

	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			ProUCL 5.110/13/2016 9:30:21 AM								
5	From File			ProUCL input 01-003(b1) 0-5, 0-10.xls								
6	Full Precision			OFF								
7	Confidence Coefficient			95%								
8	Number of Bootstrap Operations			2000								
9												
10												
11	Copper											
12												
13	General Statistics											
14	Total Number of Observations				8		Number of Distinct Observations				8	
15							Number of Missing Observations				0	
16	Minimum				3.12		Mean				8.133	
17	Maximum				18.2		Median				7.715	
18	SD				4.435		Std. Error of Mean				1.568	
19	Coefficient of Variation				0.545		Skewness				1.885	
20												
21	Note: Sample size is small (e.g., <10), if data are collected using ISM approach, you should use											
22	guidance provided in ITRC Tech Reg Guide on ISM (ITRC, 2012) to compute statistics of interest.											
23	For example, you may want to use Chebyshev UCL to estimate EPC (ITRC, 2012).											
24	Chebyshev UCL can be computed using the Nonparametric and All UCL Options of ProUCL 5.1											
25												
26	Normal GOF Test											
27	Shapiro Wilk Test Statistic				0.77		Shapiro Wilk GOF Test					
28	5% Shapiro Wilk Critical Value				0.818		Data Not Normal at 5% Significance Level					
29	Lilliefors Test Statistic				0.378		Lilliefors GOF Test					
30	5% Lilliefors Critical Value				0.283		Data Not Normal at 5% Significance Level					
31	Data Not Normal at 5% Significance Level											
32												
33	Assuming Normal Distribution											
34	95% Normal UCL					95% UCLs (Adjusted for Skewness)						
35	95% Student's-t UCL				11.1		95% Adjusted-CLT UCL (Chen-1995)				11.83	
36							95% Modified-t UCL (Johnson-1978)				11.28	
37												
38	Gamma GOF Test											
39	A-D Test Statistic				0.63		Anderson-Darling Gamma GOF Test					
40	5% A-D Critical Value				0.719		Detected data appear Gamma Distributed at 5% Significance Level					
41	K-S Test Statistic				0.317		Kolmogorov-Smirnov Gamma GOF Test					
42	5% K-S Critical Value				0.295		Data Not Gamma Distributed at 5% Significance Level					
43	Detected data follow Appr. Gamma Distribution at 5% Significance Level											
44												
45	Gamma Statistics											
46	k hat (MLE)				4.676		k star (bias corrected MLE)				3.006	
47	Theta hat (MLE)				1.739		Theta star (bias corrected MLE)				2.706	
48	nu hat (MLE)				74.81		nu star (bias corrected)				48.09	
49	MLE Mean (bias corrected)				8.133		MLE Sd (bias corrected)				4.691	
50							Approximate Chi Square Value (0.05)				33.17	
51	Adjusted Level of Significance				0.0195		Adjusted Chi Square Value				30.07	
52												

	A	B	C	D	E	F	G	H	I	J	K	L
53	Assuming Gamma Distribution											
54	95% Approximate Gamma UCL (use when n>=50)					11.79	95% Adjusted Gamma UCL (use when n<50)					13.01
55												
56	Lognormal GOF Test											
57	Shapiro Wilk Test Statistic					0.897	Shapiro Wilk Lognormal GOF Test					
58	5% Shapiro Wilk Critical Value					0.818	Data appear Lognormal at 5% Significance Level					
59	Lilliefors Test Statistic					0.29	Lilliefors Lognormal GOF Test					
60	5% Lilliefors Critical Value					0.283	Data Not Lognormal at 5% Significance Level					
61	Data appear Approximate Lognormal at 5% Significance Level											
62												
63	Lognormal Statistics											
64	Minimum of Logged Data					1.138	Mean of logged Data					1.985
65	Maximum of Logged Data					2.901	SD of logged Data					0.497
66												
67	Assuming Lognormal Distribution											
68	95% H-UCL					12.8	90% Chebyshev (MVUE) UCL					12.41
69	95% Chebyshev (MVUE) UCL					14.36	97.5% Chebyshev (MVUE) UCL					17.07
70	99% Chebyshev (MVUE) UCL					22.39						
71												
72	Nonparametric Distribution Free UCL Statistics											
73	Data appear to follow a Discernible Distribution at 5% Significance Level											
74												
75	Nonparametric Distribution Free UCLs											
76	95% CLT UCL					10.71	95% Jackknife UCL					11.1
77	95% Standard Bootstrap UCL					10.55	95% Bootstrap-t UCL					12.91
78	95% Hall's Bootstrap UCL					23.34	95% Percentile Bootstrap UCL					11.02
79	95% BCA Bootstrap UCL					11.42						
80	90% Chebyshev(Mean, Sd) UCL					12.84	95% Chebyshev(Mean, Sd) UCL					14.97
81	97.5% Chebyshev(Mean, Sd) UCL					17.92	99% Chebyshev(Mean, Sd) UCL					23.73
82												
83	Suggested UCL to Use											
84	95% Adjusted Gamma UCL					13.01						
85												
86	When a data set follows an approximate (e.g., normal) distribution passing one of the GOF test											
87	When applicable, it is suggested to use a UCL based upon a distribution (e.g., gamma) passing both GOF tests in ProUCL											
88												
89	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
90	Recommendations are based upon data size, data distribution, and skewness.											
91	These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).											
92	However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.											
93												
94												
95	Lead											
96												
97	General Statistics											
98	Total Number of Observations					8	Number of Distinct Observations					8
99							Number of Missing Observations					0
100	Minimum					13.8	Mean					34.84
101	Maximum					147	Median					18.85
102	SD					45.54	Std. Error of Mean					16.1
103	Coefficient of Variation					1.307	Skewness					2.774
104												

	A	B	C	D	E	F	G	H	I	J	K	L
105	Note: Sample size is small (e.g., <10), if data are collected using ISM approach, you should use											
106	guidance provided in ITRC Tech Reg Guide on ISM (ITRC, 2012) to compute statistics of interest.											
107	For example, you may want to use Chebyshev UCL to estimate EPC (ITRC, 2012).											
108	Chebyshev UCL can be computed using the Nonparametric and All UCL Options of ProUCL 5.1											
109												
110	Normal GOF Test											
111	Shapiro Wilk Test Statistic				0.508	Shapiro Wilk GOF Test						
112	5% Shapiro Wilk Critical Value				0.818	Data Not Normal at 5% Significance Level						
113	Lilliefors Test Statistic				0.447	Lilliefors GOF Test						
114	5% Lilliefors Critical Value				0.283	Data Not Normal at 5% Significance Level						
115	Data Not Normal at 5% Significance Level											
116												
117	Assuming Normal Distribution											
118	95% Normal UCL					95% UCLs (Adjusted for Skewness)						
119	95% Student's-t UCL				65.34	95% Adjusted-CLT UCL (Chen-1995)						78.2
120						95% Modified-t UCL (Johnson-1978)						67.98
121												
122	Gamma GOF Test											
123	A-D Test Statistic				1.469	Anderson-Darling Gamma GOF Test						
124	5% A-D Critical Value				0.729	Data Not Gamma Distributed at 5% Significance Level						
125	K-S Test Statistic				0.385	Kolmogorov-Smirnov Gamma GOF Test						
126	5% K-S Critical Value				0.299	Data Not Gamma Distributed at 5% Significance Level						
127	Data Not Gamma Distributed at 5% Significance Level											
128												
129	Gamma Statistics											
130	k hat (MLE)				1.449	k star (bias corrected MLE)						0.989
131	Theta hat (MLE)				24.03	Theta star (bias corrected MLE)						35.22
132	nu hat (MLE)				23.19	nu star (bias corrected)						15.83
133	MLE Mean (bias corrected)				34.84	MLE Sd (bias corrected)						35.03
134						Approximate Chi Square Value (0.05)						7.841
135	Adjusted Level of Significance				0.0195	Adjusted Chi Square Value						6.472
136												
137	Assuming Gamma Distribution											
138	95% Approximate Gamma UCL (use when n>=50))				70.32	95% Adjusted Gamma UCL (use when n<50)						85.2
139												
140	Lognormal GOF Test											
141	Shapiro Wilk Test Statistic				0.692	Shapiro Wilk Lognormal GOF Test						
142	5% Shapiro Wilk Critical Value				0.818	Data Not Lognormal at 5% Significance Level						
143	Lilliefors Test Statistic				0.317	Lilliefors Lognormal GOF Test						
144	5% Lilliefors Critical Value				0.283	Data Not Lognormal at 5% Significance Level						
145	Data Not Lognormal at 5% Significance Level											
146												
147	Lognormal Statistics											
148	Minimum of Logged Data				2.625	Mean of logged Data						3.168
149	Maximum of Logged Data				4.99	SD of logged Data						0.772
150												
151	Assuming Lognormal Distribution											
152	95% H-UCL				74.36	90% Chebyshev (MVUE) UCL						56.13
153	95% Chebyshev (MVUE) UCL				67.69	97.5% Chebyshev (MVUE) UCL						83.73
154	99% Chebyshev (MVUE) UCL				115.2							
155												
156	Nonparametric Distribution Free UCL Statistics											

