	A	B	C	D	E	F	G	H	I	J	K	L
1	**UCL Statistics for Data Sets with Non-Detects**											
2												
3	User Selected Options											
4	Date/Time of Computation			7/30/2013 11:30:54 AM								
5	From File			WorkSheet.xls								
6	Full Precision			OFF								
7	Confidence Coefficient			95%								
8	mber of Bootstrap Operations			2000								
9												
10	**BEHP**											
11												
12	**General Statistics**											
13	Total Number of Observations					63	Number of Distinct Observations					48
14	Number of Detects					48	Number of Non-Detects					15
15	Number of Distinct Detects					41	Number of Distinct Non-Detects					10
16	Minimum Detect					4.2	Minimum Non-Detect					3.2
17	Maximum Detect					120	Maximum Non-Detect					31
18	Variance Detects					876.4	Percent Non-Detects					23.81%
19	Mean Detects					39.8	SD Detects					29.6
20	Median Detects					33	CV Detects					0.744
21	Skewness Detects					1.039	Kurtosis Detects					0.394
22	Mean of Logged Detects					3.37	SD of Logged Detects					0.874
23												
24	**Normal GOF Test on Detects Only**											
25	Shapiro Wilk Test Statistic					0.893	**Shapiro Wilk GOF Test**					
26	5% Shapiro Wilk Critical Value					0.947	Detected Data Not Normal at 5% Significance Level					
27	Lilliefors Test Statistic					0.143	**Lilliefors GOF Test**					
28	5% Lilliefors Critical Value					0.128	Detected Data Not Normal at 5% Significance Level					
29	**Detected Data Not Normal at 5% Significance Level**											
30												
31	**Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs**											
32	Mean					32.86	Standard Error of Mean					3.675
33	SD					28.63	95% KM (BCA) UCL					39.3
34	95% KM (t) UCL					38.99	95% KM (Percentile Bootstrap) UCL					39.04
35	95% KM (z) UCL					38.9	95% KM Bootstrap t UCL					40.05
36	90% KM Chebyshev UCL					43.88	95% KM Chebyshev UCL					48.87
37	97.5% KM Chebyshev UCL					55.8	99% KM Chebyshev UCL					69.42
38												
39	**Gamma GOF Tests on Detected Observations Only**											
40	A-D Test Statistic					0.25	**Anderson-Darling GOF Test**					
41	5% A-D Critical Value					0.765	etected data appear Gamma Distributed at 5% Significance Lev					
42	K-S Test Statistic					0.0618	**Kolmogrov-Smirnoff GOF**					
43	5% K-S Critical Value					0.13	etected data appear Gamma Distributed at 5% Significance Lev					
44	**Detected data appear Gamma Distributed at 5% Significance Level**											
45												
46	**Gamma Statistics on Detected Data Only**											
47	k hat (MLE)					1.743	k star (bias corrected MLE)					1.648
48	Theta hat (MLE)					22.84	Theta star (bias corrected MLE)					24.16
49	nu hat (MLE)					167.3	nu star (bias corrected)					158.2
50	MLE Mean (bias corrected)					39.8	MLE Sd (bias corrected)					31.01
51												
52	**Gamma Kaplan-Meier (KM) Statistics**											
53	k hat (KM)					1.317	nu hat (KM)					166
54	Approximate Chi Square Value (165.96, α)					137.2	Adjusted Chi Square Value (165.96, β)					136.6
55	5% Gamma Approximate KM-UCL (use when n>=50)					39.75	95% Gamma Adjusted KM-UCL (use when n<50)					39.93
56												
57	**Gamma ROS Statistics using Imputed Non-Detects**											
58	GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs											
59	GROS may not be used when kstar of detected data is small such as < 0.1											
60	For such situations, GROS method tends to yield inflated values of UCLs and BTVs											
61	For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates											
62	Minimum					0.01	Mean					32.31

	A	B	C	D	E	F	G	H	I	J	K	L
63					Maximum	120					Median	23
64					SD	29.23					CV	0.905
65					k hat (MLE)	1.031					k star (bias corrected MLE)	0.992
66					Theta hat (MLE)	31.35					Theta star (bias corrected MLE)	32.56
67					nu hat (MLE)	129.9					nu star (bias corrected)	125
68					MLE Mean (bias corrected)	32.31					MLE Sd (bias corrected)	32.44
69											Adjusted Level of Significance (β)	0.0462
70					Approximate Chi Square Value (125.03, α)	100.2					Adjusted Chi Square Value (125.03, β)	99.68
71					95% Gamma Approximate UCL (use when n>=50)	40.32					95% Gamma Adjusted UCL (use when n<50)	40.53
72												
73					**Lognormal GOF Test on Detected Observations Only**							
74					Shapiro Wilk Test Statistic	0.941			**Shapiro Wilk GOF Test**			
75					5% Shapiro Wilk Critical Value	0.947			Detected Data Not Lognormal at 5% Significance Level			
76					Lilliefors Test Statistic	0.0991			**Lilliefors GOF Test**			
77					5% Lilliefors Critical Value	0.128			Detected Data appear Lognormal at 5% Significance Level			
78					**Detected Data appear Approximate Lognormal at 5% Significance Level**							
79												
80					**Lognormal ROS Statistics Using Imputed Non-Detects**							
81					Mean in Original Scale	32.76					Mean in Log Scale	3.1
82					SD in Original Scale	28.79					SD in Log Scale	0.932
83					95% t UCL (assumes normality of ROS data)	38.82					95% Percentile Bootstrap UCL	38.77
84					95% BCA Bootstrap UCL	39.52					95% Bootstrap t UCL	39.7
85					95% H-UCL (Log ROS)	44.49						
86												
87					**UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed**							
88					KM Mean (logged)	3.074					95% H-UCL (KM -Log)	46.52
89					KM SD (logged)	0.985					95% Critical H Value (KM-Log)	2.243
90					KM Standard Error of Mean (logged)	0.134						
91												
92					**DL/2 Statistics**							
93					**DL/2 Normal**				**DL/2 Log-Transformed**			
94					Mean in Original Scale	32.87					Mean in Log Scale	3.106
95					SD in Original Scale	28.7					SD in Log Scale	0.938
96					95% t UCL (Assumes normality)	38.9					95% H-Stat UCL	45.15
97					**DL/2 is not a recommended method, provided for comparisons and historical reasons**							
98												
99					**Nonparametric Distribution Free UCL Statistics**							
100					**Detected Data appear Gamma Distributed at 5% Significance Level**							
101												
102					**Suggested UCL to Use**							
103					95% KM (BCA) UCL	39.3			95% GROS Approximate Gamma UCL			40.32
104					95% Approximate Gamma KM-UCL	39.75						
105												
106	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
107	Recommendations are based upon data size, data distribution, and skewness.											
108	These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).											
109	owever, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statisticia											
110												