAL	Data are normal at 5% significance level	
95% Student's-t UCL	117.4811		
Gamma Statistics			
k hat	7.323236		
k star (bias corrected)	1.997476		
Theta hat	10.68517		
Theta star	39.17444		
nu hat	58.58589		
nu star	15.97981		
5% Approximate Chi Square Value	7.946674		
Adjusted Level of Significance	N/A		
Adjusted Chi Square Value	N/A		
Anderson-Darling Test Statistic	0.238104		
Anderson-Darling 5% Critical Value	0.658133		
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.	
Kolmogrov-Smirnov Test Statistic	0.226932		
Kolmogrov-Smirnov 5% Critical Value	0.395444		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level	
95% Approximate Gamma UCL	157.3513		
95% Adjusted Gamma UCL	N/A		
Lognormal Statistics			
Minimum of log data	3.806662		
Maximum of log data	4.787492		
Mean of log data	4.290082		
Standard Deviation of log data	0.434246		
Variance of log data	0.18857		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.975765		
Shapiro-Wilk 5% Critical Value	0.748		
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level	
MLE Mean	80.18745		
MLE Standard Deviation	36.52902		
MLE Coefficient of Variation	0.455545		
MLE Skewness	1.461172		
MLE Median	72.97245		
MLE 80% Quantile	105.3218		
MLE 90% Quantile	127.4965		
MLE 95% Quantile	149.0702		
MLE 99% Quantile	200.3647		
MVU Estimate of Median	71.26452		
MVU Estimate of Mean	78.24319		
MVU Estimate of Standard Deviation	33.50874		
MVU Estimate of SE of Mean	16.74987		
95% H-UCL	229.4099		
95% Chebyshev (MVUE) UCL	151.2542		
97.5% Chebyshev (MVUE) UCL	182.8461		
99% Chebyshev (MVUE) UCL	244.9023		
Non-parametric Statistics			
95% CLT UCL	105.6701		
95% Adjusted-CLT UCL	110.4959		
95% Modified-t UCL	118.2338		
95% Jackknife UCL	117.4811		
95% Chebyshev (Mean, Sd) UCL	150.9138		
97.5% Chebyshev (Mean, Sd) UCL	182.3554		
99% Chebyshev (Mean, Sd) UCL	244.1165		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	N/R	Not enough distinct data warning	
95% Bootstrap-t UCL	N/R	Not enough distinct data warning	
95% Hall's Bootstrap UCL	N/R	Not enough distinct data warning	
95% Percentile Bootstrap UCL	N/R	Not enough distinct data warning	
95% BCA Bootstrap UCL	N/R	Not enough distinct data warning	
Recommendations			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	117.4811	95% Student's-t UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value			
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\July 2004\Sed-SC13-f.xls		
Variable:	Cadmium		
Raw Statistics			
Number of Observations	4		
Number of Missing Data	0		
Number of Valid Observations	4		
Number of Distinct Observations	4		
Minimum	3.95		
Maximum	12		
Mean	7.1625		
Standard Deviation	3.805561		
Variance	14.48229		
Coefficient of Variation	0.531317		
Skewness	0.707523		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.890341		
Shapiro-Wilk 5% Critical Value	0.748		
5% Normality Test Result	NORMAL	Data are normal at 5% significance level	
95% Student's-t UCL	11.64043		
Gamma Statistics			
k hat	4.811944		
k star (bias corrected)	1.369653		
Theta hat	1.488484		
Theta star	5.229428		
nu hat	38.49555		
nu star	10.95722		
5% Approximate Chi Square Value	4.547594		
Adjusted Level of Significance	N/A		
Adjusted Chi Square Value	N/A		
Anderson-Darling Test Statistic	0.384393		
Anderson-Darling 5% Critical Value	0.659002		
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.	