	A	B	C	D	E	F	G	H	I	J	K	L
157	Data do not follow a Discernible Distribution (0.05)											
158												
159	Nonparametric Distribution Free UCLs											
160	95% CLT UCL				61.32	95% Jackknife UCL				65.34		
161	95% Standard Bootstrap UCL				59.55	95% Bootstrap-t UCL				268.5		
162	95% Hall's Bootstrap UCL				192.7	95% Percentile Bootstrap UCL				64.83		
163	95% BCA Bootstrap UCL				83.18							
164	90% Chebyshev(Mean, Sd) UCL				83.14	95% Chebyshev(Mean, Sd) UCL				105		
165	97.5% Chebyshev(Mean, Sd) UCL				135.4	99% Chebyshev(Mean, Sd) UCL				195		
166												
167	Suggested UCL to Use											
168	95% Chebyshev (Mean, Sd) UCL				105							
169												
170	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
171	Recommendations are based upon data size, data distribution, and skewness.											
172	These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).											
173	However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.											
174												
175												
176	Mercury											
177												
178	General Statistics											
179	Total Number of Observations				8	Number of Distinct Observations				8		
180						Number of Missing Observations				0		
181	Minimum				0.0136	Mean				0.0791		
182	Maximum				0.378	Median				0.0417		
183	SD				0.121	Std. Error of Mean				0.0429		
184	Coefficient of Variation				1.534	Skewness				2.781		
185												
186	Note: Sample size is small (e.g., <10), if data are collected using ISM approach, you should use											
187	guidance provided in ITRC Tech Reg Guide on ISM (ITRC, 2012) to compute statistics of interest.											
188	For example, you may want to use Chebyshev UCL to estimate EPC (ITRC, 2012).											
189	Chebyshev UCL can be computed using the Nonparametric and All UCL Options of ProUCL 5.1											
190												
191	Normal GOF Test											
192	Shapiro Wilk Test Statistic				0.507	Shapiro Wilk GOF Test						
193	5% Shapiro Wilk Critical Value				0.818	Data Not Normal at 5% Significance Level						
194	Lilliefors Test Statistic				0.475	Lilliefors GOF Test						
195	5% Lilliefors Critical Value				0.283	Data Not Normal at 5% Significance Level						
196	Data Not Normal at 5% Significance Level											
197												
198	Assuming Normal Distribution											
199	95% Normal UCL					95% UCLs (Adjusted for Skewness)						
200	95% Student's-t UCL				0.16	95% Adjusted-CLT UCL (Chen-1995)				0.195		
201						95% Modified-t UCL (Johnson-1978)				0.167		
202												
203	Gamma GOF Test											
204	A-D Test Statistic				1.34	Anderson-Darling Gamma GOF Test						
205	5% A-D Critical Value				0.735	Data Not Gamma Distributed at 5% Significance Level						
206	K-S Test Statistic				0.425	Kolmogorov-Smirnov Gamma GOF Test						
207	5% K-S Critical Value				0.301	Data Not Gamma Distributed at 5% Significance Level						
208	Data Not Gamma Distributed at 5% Significance Level											

	A	B	C	D	E	F	G	H	I	J	K	L
209												
210	Gamma Statistics											
211	k hat (MLE)					1.057	k star (bias corrected MLE)					0.744
212	Theta hat (MLE)					0.0748	Theta star (bias corrected MLE)					0.106
213	nu hat (MLE)					16.92	nu star (bias corrected)					11.91
214	MLE Mean (bias corrected)					0.0791	MLE Sd (bias corrected)					0.0917
215							Approximate Chi Square Value (0.05)					5.165
216	Adjusted Level of Significance					0.0195	Adjusted Chi Square Value					4.1
217												
218	Assuming Gamma Distribution											
219	95% Approximate Gamma UCL (use when n>=50))					0.182	95% Adjusted Gamma UCL (use when n<50)					0.23
220												
221	Lognormal GOF Test											
222	Shapiro Wilk Test Statistic					0.79	Shapiro Wilk Lognormal GOF Test					
223	5% Shapiro Wilk Critical Value					0.818	Data Not Lognormal at 5% Significance Level					
224	Lilliefors Test Statistic					0.352	Lilliefors Lognormal GOF Test					
225	5% Lilliefors Critical Value					0.283	Data Not Lognormal at 5% Significance Level					
226	Data Not Lognormal at 5% Significance Level											
227												
228	Lognormal Statistics											
229	Minimum of Logged Data					-4.298	Mean of logged Data					-3.08
230	Maximum of Logged Data					-0.973	SD of logged Data					0.943
231												
232	Assuming Lognormal Distribution											
233	95% H-UCL					0.231	90% Chebyshev (MVUE) UCL					0.135
234	95% Chebyshev (MVUE) UCL					0.166	97.5% Chebyshev (MVUE) UCL					0.209
235	99% Chebyshev (MVUE) UCL					0.293						
236												
237	Nonparametric Distribution Free UCL Statistics											
238	Data do not follow a Discernible Distribution (0.05)											
239												
240	Nonparametric Distribution Free UCLs											
241	95% CLT UCL					0.15	95% Jackknife UCL					0.16
242	95% Standard Bootstrap UCL					0.144	95% Bootstrap-t UCL					0.856
243	95% Hall's Bootstrap UCL					0.716	95% Percentile Bootstrap UCL					0.163
244	95% BCA Bootstrap UCL					0.169						
245	90% Chebyshev(Mean, Sd) UCL					0.208	95% Chebyshev(Mean, Sd) UCL					0.266
246	97.5% Chebyshev(Mean, Sd) UCL					0.347	99% Chebyshev(Mean, Sd) UCL					0.506
247												
248	Suggested UCL to Use											
249	95% Chebyshev (Mean, Sd) UCL					0.266						
250												
251	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
252	Recommendations are based upon data size, data distribution, and skewness.											
253	These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).											
254	However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.											
255												
256												
257	Zinc											
258												
259	General Statistics											
260	Total Number of Observations					8	Number of Distinct Observations					8

	A	B	C	D	E	F	G	H	I	J	K	L		
261						Number of Missing Observations							0	
262	Minimum					16.7	Mean							47.86
263	Maximum					108	Median							43.9
264	SD					27.15	Std. Error of Mean							9.6
265	Coefficient of Variation					0.567	Skewness							1.705
266														
267	Note: Sample size is small (e.g., <10), if data are collected using ISM approach, you should use													
268	guidance provided in ITRC Tech Reg Guide on ISM (ITRC, 2012) to compute statistics of interest.													
269	For example, you may want to use Chebyshev UCL to estimate EPC (ITRC, 2012).													
270	Chebyshev UCL can be computed using the Nonparametric and All UCL Options of ProUCL 5.1													
271														
272	Normal GOF Test													
273	Shapiro Wilk Test Statistic					0.84	Shapiro Wilk GOF Test							
274	5% Shapiro Wilk Critical Value					0.818	Data appear Normal at 5% Significance Level							
275	Lilliefors Test Statistic					0.297	Lilliefors GOF Test							
276	5% Lilliefors Critical Value					0.283	Data Not Normal at 5% Significance Level							
277	Data appear Approximate Normal at 5% Significance Level													
278														
279	Assuming Normal Distribution													
280	95% Normal UCL					95% UCLs (Adjusted for Skewness)								
281	95% Student's-t UCL					66.05	95% Adjusted-CLT UCL (Chen-1995)					69.84		
282							95% Modified-t UCL (Johnson-1978)					67.02		
283														
284	Gamma GOF Test													
285	A-D Test Statistic					0.322	Anderson-Darling Gamma GOF Test							
286	5% A-D Critical Value					0.719	Detected data appear Gamma Distributed at 5% Significance Level							
287	K-S Test Statistic					0.226	Kolmogorov-Smirnov Gamma GOF Test							
288	5% K-S Critical Value					0.295	Detected data appear Gamma Distributed at 5% Significance Level							
289	Detected data appear Gamma Distributed at 5% Significance Level													
290														
291	Gamma Statistics													
292	k hat (MLE)					4.147	k star (bias corrected MLE)					2.675		
293	Theta hat (MLE)					11.54	Theta star (bias corrected MLE)					17.89		
294	nu hat (MLE)					66.35	nu star (bias corrected)					42.8		
295	MLE Mean (bias corrected)					47.86	MLE Sd (bias corrected)					29.26		
296							Approximate Chi Square Value (0.05)					28.8		
297	Adjusted Level of Significance					0.0195	Adjusted Chi Square Value					25.93		
298														
299	Assuming Gamma Distribution													
300	95% Approximate Gamma UCL (use when n>=50))					71.13	95% Adjusted Gamma UCL (use when n<50)					79		
301														
302	Lognormal GOF Test													
303	Shapiro Wilk Test Statistic					0.96	Shapiro Wilk Lognormal GOF Test							
304	5% Shapiro Wilk Critical Value					0.818	Data appear Lognormal at 5% Significance Level							
305	Lilliefors Test Statistic					0.208	Lilliefors Lognormal GOF Test							
306	5% Lilliefors Critical Value					0.283	Data appear Lognormal at 5% Significance Level							
307	Data appear Lognormal at 5% Significance Level													
308														
309	Lognormal Statistics													
310	Minimum of Logged Data					2.815	Mean of logged Data					3.743		
311	Maximum of Logged Data					4.682	SD of logged Data					0.535		
312														

	A	B	C	D	E	F	G	H	I	J	K	L
313	Assuming Lognormal Distribution											
314	95% H-UCL					79.39	90% Chebyshev (MVUE) UCL					75.19
315	95% Chebyshev (MVUE) UCL					87.61	97.5% Chebyshev (MVUE) UCL					104.8
316	99% Chebyshev (MVUE) UCL					138.7						
317												
318	Nonparametric Distribution Free UCL Statistics											
319	Data appear to follow a Discernible Distribution at 5% Significance Level											
320												
321	Nonparametric Distribution Free UCLs											
322	95% CLT UCL					63.65	95% Jackknife UCL					66.05
323	95% Standard Bootstrap UCL					62.54	95% Bootstrap-t UCL					76.89
324	95% Hall's Bootstrap UCL					142.6	95% Percentile Bootstrap UCL					64.21
325	95% BCA Bootstrap UCL					68.55						
326	90% Chebyshev(Mean, Sd) UCL					76.66	95% Chebyshev(Mean, Sd) UCL					89.71
327	97.5% Chebyshev(Mean, Sd) UCL					107.8	99% Chebyshev(Mean, Sd) UCL					143.4
328												
329	Suggested UCL to Use											
330	95% Student's-t UCL					66.05						
331												
332	When a data set follows an approximate (e.g., normal) distribution passing one of the GOF test											
333	When applicable, it is suggested to use a UCL based upon a distribution (e.g., gamma) passing both GOF tests in ProUCL											
334												
335	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
336	Recommendations are based upon data size, data distribution, and skewness.											
337	These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).											
338	However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.											
339												
340												
341	Aroclor-1260											
342												
343	General Statistics											
344	Total Number of Observations					8	Number of Distinct Observations					8
345							Number of Missing Observations					0
346	Minimum					0.00257	Mean					0.00917
347	Maximum					0.0236	Median					0.00688
348	SD					0.00796	Std. Error of Mean					0.00281
349	Coefficient of Variation					0.867	Skewness					1.289
350												
351	Note: Sample size is small (e.g., <10), if data are collected using ISM approach, you should use											
352	guidance provided in ITRC Tech Reg Guide on ISM (ITRC, 2012) to compute statistics of interest.											
353	For example, you may want to use Chebyshev UCL to estimate EPC (ITRC, 2012).											
354	Chebyshev UCL can be computed using the Nonparametric and All UCL Options of ProUCL 5.1											
355												
356	Normal GOF Test											
357	Shapiro Wilk Test Statistic					0.782	Shapiro Wilk GOF Test					
358	5% Shapiro Wilk Critical Value					0.818	Data Not Normal at 5% Significance Level					
359	Lilliefors Test Statistic					0.354	Lilliefors GOF Test					
360	5% Lilliefors Critical Value					0.283	Data Not Normal at 5% Significance Level					
361	Data Not Normal at 5% Significance Level											
362												
363	Assuming Normal Distribution											
364	95% Normal UCL						95% UCLs (Adjusted for Skewness)					

	A	B	C	D	E	F	G	H	I	J	K	L
365	95% Student's-t UCL					0.0145	95% Adjusted-CLT UCL (Chen-1995)					0.0152
366							95% Modified-t UCL (Johnson-1978)					0.0147
367												
368	Gamma GOF Test											
369	A-D Test Statistic					0.534	Anderson-Darling Gamma GOF Test					
370	5% A-D Critical Value					0.726	Detected data appear Gamma Distributed at 5% Significance Level					
371	K-S Test Statistic					0.281	Kolmogorov-Smirnov Gamma GOF Test					
372	5% K-S Critical Value					0.298	Detected data appear Gamma Distributed at 5% Significance Level					
373	Detected data appear Gamma Distributed at 5% Significance Level											
374												
375	Gamma Statistics											
376	k hat (MLE)					1.788	k star (bias corrected MLE)					1.201
377	Theta hat (MLE)					0.00513	Theta star (bias corrected MLE)					0.00764
378	nu hat (MLE)					28.61	nu star (bias corrected)					19.22
379	MLE Mean (bias corrected)					0.00917	MLE Sd (bias corrected)					0.00837
380							Approximate Chi Square Value (0.05)					10.28
381	Adjusted Level of Significance					0.0195	Adjusted Chi Square Value					8.671
382												
383	Assuming Gamma Distribution											
384	95% Approximate Gamma UCL (use when n>=50)					0.0172	95% Adjusted Gamma UCL (use when n<50)					0.0203
385												
386	Lognormal GOF Test											
387	Shapiro Wilk Test Statistic					0.903	Shapiro Wilk Lognormal GOF Test					
388	5% Shapiro Wilk Critical Value					0.818	Data appear Lognormal at 5% Significance Level					
389	Lilliefors Test Statistic					0.228	Lilliefors Lognormal GOF Test					
390	5% Lilliefors Critical Value					0.283	Data appear Lognormal at 5% Significance Level					
391	Data appear Lognormal at 5% Significance Level											
392												
393	Lognormal Statistics											
394	Minimum of Logged Data					-5.964	Mean of logged Data					-4.996
395	Maximum of Logged Data					-3.747	SD of logged Data					0.823
396												
397	Assuming Lognormal Distribution											
398	95% H-UCL					0.0242	90% Chebyshev (MVUE) UCL					0.017
399	95% Chebyshev (MVUE) UCL					0.0207	97.5% Chebyshev (MVUE) UCL					0.0257
400	99% Chebyshev (MVUE) UCL					0.0356						
401												
402	Nonparametric Distribution Free UCL Statistics											
403	Data appear to follow a Discernible Distribution at 5% Significance Level											
404												
405	Nonparametric Distribution Free UCLs											
406	95% CLT UCL					0.0138	95% Jackknife UCL					0.0145
407	95% Standard Bootstrap UCL					0.0136	95% Bootstrap-t UCL					0.0257
408	95% Hall's Bootstrap UCL					0.0509	95% Percentile Bootstrap UCL					0.0139
409	95% BCA Bootstrap UCL					0.0147						
410	90% Chebyshev(Mean, Sd) UCL					0.0176	95% Chebyshev(Mean, Sd) UCL					0.0214
411	97.5% Chebyshev(Mean, Sd) UCL					0.0267	99% Chebyshev(Mean, Sd) UCL					0.0372
412												
413	Suggested UCL to Use											
414	95% Adjusted Gamma UCL					0.0203						
415												
416	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											

	A	B	C	D	E	F	G	H	I	J	K	L
417	Recommendations are based upon data size, data distribution, and skewness.											
418	These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).											
419	However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.											
420												
421	Benzo(a)anthracene											
422												
423	General Statistics											
424	Total Number of Observations				8		Number of Distinct Observations				8	
425	Number of Detects				6		Number of Non-Detects				2	
426	Number of Distinct Detects				6		Number of Distinct Non-Detects				2	
427	Minimum Detect				0.0136		Minimum Non-Detect				0.0382	
428	Maximum Detect				0.0395		Maximum Non-Detect				0.146	
429	Variance Detects				9.5990E-5		Percent Non-Detects				25%	
430	Mean Detects				0.0209		SD Detects				0.0098	
431	Median Detects				0.0174		CV Detects				0.469	
432	Skewness Detects				1.793		Kurtosis Detects				3.302	
433	Mean of Logged Detects				-3.943		SD of Logged Detects				0.402	
434												
435	Note: Sample size is small (e.g., <10), if data are collected using ISM approach, you should use											
436	guidance provided in ITRC Tech Reg Guide on ISM (ITRC, 2012) to compute statistics of interest.											
437	For example, you may want to use Chebyshev UCL to estimate EPC (ITRC, 2012).											
438	Chebyshev UCL can be computed using the Nonparametric and All UCL Options of ProUCL 5.1											
439												
440	Normal GOF Test on Detects Only											
441	Shapiro Wilk Test Statistic				0.787		Shapiro Wilk GOF Test					
442	5% Shapiro Wilk Critical Value				0.788		Detected Data Not Normal at 5% Significance Level					
443	Lilliefors Test Statistic				0.248		Lilliefors GOF Test					
444	5% Lilliefors Critical Value				0.325		Detected Data appear Normal at 5% Significance Level					
445	Detected Data appear Approximate Normal at 5% Significance Level											
446												
447	Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs											
448	KM Mean				0.0204		KM Standard Error of Mean				0.00357	
449	KM SD				0.00849		95% KM (BCA) UCL				0.0266	
450	95% KM (t) UCL				0.0271		95% KM (Percentile Bootstrap) UCL				0.0261	
451	95% KM (z) UCL				0.0262		95% KM Bootstrap t UCL				0.0367	
452	90% KM Chebyshev UCL				0.0311		95% KM Chebyshev UCL				0.0359	
453	97.5% KM Chebyshev UCL				0.0426		99% KM Chebyshev UCL				0.0559	
454												
455	Gamma GOF Tests on Detected Observations Only											
456	A-D Test Statistic				0.508		Anderson-Darling GOF Test					
457	5% A-D Critical Value				0.698		Detected data appear Gamma Distributed at 5% Significance Level					
458	K-S Test Statistic				0.25		Kolmogorov-Smirnov GOF					
459	5% K-S Critical Value				0.333		Detected data appear Gamma Distributed at 5% Significance Level					
460	Detected data appear Gamma Distributed at 5% Significance Level											
461												
462	Gamma Statistics on Detected Data Only											
463	k hat (MLE)				6.867		k star (bias corrected MLE)				3.544	
464	Theta hat (MLE)				0.00304		Theta star (bias corrected MLE)				0.00589	
465	nu hat (MLE)				82.4		nu star (bias corrected)				42.53	
466	Mean (detects)				0.0209							
467												
468	Gamma ROS Statistics using Imputed Non-Detects											