Kolmogrov-Smirnov Test Statistic	0.30877		
Kolmogrov-Smirnov 5% Critical Value	0.395941		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level	
95% Approximate Gamma UCL	17.25772		
95% Adjusted Gamma UCL	N/A		
Lognormal Statistics			
Minimum of log data	1.373716		
Maximum of log data	2.484907		
Mean of log data	1.861367		
Standard Deviation of log data	0.535422		
Variance of log data	0.286677		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.892072		
Shapiro-Wilk 5% Critical Value	0.748		
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level	
MLE Mean	7.42391		
MLE Standard Deviation	4.277578		
MLE Coefficient of Variation	0.576189		
MLE Skewness	1.919859		
MLE Median	6.432526		
MLE 80% Quantile	10.11277		
MLE 90% Quantile	12.79923		
MLE 95% Quantile	15.52012		
MLE 99% Quantile	22.34851		
MVU Estimate of Median	6.204484		
MVU Estimate of Mean	7.146695		
MVU Estimate of Standard Deviation	3.747423		
MVU Estimate of SE of Mean	1.872583		
95% H-UCL	34.92162		
95% Chebyshev (MVUE) UCL	15.3091		
97.5% Chebyshev (MVUE) UCL	18.84097		
99% Chebyshev (MVUE) UCL	25.77866		
Non-parametric Statistics			
95% CLT UCL	10.2923		
95% Adjusted-CLT UCL	11.01155		
95% Modified-t UCL	11.75262		
95% Jackknife UCL	11.64043		
95% Chebyshev (Mean, Sd) UCL	15.45653		
97.5% Chebyshev (Mean, Sd) UCL	19.04536		
99% Chebyshev (Mean, Sd) UCL	26.09493		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	N/R	Not enough distinct data warning	
95% Bootstrap-t UCL	N/R	Not enough distinct data warning	
95% Hall's Bootstrap UCL	N/R	Not enough distinct data warning	
95% Percentile Bootstrap UCL	N/R	Not enough distinct data warning	
95% BCA Bootstrap UCL	N/R	Not enough distinct data warning	
Recommendations			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	11.64043	95% Student's-t UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value			
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\July 2004\Sed-SC13-f.xls		
Variable:	Copper		
Raw Statistics			
Number of Observations	4		
Number of Missing Data	0		
Number of Valid Observations	4		
Number of Distinct Observations	4		
Minimum	210		
Maximum	460		
Mean	332.5		
Standard Deviation	121.2092		
Variance	14691.67		
Coefficient of Variation	0.364539		
Skewness	0.051804		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.895171		
Shapiro-Wilk 5% Critical Value	0.748		
5% Normality Test Result	NORMAL	Data are normal at 5% significance level	
95% Student's-t UCL	475.1246		
Gamma Statistics			
k hat	9.660013		
k star (bias corrected)	2.58167		
Theta hat	34.42024		
Theta star	128.7926		
nu hat	77.28011		
nu star	20.65336		
5% Approximate Chi Square Value	11.33267		
Adjusted Level of Significance	N/A		
Adjusted Chi Square Value	N/A		
Anderson-Darling Test Statistic	0.387115		
Anderson-Darling 5% Critical Value	0.657231		
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.	
Kolmogrov-Smirnov Test Statistic	0.2824		
Kolmogrov-Smirnov 5% Critical Value	0.394995		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level	
95% Approximate Gamma UCL	605.9686		
95% Adjusted Gamma UCL	N/A		
Lognormal Statistics			
Minimum of log data	5.347108		
Maximum of log data	6.131226		
Mean of log data	5.753988		
Standard Deviation of log data	0.378885		
Variance of log data	0.143554		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.89779		
Shapiro-Wilk 5% Critical Value	0.748		
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level	
MLE Mean	338.9203		
MLE Standard Deviation	133.1613		
MLE Coefficient of Variation	0.392898		
MLE Skewness	1.239347		
MLE Median	315.4462		
MLE 80% Quantile	434.4783		
MLE 90% Quantile	513.2975		
MLE 95% Quantile	588.3101		
MLE 99% Quantile	761.4885		
MVU Estimate of Median	309.8161		
MVU Estimate of Mean	332.7039		
MVU Estimate of Standard Deviation	124.7263		
MVU Estimate of SE of Mean	62.35331		
95% H-UCL	774.4324		
95% Chebyshev (MVUE) UCL	604.4956		
97.5% Chebyshev (MVUE) UCL	722.1001		
99% Chebyshev (MVUE) UCL	953.1114		
Non-parametric Statistics			
95% CLT UCL	432.1857		
95% Adjusted-CLT UCL	433.863		
95% Modified-t UCL	475.3862		
95% Jackknife UCL	475.1246		
95% Chebyshev (Mean, Sd) UCL	596.6693		
97.5% Chebyshev (Mean, Sd) UCL	710.9756		
99% Chebyshev (Mean, Sd) UCL	935.5081		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	N/R	Not enough distinct data warning	
95% Bootstrap-t UCL	N/R	Not enough distinct data warning	
95% Hall's Bootstrap UCL	N/R	Not enough distinct data warning	
95% Percentile Bootstrap UCL	N/R	Not enough distinct data warning	
95% BCA Bootstrap UCL	N/R	Not enough distinct data warning	