	A	B	C	D	E	F	G	H	I	J	K	L
469	GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs											
470	GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)											
471	For such situations, GROS method may yield incorrect values of UCLs and BTVs											
472	This is especially true when the sample size is small.											
473	For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates											
474		Minimum		0.0136				Mean				0.0203
475		Maximum		0.0395				Median				0.0185
476		SD		0.00837				CV				0.413
477		k hat (MLE)		8.845				k star (bias corrected MLE)				5.612
478		Theta hat (MLE)		0.00229				Theta star (bias corrected MLE)				0.00361
479		nu hat (MLE)		141.5				nu star (bias corrected)				89.78
480		Adjusted Level of Significance (β)		0.0195								
481		Approximate Chi Square Value (89.78, α)		68.94				Adjusted Chi Square Value (89.78, β)				64.33
482		95% Gamma Approximate UCL (use when $n \geq 50$)		0.0264				95% Gamma Adjusted UCL (use when $n < 50$)				0.0283
483												
484	Estimates of Gamma Parameters using KM Estimates											
485		Mean (KM)		0.0204				SD (KM)				0.00849
486		Variance (KM)		7.2092E-5				SE of Mean (KM)				0.00357
487		k hat (KM)		5.745				k star (KM)				3.674
488		nu hat (KM)		91.92				nu star (KM)				58.79
489		theta hat (KM)		0.00354				theta star (KM)				0.00554
490		80% gamma percentile (KM)		0.0283				90% gamma percentile (KM)				0.0346
491		95% gamma percentile (KM)		0.0404				99% gamma percentile (KM)				0.0527
492												
493	Gamma Kaplan-Meier (KM) Statistics											
494		Approximate Chi Square Value (58.79, α)		42.16				Adjusted Chi Square Value (58.79, β)				38.62
495		95% Gamma Approximate KM-UCL (use when $n \geq 50$)		0.0284				95% Gamma Adjusted KM-UCL (use when $n < 50$)				0.031
496												
497	Lognormal GOF Test on Detected Observations Only											
498		Shapiro Wilk Test Statistic		0.869				Shapiro Wilk GOF Test				
499		5% Shapiro Wilk Critical Value		0.788				Detected Data appear Lognormal at 5% Significance Level				
500		Lilliefors Test Statistic		0.233				Lilliefors GOF Test				
501		5% Lilliefors Critical Value		0.325				Detected Data appear Lognormal at 5% Significance Level				
502	Detected Data appear Lognormal at 5% Significance Level											
503												
504	Lognormal ROS Statistics Using Imputed Non-Detects											
505		Mean in Original Scale		0.0202				Mean in Log Scale				-3.96
506		SD in Original Scale		0.00839				SD in Log Scale				0.342
507		95% t UCL (assumes normality of ROS data)		0.0258				95% Percentile Bootstrap UCL				0.0256
508		95% BCA Bootstrap UCL		0.0276				95% Bootstrap t UCL				0.0327
509		95% H-UCL (Log ROS)		0.0265								
510												
511	Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution											
512		KM Mean (logged)		-3.964				KM Geo Mean				0.019
513		KM SD (logged)		0.352				95% Critical H Value (KM-Log)				2.126
514		KM Standard Error of Mean (logged)		0.15				95% H-UCL (KM -Log)				0.0268
515		KM SD (logged)		0.352				95% Critical H Value (KM-Log)				2.126
516		KM Standard Error of Mean (logged)		0.15								
517												
518	DL/2 Statistics											
519	DL/2 Normal						DL/2 Log-Transformed					
520		Mean in Original Scale		0.0272				Mean in Log Scale				-3.779

	A	B	C	D	E	F	G	H	I	J	K	L
521	SD in Original Scale					0.0203	SD in Log Scale					0.58
522	95% t UCL (Assumes normality)					0.0408	95% H-Stat UCL					0.0467
523	DL/2 is not a recommended method, provided for comparisons and historical reasons											
524												
525	Nonparametric Distribution Free UCL Statistics											
526	Detected Data appear Approximate Normal Distributed at 5% Significance Level											
527												
528	Suggested UCL to Use											
529	95% KM (t) UCL					0.0271						
530												
531	When a data set follows an approximate (e.g., normal) distribution passing one of the GOF test											
532	When applicable, it is suggested to use a UCL based upon a distribution (e.g., gamma) passing both GOF tests in ProUCL											
533												
534	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
535	Recommendations are based upon data size, data distribution, and skewness.											
536	These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).											
537	However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.											
538												
539	Benzo(a)pyrene											
540												
541	General Statistics											
542	Total Number of Observations					8	Number of Distinct Observations					8
543	Number of Detects					6	Number of Non-Detects					2
544	Number of Distinct Detects					6	Number of Distinct Non-Detects					2
545	Minimum Detect					0.0136	Minimum Non-Detect					0.0382
546	Maximum Detect					0.0399	Maximum Non-Detect					0.146
547	Variance Detects					9.3350E-5	Percent Non-Detects					25%
548	Mean Detects					0.0208	SD Detects					0.00966
549	Median Detects					0.0178	CV Detects					0.465
550	Skewness Detects					2.124	Kurtosis Detects					4.784
551	Mean of Logged Detects					-3.943	SD of Logged Detects					0.381
552												
553	Note: Sample size is small (e.g., <10), if data are collected using ISM approach, you should use											
554	guidance provided in ITRC Tech Reg Guide on ISM (ITRC, 2012) to compute statistics of interest.											
555	For example, you may want to use Chebyshev UCL to estimate EPC (ITRC, 2012).											
556	Chebyshev UCL can be computed using the Nonparametric and All UCL Options of ProUCL 5.1											
557												
558	Normal GOF Test on Detects Only											
559	Shapiro Wilk Test Statistic					0.727	Shapiro Wilk GOF Test					
560	5% Shapiro Wilk Critical Value					0.788	Detected Data Not Normal at 5% Significance Level					
561	Lilliefors Test Statistic					0.345	Lilliefors GOF Test					
562	5% Lilliefors Critical Value					0.325	Detected Data Not Normal at 5% Significance Level					
563	Detected Data Not Normal at 5% Significance Level											
564												
565	Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs											
566	KM Mean					0.0202	KM Standard Error of Mean					0.00347
567	KM SD					0.00832	95% KM (BCA) UCL					0.0263
568	95% KM (t) UCL					0.0268	95% KM (Percentile Bootstrap) UCL					0.0261
569	95% KM (z) UCL					0.0259	95% KM Bootstrap t UCL					0.0391
570	90% KM Chebyshev UCL					0.0306	95% KM Chebyshev UCL					0.0354
571	97.5% KM Chebyshev UCL					0.0419	99% KM Chebyshev UCL					0.0548
572												

	A	B	C	D	E	F	G	H	I	J	K	L
573	Gamma GOF Tests on Detected Observations Only											
574	A-D Test Statistic					0.663	Anderson-Darling GOF Test					
575	5% A-D Critical Value					0.698	Detected data appear Gamma Distributed at 5% Significance Level					
576	K-S Test Statistic					0.299	Kolmogorov-Smirnov GOF					
577	5% K-S Critical Value					0.333	Detected data appear Gamma Distributed at 5% Significance Level					
578	Detected data appear Gamma Distributed at 5% Significance Level											
579												
580	Gamma Statistics on Detected Data Only											
581	k hat (MLE)					7.408	k star (bias corrected MLE)					3.815
582	Theta hat (MLE)					0.00281	Theta star (bias corrected MLE)					0.00545
583	nu hat (MLE)					88.9	nu star (bias corrected)					45.78
584	Mean (detects)					0.0208						
585												
586	Gamma ROS Statistics using Imputed Non-Detects											
587	GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs											
588	GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)											
589	For such situations, GROS method may yield incorrect values of UCLs and BTVs											
590	This is especially true when the sample size is small.											
591	For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates											
592	Minimum					0.0136	Mean					0.0202
593	Maximum					0.0399	Median					0.0178
594	SD					0.00825	CV					0.408
595	k hat (MLE)					9.552	k star (bias corrected MLE)					6.054
596	Theta hat (MLE)					0.00212	Theta star (bias corrected MLE)					0.00334
597	nu hat (MLE)					152.8	nu star (bias corrected)					96.86
598	Adjusted Level of Significance (β)					0.0195						
599	Approximate Chi Square Value (96.86, α)					75.16	Adjusted Chi Square Value (96.86, β)					70.33
600	95% Gamma Approximate UCL (use when n>=50)					0.026	95% Gamma Adjusted UCL (use when n<50)					0.0278
601												
602	Estimates of Gamma Parameters using KM Estimates											
603	Mean (KM)					0.0202	SD (KM)					0.00832
604	Variance (KM)					6.9274E-5	SE of Mean (KM)					0.00347
605	k hat (KM)					5.912	k star (KM)					3.778
606	nu hat (KM)					94.59	nu star (KM)					60.45
607	theta hat (KM)					0.00342	theta star (KM)					0.00536
608	80% gamma percentile (KM)					0.0281	90% gamma percentile (KM)					0.0342
609	95% gamma percentile (KM)					0.0398	99% gamma percentile (KM)					0.0519
610												
611	Gamma Kaplan-Meier (KM) Statistics											
612	Approximate Chi Square Value (60.45, α)					43.57	Adjusted Chi Square Value (60.45, β)					39.97
613	95% Gamma Approximate KM-UCL (use when n>=50)					0.0281	95% Gamma Adjusted KM-UCL (use when n<50)					0.0306
614												
615	Lognormal GOF Test on Detected Observations Only											
616	Shapiro Wilk Test Statistic					0.834	Shapiro Wilk GOF Test					
617	5% Shapiro Wilk Critical Value					0.788	Detected Data appear Lognormal at 5% Significance Level					
618	Lilliefors Test Statistic					0.276	Lilliefors GOF Test					
619	5% Lilliefors Critical Value					0.325	Detected Data appear Lognormal at 5% Significance Level					
620	Detected Data appear Lognormal at 5% Significance Level											
621												
622	Lognormal ROS Statistics Using Imputed Non-Detects											
623	Mean in Original Scale					0.0201	Mean in Log Scale					-3.958
624	SD in Original Scale					0.00826	SD in Log Scale					0.324