Recommendations			
Human Inspection Recommended?	YES		
Appropriate Distribution	NORMAL		
1st Recommended UCL	475.1246	95% Student's-t UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	YES	Recommended UCL exceeds the maximum data value	
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\July 2004\Sed-SC13-f.xls		
Variable:	Lead		
<b>Raw Statistics</b>			
Number of Observations	4		
Number of Missing Data	0		
Number of Valid Observations	4		
Number of Distinct Observations	4		
Minimum	130		
Maximum	810		
Mean	370		
Standard Deviation	306.0501		
Variance	93666.67		
Coefficient of Variation	0.827162		
Skewness	1.54465		
Too Few Distinct Observations?	NO		
<b>Normal Statistics</b>			
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.85715		
Shapiro-Wilk 5% Critical Value	0.748		
5% Normality Test Result	NORMAL		Data are normal at 5% significance level
95% Student's-t UCL	730.1235		
<b>Gamma Statistics</b>			
k hat	2.231025		
k star (bias corrected)	0.724423		
Theta hat	165.8431		
Theta star	510.7515		
nu hat	17.8482		
nu star	5.795382		
5% Approximate Chi Square Value	1.53573		
Adjusted Level of Significance	N/A		
Adjusted Chi Square Value	N/A		
Anderson-Darling Test Statistic	0.289324		
Anderson-Darling 5% Critical Value	0.660287		
Anderson-Darling 5% Gamma Test Result	AD GAMMA		Data follow gamma distribution at 5% significance level.
Kolmogrov-Smirnov Test Statistic	0.225476		
Kolmogrov-Smirnov 5% Critical Value	0.39759		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA		Data follow gamma distribution at 5% significance level
5% Gamma Test Result	GAMMA		Data follow gamma distribution at 5% significance level
95% Approximate Gamma UCL	1396.268		
95% Adjusted Gamma UCL	N/A		
<b>Lognormal Statistics</b>			
Minimum of log data	4.867534		
Maximum of log data	6.697034		
Mean of log data	5.672958		
Standard Deviation of log data	0.787851		
Variance of log data	0.620709		
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.973244		
Shapiro-Wilk 5% Critical Value	0.748		
5% Lognormality Test Result	LOGNORMAL		Data are lognormal at 5% significance level
MLE Mean	396.7524		
MLE Standard Deviation	367.9858		
MLE Coefficient of Variation	0.927495		
MLE Skewness	3.580358		
MLE Median	290.8937		
MLE 80% Quantile	566.0554		
MLE 90% Quantile	800.5879		
MLE 95% Quantile	1063.13		
MLE 99% Quantile	1818.012		
MVU Estimate of Median	268.8432		
MVU Estimate of Mean	363.4923		
MVU Estimate of Standard Deviation	274.1166		
MVU Estimate of SE of Mean	136.7084		
95% H-UCL	10216.45		
95% Chebyshev (MVUE) UCL	959.3903		
97.5% Chebyshev (MVUE) UCL	1217.236		
99% Chebyshev (MVUE) UCL	1723.723		
<b>Non-parametric Statistics</b>			
95% CLT UCL	621.7038		
95% Adjusted-CLT UCL	747.9863		
95% Modified-t UCL	749.821		
95% Jackknife UCL	730.1235		
95% Chebyshev (Mean, Sd) UCL	1037.021		
97.5% Chebyshev (Mean, Sd) UCL	1325.641		
99% Chebyshev (Mean, Sd) UCL	1892.58		
<b>Bootstrap Statistics</b>			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	N/R		Not enough distinct data warning
95% Bootstrap-t UCL	N/R		Not enough distinct data warning
95% Hall's Bootstrap UCL	N/R		Not enough distinct data warning
95% Percentile Bootstrap UCL	N/R		Not enough distinct data warning
95% BCA Bootstrap UCL	N/R		Not enough distinct data warning
<b>Recommendations</b>			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	730.1235		95% Student's-t UCL
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value			
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\July 2004\Sed-SC13-f.xls		
Variable:	Manganese		
<b>Raw Statistics</b>			
Number of Observations	4		
Number of Missing Data	0		
Number of Valid Observations	4		
Number of Distinct Observations	4		
Minimum	180		
Maximum	370		
Mean	250		
Standard Deviation	83.666		
Variance	7000		
Coefficient of Variation	0.334664		
Skewness	1.502573		
Too Few Distinct Observations?	NO		
<b>Normal Statistics</b>			
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.875576		
Shapiro-Wilk 5% Critical Value	0.748		
5% Normality Test Result	NORMAL		Data are normal at 5% significance level
95% Student's-t UCL	348.4482		
<b>Gamma Statistics</b>			
k hat	13.35388		
k star (bias corrected)	3.505137		
Theta hat	18.72115		
Theta star	71.32388		
nu hat	106.8311		
nu star	28.0411		
5% Approximate Chi Square Value	16.95813		
Adjusted Level of Significance	N/A		
Adjusted Chi Square Value	N/A		
Anderson-Darling Test Statistic	0.349244		
Anderson-Darling 5% Critical Value	0.657097		
Anderson-Darling 5% Gamma Test Result	AD GAMMA		Data follow gamma distribution at 5% significance level.