	A	B	C	D	E	F	G	H	I	J	K	L
625	95% t UCL (assumes normality of ROS data)					0.0257	95% Percentile Bootstrap UCL					0.0255
626	95% BCA Bootstrap UCL					0.0274	95% Bootstrap t UCL					0.036
627	95% H-UCL (Log ROS)					0.026						
628												
629	Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution											
630	KM Mean (logged)					-3.963	KM Geo Mean					0.019
631	KM SD (logged)					0.33	95% Critical H Value (KM-Log)					2.097
632	KM Standard Error of Mean (logged)					0.139	95% H-UCL (KM -Log)					0.0261
633	KM SD (logged)					0.33	95% Critical H Value (KM-Log)					2.097
634	KM Standard Error of Mean (logged)					0.139						
635												
636	DL/2 Statistics											
637	DL/2 Normal					DL/2 Log-Transformed						
638	Mean in Original Scale					0.0271	Mean in Log Scale					-3.779
639	SD in Original Scale					0.0203	SD in Log Scale					0.569
640	95% t UCL (Assumes normality)					0.0407	95% H-Stat UCL					0.0458
641	DL/2 is not a recommended method, provided for comparisons and historical reasons											
642												
643	Nonparametric Distribution Free UCL Statistics											
644	Detected Data appear Gamma Distributed at 5% Significance Level											
645												
646	Suggested UCL to Use											
647	95% KM Adjusted Gamma UCL					0.0306	95% GROS Adjusted Gamma UCL					0.0278
648												
649	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
650	Recommendations are based upon data size, data distribution, and skewness.											
651	These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).											
652	However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.											
653												
654	Benzo(b)fluoranthene											
655												
656	General Statistics											
657	Total Number of Observations					8	Number of Distinct Observations					8
658	Number of Detects					7	Number of Non-Detects					1
659	Number of Distinct Detects					7	Number of Distinct Non-Detects					1
660	Minimum Detect					0.0158	Minimum Non-Detect					0.0382
661	Maximum Detect					0.049	Maximum Non-Detect					0.0382
662	Variance Detects					1.8441E-4	Percent Non-Detects					12.5%
663	Mean Detects					0.0286	SD Detects					0.0136
664	Median Detects					0.0249	CV Detects					0.475
665	Skewness Detects					0.757	Kurtosis Detects					-1.206
666	Mean of Logged Detects					-3.648	SD of Logged Detects					0.463
667												
668	Note: Sample size is small (e.g., <10), if data are collected using ISM approach, you should use											
669	guidance provided in ITRC Tech Reg Guide on ISM (ITRC, 2012) to compute statistics of interest.											
670	For example, you may want to use Chebyshev UCL to estimate EPC (ITRC, 2012).											
671	Chebyshev UCL can be computed using the Nonparametric and All UCL Options of ProUCL 5.1											
672												
673	Normal GOF Test on Detects Only											
674	Shapiro Wilk Test Statistic					0.864	Shapiro Wilk GOF Test					
675	5% Shapiro Wilk Critical Value					0.803	Detected Data appear Normal at 5% Significance Level					
676	Lilliefors Test Statistic					0.179	Lilliefors GOF Test					

	A	B	C	D	E	F	G	H	I	J	K	L	
677	5% Lilliefors Critical Value					0.304	Detected Data appear Normal at 5% Significance Level						
678	Detected Data appear Normal at 5% Significance Level												
679													
680	Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs												
681	KM Mean				0.0277	KM Standard Error of Mean					0.00471		
682	KM SD				0.0122	95% KM (BCA) UCL					0.0349		
683	95% KM (t) UCL				0.0366	95% KM (Percentile Bootstrap) UCL					0.0355		
684	95% KM (z) UCL				0.0354	95% KM Bootstrap t UCL					0.0416		
685	90% KM Chebyshev UCL				0.0418	95% KM Chebyshev UCL					0.0482		
686	97.5% KM Chebyshev UCL				0.0571	99% KM Chebyshev UCL					0.0746		
687													
688	Gamma GOF Tests on Detected Observations Only												
689	A-D Test Statistic				0.393	Anderson-Darling GOF Test							
690	5% A-D Critical Value				0.71	Detected data appear Gamma Distributed at 5% Significance Level							
691	K-S Test Statistic				0.188	Kolmogorov-Smirnov GOF							
692	5% K-S Critical Value				0.313	Detected data appear Gamma Distributed at 5% Significance Level							
693	Detected data appear Gamma Distributed at 5% Significance Level												
694													
695	Gamma Statistics on Detected Data Only												
696	k hat (MLE)				5.509	k star (bias corrected MLE)					3.243		
697	Theta hat (MLE)				0.00519	Theta star (bias corrected MLE)					0.00882		
698	nu hat (MLE)				77.12	nu star (bias corrected)					45.4		
699	Mean (detects)				0.0286								
700													
701	Gamma ROS Statistics using Imputed Non-Detects												
702	GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs												
703	GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)												
704	For such situations, GROS method may yield incorrect values of UCLs and BTVs												
705	This is especially true when the sample size is small.												
706	For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates												
707	Minimum				0.0158	Mean					0.0277		
708	Maximum				0.049	Median					0.0233		
709	SD				0.0128	CV					0.461		
710	k hat (MLE)				6.001	k star (bias corrected MLE)					3.834		
711	Theta hat (MLE)				0.00462	Theta star (bias corrected MLE)					0.00724		
712	nu hat (MLE)				96.02	nu star (bias corrected)					61.35		
713	Adjusted Level of Significance (β)				0.0195								
714	Approximate Chi Square Value (61.35, α)				44.33	Adjusted Chi Square Value (61.35, β)					40.7		
715	95% Gamma Approximate UCL (use when n>=50)				0.0384	95% Gamma Adjusted UCL (use when n<50)					0.0418		
716													
717	Estimates of Gamma Parameters using KM Estimates												
718	Mean (KM)				0.0277	SD (KM)					0.0122		
719	Variance (KM)				1.4790E-4	SE of Mean (KM)					0.00471		
720	k hat (KM)				5.179	k star (KM)					3.32		
721	nu hat (KM)				82.87	nu star (KM)					53.13		
722	theta hat (KM)				0.00534	theta star (KM)					0.00834		
723	80% gamma percentile (KM)				0.039	90% gamma percentile (KM)					0.048		
724	95% gamma percentile (KM)				0.0564	99% gamma percentile (KM)					0.0745		
725													
726	Gamma Kaplan-Meier (KM) Statistics												
727	Approximate Chi Square Value (53.13, α)				37.38	Adjusted Chi Square Value (53.13, β)					34.07		
728	95% Gamma Approximate KM-UCL (use when n>=50)				0.0393	95% Gamma Adjusted KM-UCL (use when n<50)					0.0432		