Kolmogrov-Smirnov Test Statistic	0.272523		
Kolmogrov-Smirnov 5% Critical Value	0.394699		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA		Data follow gamma distribution at 5% significance level
5% Gamma Test Result	GAMMA		Data follow gamma distribution at 5% significance level
95% Approximate Gamma UCL	413.3873		
95% Adjusted Gamma UCL	N/A		
<b>Lognormal Statistics</b>			
Minimum of log data	5.192957		
Maximum of log data	5.913503		
Mean of log data	5.483552		
Standard Deviation of log data	0.3098		
Variance of log data	0.095976		
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.930301		
Shapiro-Wilk 5% Critical Value	0.748		
5% Lognormality Test Result	LOGNORMAL		Data are lognormal at 5% significance level
MLE Mean	252.5324		
MLE Standard Deviation	80.14992		
MLE Coefficient of Variation	0.317385		
MLE Skewness	0.984125		
MLE Median	240.7001		
MLE 80% Quantile	312.7277		
MLE 90% Quantile	358.3984		
MLE 95% Quantile	400.6841		
MLE 99% Quantile	494.7969		
MVU Estimate of Median	237.8227		
MVU Estimate of Mean	249.4571		
MVU Estimate of Standard Deviation	76.73307		
MVU Estimate of SE of Mean	38.36379		
95% H-UCL	456.8694		
95% Chebyshev (MVUE) UCL	416.681		
97.5% Chebyshev (MVUE) UCL	489.0389		
99% Chebyshev (MVUE) UCL	631.172		
<b>Non-parametric Statistics</b>			
95% CLT UCL	318.8092		
95% Adjusted-CLT UCL	352.391		
95% Modified-t UCL	353.6863		
95% Jackknife UCL	348.4482		
95% Chebyshev (Mean, Sd) UCL	432.3458		
97.5% Chebyshev (Mean, Sd) UCL	511.247		
99% Chebyshev (Mean, Sd) UCL	666.2331		
<b>Bootstrap Statistics</b>			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	N/R		Not enough distinct data warning
95% Bootstrap-t UCL	N/R		Not enough distinct data warning
95% Hall's Bootstrap UCL	N/R		Not enough distinct data warning
95% Percentile Bootstrap UCL	N/R		Not enough distinct data warning
95% BCA Bootstrap UCL	N/R		Not enough distinct data warning
<b>Recommendations</b>			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	348.4482		95% Student's-t UCL
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value			
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\July 2004\Sed-SC13-f.xls		
Variable:	Mercury		
<b>Raw Statistics</b>			
Number of Observations	4		
Number of Missing Data	0		
Number of Valid Observations	4		
Number of Distinct Observations	4		
Minimum	0.95		
Maximum	2.1		
Mean	1.5375		
Standard Deviation	0.596343		
Variance	0.355625		
Coefficient of Variation	0.387865		
Skewness	-0.030208		
Too Few Distinct Observations?	NO		
<b>Normal Statistics</b>			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.830347		
Shapiro-Wilk 5% Critical Value	0.748		
5% Normality Test Result	NORMAL	Data are normal at 5% significance level	
95% Student's-t UCL	2.239206		
<b>Gamma Statistics</b>			
k hat	8.44378		
k star (bias corrected)	2.277612		
Theta hat	0.182087		
Theta star	0.675049		
nu hat	67.55024		
nu star	18.22089		
5% Approximate Chi Square Value	9.549303		
Adjusted Level of Significance	N/A		
Adjusted Chi Square Value	N/A		
Anderson-Darling Test Statistic	0.505167		
Anderson-Darling 5% Critical Value	0.657701		
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.	
Kolmogrov-Smirnov Test Statistic	0.319019		
Kolmogrov-Smirnov 5% Critical Value	0.395229		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level	
95% Approximate Gamma UCL	2.933683		
95% Adjusted Gamma UCL	N/A		
<b>Lognormal Statistics</b>			
Minimum of log data	-0.051293		
Maximum of log data	0.741937		
Mean of log data	0.369775		
Standard Deviation of log data	0.406491		
Variance of log data	0.165235		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.840212		
Shapiro-Wilk 5% Critical Value	0.748		
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level	
MLE Mean	1.572069		
MLE Standard Deviation	0.66636		
MLE Coefficient of Variation	0.423875		
MLE Skewness	1.347782		
MLE Median	1.447409		
MLE 80% Quantile	2.040633		
MLE 90% Quantile	2.440287		
MLE 95% Quantile	2.824842		
MLE 99% Quantile	3.725766		
MVU Estimate of Median	1.417699		
MVU Estimate of Mean	1.538777		
MVU Estimate of Standard Deviation	0.617923		
MVU Estimate of SE of Mean	0.308897		
95% H-UCL	4.0037		
95% Chebyshev (MVUE) UCL	2.88523		
97.5% Chebyshev (MVUE) UCL	3.467841		
99% Chebyshev (MVUE) UCL	4.612268		
<b>Non-parametric Statistics</b>			
95% CLT UCL	2.027948		
95% Adjusted-CLT UCL	2.023136		
95% Modified-t UCL	2.238455		
95% Jackknife UCL	2.239206		
95% Chebyshev (Mean, Sd) UCL	2.837199		
97.5% Chebyshev (Mean, Sd) UCL	3.39958		
99% Chebyshev (Mean, Sd) UCL	4.504269		
<b>Bootstrap Statistics</b>			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	N/R	Not enough distinct data warning	
95% Bootstrap-t UCL	N/R	Not enough distinct data warning	
95% Hall's Bootstrap UCL	N/R	Not enough distinct data warning	
95% Percentile Bootstrap UCL	N/R	Not enough distinct data warning	
95% BCA Bootstrap UCL	N/R	Not enough distinct data warning	
<b>Recommendations</b>			
Human Inspection Recommended?	YES		
Appropriate Distribution	NORMAL		
1st Recommended UCL	2.239206	95% Student's-t UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	YES	Recommended UCL exceeds the maximum data value	
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\July 2004\Sed-SC13-f.xls		
Variable:	Vanadium		
Raw Statistics			
Number of Observations	4		
Number of Missing Data	0		
Number of Valid Observations	4		
Number of Distinct Observations	4		
Minimum	30		
Maximum	87		
Mean	48.25		
Standard Deviation	26.22181		
Variance	687.5833		
Coefficient of Variation	0.543457		
Skewness	1.826613		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.782528		
Shapiro-Wilk 5% Critical Value	0.748		
5% Normality Test Result	NORMAL	Data are normal at 5% significance level	
95% Student's-t UCL	79.10472		
Gamma Statistics			
k hat	5.573204		
k star (bias corrected)	1.559968		
Theta hat	8.657498		
Theta star	30.93013		
nu hat	44.58563		
nu star	12.47974		
5% Approximate Chi Square Value	5.543625		
Adjusted Level of Significance	N/A		
Adjusted Chi Square Value	N/A		
Anderson-Darling Test Statistic	0.505169		
Anderson-Darling 5% Critical Value	0.658809		
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.	