	A	B	C	D	E	F	G	H	I	J	K	L
729												
730	Lognormal GOF Test on Detected Observations Only											
731	Shapiro Wilk Test Statistic					0.902	Shapiro Wilk GOF Test					
732	5% Shapiro Wilk Critical Value					0.803	Detected Data appear Lognormal at 5% Significance Level					
733	Lilliefors Test Statistic					0.168	Lilliefors GOF Test					
734	5% Lilliefors Critical Value					0.304	Detected Data appear Lognormal at 5% Significance Level					
735	Detected Data appear Lognormal at 5% Significance Level											
736												
737	Lognormal ROS Statistics Using Imputed Non-Detects											
738	Mean in Original Scale					0.0277	Mean in Log Scale					-3.673
739	SD in Original Scale					0.0128	SD in Log Scale					0.434
740	95% t UCL (assumes normality of ROS data)					0.0363	95% Percentile Bootstrap UCL					0.035
741	95% BCA Bootstrap UCL					0.0362	95% Bootstrap t UCL					0.0444
742	95% H-UCL (Log ROS)					0.0404						
743												
744	Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution											
745	KM Mean (logged)					-3.677	KM Geo Mean					0.0253
746	KM SD (logged)					0.418	95% Critical H Value (KM-Log)					2.222
747	KM Standard Error of Mean (logged)					0.164	95% H-UCL (KM -Log)					0.0392
748	KM SD (logged)					0.418	95% Critical H Value (KM-Log)					2.222
749	KM Standard Error of Mean (logged)					0.164						
750												
751	DL/2 Statistics											
752	DL/2 Normal					DL/2 Log-Transformed						
753	Mean in Original Scale					0.0274	Mean in Log Scale					-3.687
754	SD in Original Scale					0.013	SD in Log Scale					0.442
755	95% t UCL (Assumes normality)					0.0361	95% H-Stat UCL					0.0403
756	DL/2 is not a recommended method, provided for comparisons and historical reasons											
757												
758	Nonparametric Distribution Free UCL Statistics											
759	Detected Data appear Normal Distributed at 5% Significance Level											
760												
761	Suggested UCL to Use											
762	95% KM (t) UCL					0.0366						
763												
764	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
765	Recommendations are based upon data size, data distribution, and skewness.											
766	These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).											
767	However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.											
768												
769	Chrysene											
770												
771	General Statistics											
772	Total Number of Observations					8	Number of Distinct Observations					8
773	Number of Detects					5	Number of Non-Detects					3
774	Number of Distinct Detects					5	Number of Distinct Non-Detects					3
775	Minimum Detect					0.012	Minimum Non-Detect					0.0358
776	Maximum Detect					0.0417	Maximum Non-Detect					0.146
777	Variance Detects					1.4973E-4	Percent Non-Detects					37.5%
778	Mean Detects					0.0203	SD Detects					0.0122
779	Median Detects					0.0165	CV Detects					0.602
780	Skewness Detects					1.977	Kurtosis Detects					4.059

	A	B	C	D	E	F	G	H	I	J	K	L
781	Mean of Logged Detects				-4.008	SD of Logged Detects						0.497
782												
783	Note: Sample size is small (e.g., <10), if data are collected using ISM approach, you should use											
784	guidance provided in ITRC Tech Reg Guide on ISM (ITRC, 2012) to compute statistics of interest.											
785	For example, you may want to use Chebyshev UCL to estimate EPC (ITRC, 2012).											
786	Chebyshev UCL can be computed using the Nonparametric and All UCL Options of ProUCL 5.1											
787												
788	Normal GOF Test on Detects Only											
789	Shapiro Wilk Test Statistic				0.744	Shapiro Wilk GOF Test						
790	5% Shapiro Wilk Critical Value				0.762	Detected Data Not Normal at 5% Significance Level						
791	Lilliefors Test Statistic				0.357	Lilliefors GOF Test						
792	5% Lilliefors Critical Value				0.343	Detected Data Not Normal at 5% Significance Level						
793	Detected Data Not Normal at 5% Significance Level											
794												
795	Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs											
796	KM Mean				0.0188	KM Standard Error of Mean						0.00415
797	KM SD				0.00967	95% KM (BCA) UCL						0.0263
798	95% KM (t) UCL				0.0267	95% KM (Percentile Bootstrap) UCL						0.026
799	95% KM (z) UCL				0.0256	95% KM Bootstrap t UCL						0.0398
800	90% KM Chebyshev UCL				0.0313	95% KM Chebyshev UCL						0.0369
801	97.5% KM Chebyshev UCL				0.0447	99% KM Chebyshev UCL						0.0601
802												
803	Gamma GOF Tests on Detected Observations Only											
804	A-D Test Statistic				0.562	Anderson-Darling GOF Test						
805	5% A-D Critical Value				0.681	Detected data appear Gamma Distributed at 5% Significance Level						
806	K-S Test Statistic				0.313	Kolmogorov-Smirnov GOF						
807	5% K-S Critical Value				0.358	Detected data appear Gamma Distributed at 5% Significance Level						
808	Detected data appear Gamma Distributed at 5% Significance Level											
809												
810	Gamma Statistics on Detected Data Only											
811	k hat (MLE)				4.594	k star (bias corrected MLE)						1.971
812	Theta hat (MLE)				0.00443	Theta star (bias corrected MLE)						0.0103
813	nu hat (MLE)				45.94	nu star (bias corrected)						19.71
814	Mean (detects)				0.0203							
815												
816	Gamma ROS Statistics using Imputed Non-Detects											
817	GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs											
818	GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)											
819	For such situations, GROS method may yield incorrect values of UCLs and BTVs											
820	This is especially true when the sample size is small.											
821	For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates											
822	Minimum				0.012	Mean						0.0188
823	Maximum				0.0417	Median						0.016
824	SD				0.00951	CV						0.506
825	k hat (MLE)				6.661	k star (bias corrected MLE)						4.246
826	Theta hat (MLE)				0.00282	Theta star (bias corrected MLE)						0.00443
827	nu hat (MLE)				106.6	nu star (bias corrected)						67.94
828	Adjusted Level of Significance (β)				0.0195							
829	Approximate Chi Square Value (67.94, α)				49.97	Adjusted Chi Square Value (67.94, β)						46.09
830	95% Gamma Approximate UCL (use when $n \geq 50$)				0.0256	95% Gamma Adjusted UCL (use when $n < 50$)						0.0277
831												
832	Estimates of Gamma Parameters using KM Estimates											

	A	B	C	D	E	F	G	H	I	J	K	L
833	Mean (KM)					0.0188	SD (KM)					0.00967
834	Variance (KM)					9.3426E-5	SE of Mean (KM)					0.00415
835	k hat (KM)					3.789	k star (KM)					2.451
836	nu hat (KM)					60.62	nu star (KM)					39.22
837	theta hat (KM)					0.00497	theta star (KM)					0.00767
838	80% gamma percentile (KM)					0.0275	90% gamma percentile (KM)					0.0349
839	95% gamma percentile (KM)					0.0419	99% gamma percentile (KM)					0.0572
840												
841	Gamma Kaplan-Meier (KM) Statistics											
842	Approximate Chi Square Value (39.22, α)					25.88	Adjusted Chi Square Value (39.22, β)					23.17
843	95% Gamma Approximate KM-UCL (use when $n \geq 50$)					0.0285	95% Gamma Adjusted KM-UCL (use when $n < 50$)					0.0318
844												
845	Lognormal GOF Test on Detected Observations Only											
846	Shapiro Wilk Test Statistic					0.848	Shapiro Wilk GOF Test					
847	5% Shapiro Wilk Critical Value					0.762	Detected Data appear Lognormal at 5% Significance Level					
848	Lilliefors Test Statistic					0.281	Lilliefors GOF Test					
849	5% Lilliefors Critical Value					0.343	Detected Data appear Lognormal at 5% Significance Level					
850	Detected Data appear Lognormal at 5% Significance Level											
851												
852	Lognormal ROS Statistics Using Imputed Non-Detects											
853	Mean in Original Scale					0.0187	Mean in Log Scale					-4.056
854	SD in Original Scale					0.00953	SD in Log Scale					0.383
855	95% t UCL (assumes normality of ROS data)					0.0251	95% Percentile Bootstrap UCL					0.0251
856	95% BCA Bootstrap UCL					0.0284	95% Bootstrap t UCL					0.0393
857	95% H-UCL (Log ROS)					0.0255						
858												
859	Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution											
860	KM Mean (logged)					-4.067	KM Geo Mean					0.0171
861	KM SD (logged)					0.399	95% Critical H Value (KM-Log)					2.194
862	KM Standard Error of Mean (logged)					0.176	95% H-UCL (KM -Log)					0.0258
863	KM SD (logged)					0.399	95% Critical H Value (KM-Log)					2.194
864	KM Standard Error of Mean (logged)					0.176						
865												
866	DL/2 Statistics											
867	DL/2 Normal						DL/2 Log-Transformed					
868	Mean in Original Scale					0.0265	Mean in Log Scale					-3.83
869	SD in Original Scale					0.021	SD in Log Scale					0.618
870	95% t UCL (Assumes normality)					0.0405	95% H-Stat UCL					0.0479
871	DL/2 is not a recommended method, provided for comparisons and historical reasons											
872												
873	Nonparametric Distribution Free UCL Statistics											
874	Detected Data appear Gamma Distributed at 5% Significance Level											
875												
876	Suggested UCL to Use											
877	95% KM Adjusted Gamma UCL					0.0318	95% GROS Adjusted Gamma UCL					0.0277
878												
879	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
880	Recommendations are based upon data size, data distribution, and skewness.											
881	These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).											
882	However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.											
883												
884	Fluoranthene											