Kolmogrov-Smirnov Test Statistic	0.341213		
Kolmogrov-Smirnov 5% Critical Value	0.39578		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level	
95% Approximate Gamma UCL	108.6198		
95% Adjusted Gamma UCL	N/A		
Lognormal Statistics			
Minimum of log data	3.401197		
Maximum of log data	4.465908		
Mean of log data	3.784006		
Standard Deviation of log data	0.472151		
Variance of log data	0.222926		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.859586		
Shapiro-Wilk 5% Critical Value	0.748		
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level	
MLE Mean	49.17914		
MLE Standard Deviation	24.5762		
MLE Coefficient of Variation	0.499728		
MLE Skewness	1.623981		
MLE Median	43.99194		
MLE 80% Quantile	65.56051		
MLE 90% Quantile	80.69849		
MLE 95% Quantile	95.64984		
MLE 99% Quantile	131.9243		
MVU Estimate of Median	42.77628		
MVU Estimate of Mean	47.76289		
MVU Estimate of Standard Deviation	22.18571		
MVU Estimate of SE of Mean	11.08874		
95% H-UCL	167.3144		
95% Chebyshev (MVUE) UCL	96.09756		
97.5% Chebyshev (MVUE) UCL	117.012		
99% Chebyshev (MVUE) UCL	158.0944		
Non-parametric Statistics			
95% CLT UCL	69.81552		
95% Adjusted-CLT UCL	82.61021		
95% Modified-t UCL	81.10044		
95% Jackknife UCL	79.10472		
95% Chebyshev (Mean, Sd) UCL	105.3991		
97.5% Chebyshev (Mean, Sd) UCL	130.1276		
99% Chebyshev (Mean, Sd) UCL	178.7019		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	N/R	Not enough distinct data warning	
95% Bootstrap-t UCL	N/R	Not enough distinct data warning	
95% Hall's Bootstrap UCL	N/R	Not enough distinct data warning	
95% Percentile Bootstrap UCL	N/R	Not enough distinct data warning	
95% BCA Bootstrap UCL	N/R	Not enough distinct data warning	
Recommendations			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	79.10472	95% Student's-t UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value			
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\July 2004\Sed-SC13-f.xls		
Variable:	Zinc		
Raw Statistics			
Number of Observations	4		
Number of Missing Data	0		
Number of Valid Observations	4		
Number of Distinct Observations	4		
Minimum	815		
Maximum	2500		
Mean	1628.75		
Standard Deviation	845.1664		
Variance	714306.3		
Coefficient of Variation	0.518905		
Skewness	0.066634		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.862071		
Shapiro-Wilk 5% Critical Value	0.748		
5% Normality Test Result	NORMAL	Data are normal at 5% significance level	
95% Student's-t UCL	2623.242		
Gamma Statistics			
k hat	4.594009		
k star (bias corrected)	1.315169		
Theta hat	354.5378		
Theta star	1238.434		
nu hat	36.75207		
nu star	10.52135		
5% Approximate Chi Square Value	4.2693		
Adjusted Level of Significance	N/A		
Adjusted Chi Square Value	N/A		
Anderson-Darling Test Statistic	0.451017		
Anderson-Darling 5% Critical Value	0.658969		
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.	
Kolmogrov-Smirnov Test Statistic	0.296897		
Kolmogrov-Smirnov 5% Critical Value	0.396		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level	
95% Approximate Gamma UCL	4013.925		
95% Adjusted Gamma UCL	N/A		
Lognormal Statistics			
Minimum of log data	6.703188		
Maximum of log data	7.824046		
Mean of log data	7.282801		
Standard Deviation of log data	0.559901		
Variance of log data	0.313489		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.866024		
Shapiro-Wilk 5% Critical Value	0.748		
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level	
MLE Mean	1701.975		
MLE Standard Deviation	1032.736		
MLE Coefficient of Variation	0.606786		
MLE Skewness	2.043772		
MLE Median	1455.057		
MLE 80% Quantile	2335.349		
MLE 90% Quantile	2987.74		
MLE 95% Quantile	3654.947		
MLE 99% Quantile	5351.484		
MVU Estimate of Median	1398.706		
MVU Estimate of Mean	1632.246		
MVU Estimate of Standard Deviation	893.3172		
MVU Estimate of SE of Mean	446.3396		
95% H-UCL	9172.986		
95% Chebyshev (MVUE) UCL	3577.796		
97.5% Chebyshev (MVUE) UCL	4419.636		
99% Chebyshev (MVUE) UCL	6073.269		
Non-parametric Statistics			
95% CLT UCL	2323.838		
95% Adjusted-CLT UCL	2338.881		
95% Modified-t UCL	2625.588		
95% Jackknife UCL	2623.242		
95% Chebyshev (Mean, Sd) UCL	3470.747		
97.5% Chebyshev (Mean, Sd) UCL	4267.781		
99% Chebyshev (Mean, Sd) UCL	5833.4		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	N/R	Not enough distinct data warning	
95% Bootstrap-t UCL	N/R	Not enough distinct data warning	
95% Hall's Bootstrap UCL	N/R	Not enough distinct data warning	
95% Percentile Bootstrap UCL	N/R	Not enough distinct data warning	
95% BCA Bootstrap UCL	N/R	Not enough distinct data warning	
Recommendations			
Human Inspection Recommended?	YES		
Appropriate Distribution	NORMAL		
1st Recommended UCL	2623.242	95% Student's-t UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	YES	Recommended UCL exceeds the maximum data value	
Recommendation Warning!	NONE		
Alternative UCL	NONE		