	A	B	C	D	E	F	G	H	I	J	K	L
885												
886	General Statistics											
887	Total Number of Observations					8	Number of Distinct Observations					8
888	Number of Detects					7	Number of Non-Detects					1
889	Number of Distinct Detects					7	Number of Distinct Non-Detects					1
890	Minimum Detect					0.0168	Minimum Non-Detect					0.0382
891	Maximum Detect					0.0657	Maximum Non-Detect					0.0382
892	Variance Detects					3.2875E-4	Percent Non-Detects					12.5%
893	Mean Detects					0.0331	SD Detects					0.0181
894	Median Detects					0.0238	CV Detects					0.548
895	Skewness Detects					1.117	Kurtosis Detects					0.265
896	Mean of Logged Detects					-3.525	SD of Logged Detects					0.512
897												
898	Note: Sample size is small (e.g., <10), if data are collected using ISM approach, you should use											
899	guidance provided in ITRC Tech Reg Guide on ISM (ITRC, 2012) to compute statistics of interest.											
900	For example, you may want to use Chebyshev UCL to estimate EPC (ITRC, 2012).											
901	Chebyshev UCL can be computed using the Nonparametric and All UCL Options of ProUCL 5.1											
902												
903	Normal GOF Test on Detects Only											
904	Shapiro Wilk Test Statistic					0.867	Shapiro Wilk GOF Test					
905	5% Shapiro Wilk Critical Value					0.803	Detected Data appear Normal at 5% Significance Level					
906	Lilliefors Test Statistic					0.268	Lilliefors GOF Test					
907	5% Lilliefors Critical Value					0.304	Detected Data appear Normal at 5% Significance Level					
908	Detected Data appear Normal at 5% Significance Level											
909												
910	Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs											
911	KM Mean					0.0319	KM Standard Error of Mean					0.00627
912	KM SD					0.0162	95% KM (BCA) UCL					0.0422
913	95% KM (t) UCL					0.0438	95% KM (Percentile Bootstrap) UCL					0.042
914	95% KM (z) UCL					0.0422	95% KM Bootstrap t UCL					0.05
915	90% KM Chebyshev UCL					0.0507	95% KM Chebyshev UCL					0.0593
916	97.5% KM Chebyshev UCL					0.0711	99% KM Chebyshev UCL					0.0943
917												
918	Gamma GOF Tests on Detected Observations Only											
919	A-D Test Statistic					0.384	Anderson-Darling GOF Test					
920	5% A-D Critical Value					0.71	Detected data appear Gamma Distributed at 5% Significance Level					
921	K-S Test Statistic					0.261	Kolmogorov-Smirnov GOF					
922	5% K-S Critical Value					0.313	Detected data appear Gamma Distributed at 5% Significance Level					
923	Detected data appear Gamma Distributed at 5% Significance Level											
924												
925	Gamma Statistics on Detected Data Only											
926	k hat (MLE)					4.418	k star (bias corrected MLE)					2.62
927	Theta hat (MLE)					0.0075	Theta star (bias corrected MLE)					0.0126
928	nu hat (MLE)					61.85	nu star (bias corrected)					36.68
929	Mean (detects)					0.0331						
930												
931	Gamma ROS Statistics using Imputed Non-Detects											
932	GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs											
933	GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)											
934	For such situations, GROS method may yield incorrect values of UCLs and BTVs											
935	This is especially true when the sample size is small.											
936	For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates											

	A	B	C	D	E	F	G	H	I	J	K	L
937	Minimum					0.0168	Mean					0.032
938	Maximum					0.0657	Median					0.0239
939	SD					0.0171	CV					0.535
940	k hat (MLE)					4.787	k star (bias corrected MLE)					3.075
941	Theta hat (MLE)					0.00668	Theta star (bias corrected MLE)					0.0104
942	nu hat (MLE)					76.59	nu star (bias corrected)					49.2
943	Adjusted Level of Significance (β)					0.0195						
944	Approximate Chi Square Value (49.20, α)					34.1	Adjusted Chi Square Value (49.20, β)					30.95
945	95% Gamma Approximate UCL (use when $n \geq 50$)					0.0461	95% Gamma Adjusted UCL (use when $n < 50$)					0.0508
946												
947	Estimates of Gamma Parameters using KM Estimates											
948	Mean (KM)					0.0319	SD (KM)					0.0162
949	Variance (KM)					2.6238E-4	SE of Mean (KM)					0.00627
950	k hat (KM)					3.885	k star (KM)					2.511
951	nu hat (KM)					62.16	nu star (KM)					40.18
952	theta hat (KM)					0.00822	theta star (KM)					0.0127
953	80% gamma percentile (KM)					0.0465	90% gamma percentile (KM)					0.0589
954	95% gamma percentile (KM)					0.0706	99% gamma percentile (KM)					0.0962
955												
956	Gamma Kaplan-Meier (KM) Statistics											
957	Approximate Chi Square Value (40.18, α)					26.66	Adjusted Chi Square Value (40.18, β)					23.91
958	95% Gamma Approximate KM-UCL (use when $n \geq 50$)					0.0481	95% Gamma Adjusted KM-UCL (use when $n < 50$)					0.0537
959												
960	Lognormal GOF Test on Detected Observations Only											
961	Shapiro Wilk Test Statistic					0.923	Shapiro Wilk GOF Test					
962	5% Shapiro Wilk Critical Value					0.803	Detected Data appear Lognormal at 5% Significance Level					
963	Lilliefors Test Statistic					0.233	Lilliefors GOF Test					
964	5% Lilliefors Critical Value					0.304	Detected Data appear Lognormal at 5% Significance Level					
965	Detected Data appear Lognormal at 5% Significance Level											
966												
967	Lognormal ROS Statistics Using Imputed Non-Detects											
968	Mean in Original Scale					0.0319	Mean in Log Scale					-3.553
969	SD in Original Scale					0.0171	SD in Log Scale					0.48
970	95% t UCL (assumes normality of ROS data)					0.0434	95% Percentile Bootstrap UCL					0.0417
971	95% BCA Bootstrap UCL					0.0431	95% Bootstrap t UCL					0.0567
972	95% H-UCL (Log ROS)					0.049						
973												
974	Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution											
975	KM Mean (logged)					-3.557	KM Geo Mean					0.0285
976	KM SD (logged)					0.461	95% Critical H Value (KM-Log)					2.29
977	KM Standard Error of Mean (logged)					0.181	95% H-UCL (KM -Log)					0.0473
978	KM SD (logged)					0.461	95% Critical H Value (KM-Log)					2.29
979	KM Standard Error of Mean (logged)					0.181						
980												
981	DL/2 Statistics											
982	DL/2 Normal						DL/2 Log-Transformed					
983	Mean in Original Scale					0.0314	Mean in Log Scale					-3.579
984	SD in Original Scale					0.0175	SD in Log Scale					0.498
985	95% t UCL (Assumes normality)					0.0431	95% H-Stat UCL					0.0492
986	DL/2 is not a recommended method, provided for comparisons and historical reasons											
987												
988	Nonparametric Distribution Free UCL Statistics											

	A	B	C	D	E	F	G	H	I	J	K	L
989	Detected Data appear Normal Distributed at 5% Significance Level											
990												
991	Suggested UCL to Use											
992	95% KM (t) UCL				0.0438							
993												
994	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
995	Recommendations are based upon data size, data distribution, and skewness.											
996	These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).											
997	However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.											
998												
999	Pyrene											
1000												
1001	General Statistics											
1002	Total Number of Observations				8		Number of Distinct Observations				8	
1003	Number of Detects				6		Number of Non-Detects				2	
1004	Number of Distinct Detects				6		Number of Distinct Non-Detects				2	
1005	Minimum Detect				0.0145		Minimum Non-Detect				0.0382	
1006	Maximum Detect				0.0686		Maximum Non-Detect				0.146	
1007	Variance Detects				4.4122E-4		Percent Non-Detects				25%	
1008	Mean Detects				0.0276		SD Detects				0.021	
1009	Median Detects				0.0183		CV Detects				0.762	
1010	Skewness Detects				2.044		Kurtosis Detects				4.202	
1011	Mean of Logged Detects				-3.768		SD of Logged Detects				0.601	
1012												
1013	Note: Sample size is small (e.g., <10), if data are collected using ISM approach, you should use											
1014	guidance provided in ITRC Tech Reg Guide on ISM (ITRC, 2012) to compute statistics of interest.											
1015	For example, you may want to use Chebyshev UCL to estimate EPC (ITRC, 2012).											
1016	Chebyshev UCL can be computed using the Nonparametric and All UCL Options of ProUCL 5.1											
1017												
1018	Normal GOF Test on Detects Only											
1019	Shapiro Wilk Test Statistic				0.704		Shapiro Wilk GOF Test					
1020	5% Shapiro Wilk Critical Value				0.788		Detected Data Not Normal at 5% Significance Level					
1021	Lilliefors Test Statistic				0.337		Lilliefors GOF Test					
1022	5% Lilliefors Critical Value				0.325		Detected Data Not Normal at 5% Significance Level					
1023	Detected Data Not Normal at 5% Significance Level											
1024												
1025	Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs											
1026	KM Mean				0.0264		KM Standard Error of Mean				0.00758	
1027	KM SD				0.0181		95% KM (BCA) UCL				0.0385	
1028	95% KM (t) UCL				0.0408		95% KM (Percentile Bootstrap) UCL				0.039	
1029	95% KM (z) UCL				0.0389		95% KM Bootstrap t UCL				0.119	
1030	90% KM Chebyshev UCL				0.0491		95% KM Chebyshev UCL				0.0594	
1031	97.5% KM Chebyshev UCL				0.0737		99% KM Chebyshev UCL				0.102	
1032												
1033	Gamma GOF Tests on Detected Observations Only											
1034	A-D Test Statistic				0.719		Anderson-Darling GOF Test					
1035	5% A-D Critical Value				0.701		Detected Data Not Gamma Distributed at 5% Significance Level					
1036	K-S Test Statistic				0.344		Kolmogorov-Smirnov GOF					
1037	5% K-S Critical Value				0.335		Detected Data Not Gamma Distributed at 5% Significance Level					
1038	Detected Data Not Gamma Distributed at 5% Significance Level											
1039												
1040	Gamma Statistics on Detected Data Only											

	A	B	C	D	E	F	G	H	I	J	K	L
1041	k hat (MLE)					2.976	k star (bias corrected MLE)					1.599
1042	Theta hat (MLE)					0.00926	Theta star (bias corrected MLE)					0.0172
1043	nu hat (MLE)					35.71	nu star (bias corrected)					19.19
1044	Mean (detects)					0.0276						
1045												
1046	Gamma ROS Statistics using Imputed Non-Detects											
1047	GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs											
1048	GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)											
1049	For such situations, GROS method may yield incorrect values of UCLs and BTVs											
1050	This is especially true when the sample size is small.											
1051	For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates											
1052	Minimum					0.0145	Mean					0.0261
1053	Maximum					0.0686	Median					0.0191
1054	SD					0.018	CV					0.689
1055	k hat (MLE)					3.757	k star (bias corrected MLE)					2.432
1056	Theta hat (MLE)					0.00695	Theta star (bias corrected MLE)					0.0107
1057	nu hat (MLE)					60.12	nu star (bias corrected)					38.91
1058	Adjusted Level of Significance (β)					0.0195						
1059	Approximate Chi Square Value (38.91, α)					25.62	Adjusted Chi Square Value (38.91, β)					22.93
1060	95% Gamma Approximate UCL (use when n>=50)					0.0396	95% Gamma Adjusted UCL (use when n<50)					0.0443
1061												
1062	Estimates of Gamma Parameters using KM Estimates											
1063	Mean (KM)					0.0264	SD (KM)					0.0181
1064	Variance (KM)					3.2871E-4	SE of Mean (KM)					0.00758
1065	k hat (KM)					2.119	k star (KM)					1.408
1066	nu hat (KM)					33.91	nu star (KM)					22.53
1067	theta hat (KM)					0.0125	theta star (KM)					0.0187
1068	80% gamma percentile (KM)					0.0411	90% gamma percentile (KM)					0.0559
1069	95% gamma percentile (KM)					0.0702	99% gamma percentile (KM)					0.103
1070												
1071	Gamma Kaplan-Meier (KM) Statistics											
1072	Approximate Chi Square Value (22.53, α)					12.73	Adjusted Chi Square Value (22.53, β)					10.92
1073	95% Gamma Approximate KM-UCL (use when n>=50)					0.0467	95% Gamma Adjusted KM-UCL (use when n<50)					0.0545
1074												
1075	Lognormal GOF Test on Detected Observations Only											
1076	Shapiro Wilk Test Statistic					0.811	Shapiro Wilk GOF Test					
1077	5% Shapiro Wilk Critical Value					0.788	Detected Data appear Lognormal at 5% Significance Level					
1078	Lilliefors Test Statistic					0.317	Lilliefors GOF Test					
1079	5% Lilliefors Critical Value					0.325	Detected Data appear Lognormal at 5% Significance Level					
1080	Detected Data appear Lognormal at 5% Significance Level											
1081												
1082	Lognormal ROS Statistics Using Imputed Non-Detects											
1083	Mean in Original Scale					0.0259	Mean in Log Scale					-3.793
1084	SD in Original Scale					0.018	SD in Log Scale					0.511
1085	95% t UCL (assumes normality of ROS data)					0.038	95% Percentile Bootstrap UCL					0.037
1086	95% BCA Bootstrap UCL					0.0425	95% Bootstrap t UCL					0.0806
1087	95% H-UCL (Log ROS)					0.0406						
1088												
1089	Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution											
1090	KM Mean (logged)					-3.8	KM Geo Mean					0.0224
1091	KM SD (logged)					0.524	95% Critical H Value (KM-Log)					2.395
1092	KM Standard Error of Mean (logged)					0.222	95% H-UCL (KM -Log)					0.0413

	A	B	C	D	E	F	G	H	I	J	K	L
1093	KM SD (logged)					0.524	95% Critical H Value (KM-Log)					2.395
1094	KM Standard Error of Mean (logged)					0.222						
1095												
1096	DL/2 Statistics											
1097	DL/2 Normal					DL/2 Log-Transformed						
1098	Mean in Original Scale					0.0322	Mean in Log Scale					-3.648
1099	SD in Original Scale					0.0244	SD in Log Scale					0.66
1100	95% t UCL (Assumes normality)					0.0485	95% H-Stat UCL					0.0628
1101	DL/2 is not a recommended method, provided for comparisons and historical reasons											
1102												
1103	Nonparametric Distribution Free UCL Statistics											
1104	Detected Data appear Lognormal Distributed at 5% Significance Level											
1105												
1106	Suggested UCL to Use											
1107	KM H-UCL					0.0413						
1108												
1109	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
1110	Recommendations are based upon data size, data distribution, and skewness.											
1111	These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).											
1112	However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.											
1113												
1114	Americium-241											
1115												
1116	General Statistics											
1117	Total Number of Observations					8	Number of Distinct Observations					8
1118	Number of Detects					5	Number of Non-Detects					3
1119	Number of Distinct Detects					5	Number of Distinct Non-Detects					3
1120	Minimum Detect					0.0189	Minimum Non-Detect					0.00889
1121	Maximum Detect					0.384	Maximum Non-Detect					0.0323
1122	Variance Detects					0.0238	Percent Non-Detects					37.5%
1123	Mean Detects					0.11	SD Detects					0.154
1124	Median Detects					0.0565	CV Detects					1.398
1125	Skewness Detects					2.158	Kurtosis Detects					4.722
1126	Mean of Logged Detects					-2.821	SD of Logged Detects					1.152
1127												
1128	Note: Sample size is small (e.g., <10), if data are collected using ISM approach, you should use											
1129	guidance provided in ITRC Tech Reg Guide on ISM (ITRC, 2012) to compute statistics of interest.											
1130	For example, you may want to use Chebyshev UCL to estimate EPC (ITRC, 2012).											
1131	Chebyshev UCL can be computed using the Nonparametric and All UCL Options of ProUCL 5.1											
1132												
1133	Normal GOF Test on Detects Only											
1134	Shapiro Wilk Test Statistic					0.662	Shapiro Wilk GOF Test					
1135	5% Shapiro Wilk Critical Value					0.762	Detected Data Not Normal at 5% Significance Level					
1136	Lilliefors Test Statistic					0.421	Lilliefors GOF Test					
1137	5% Lilliefors Critical Value					0.343	Detected Data Not Normal at 5% Significance Level					
1138	Detected Data Not Normal at 5% Significance Level											
1139												
1140	Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs											
1141	KM Mean					0.074	KM Standard Error of Mean					0.0469
1142	KM SD					0.119	95% KM (BCA) UCL					0.166
1143	95% KM (t) UCL					0.163	95% KM (Percentile Bootstrap) UCL					0.158
1144	95% KM (z) UCL					0.151	95% KM Bootstrap t UCL					0.431

	A	B	C	D	E	F	G	H	I	J	K	L
1145	90% KM Chebyshev UCL					0.215	95% KM Chebyshev UCL					0.279
1146	97.5% KM Chebyshev UCL					0.367	99% KM Chebyshev UCL					0.541
1147												
1148	Gamma GOF Tests on Detected Observations Only											
1149	A-D Test Statistic					0.576	Anderson-Darling GOF Test					
1150	5% A-D Critical Value					0.693	Detected data appear Gamma Distributed at 5% Significance Level					
1151	K-S Test Statistic					0.356	Kolmogorov-Smirnov GOF					
1152	5% K-S Critical Value					0.365	Detected data appear Gamma Distributed at 5% Significance Level					
1153	Detected data appear Gamma Distributed at 5% Significance Level											
1154												
1155	Gamma Statistics on Detected Data Only											
1156	k hat (MLE)					0.944	k star (bias corrected MLE)					0.511
1157	Theta hat (MLE)					0.117	Theta star (bias corrected MLE)					0.216
1158	nu hat (MLE)					9.435	nu star (bias corrected)					5.107
1159	Mean (detects)					0.11						
1160												
1161	Gamma ROS Statistics using Imputed Non-Detects											
1162	GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs											
1163	GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)											
1164	For such situations, GROS method may yield incorrect values of UCLs and BTVs											
1165	This is especially true when the sample size is small.											
1166	For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates											
1167	Minimum					0.01	Mean					0.0727
1168	Maximum					0.384	Median					0.024
1169	SD					0.128	CV					1.755
1170	k hat (MLE)					0.697	k star (bias corrected MLE)					0.519
1171	Theta hat (MLE)					0.104	Theta star (bias corrected MLE)					0.14
1172	nu hat (MLE)					11.15	nu star (bias corrected)					8.3
1173	Adjusted Level of Significance (β)					0.0195						
1174	Approximate Chi Square Value (8.30, α)					2.91	Adjusted Chi Square Value (8.30, β)					2.166
1175	95% Gamma Approximate UCL (use when n \geq 50)					0.207	95% Gamma Adjusted UCL (use when n<50)					0.278
1176												
1177	Estimates of Gamma Parameters using KM Estimates											
1178	Mean (KM)					0.074	SD (KM)					0.119
1179	Variance (KM)					0.0141	SE of Mean (KM)					0.0469
1180	k hat (KM)					0.388	k star (KM)					0.326
1181	nu hat (KM)					6.213	nu star (KM)					5.216
1182	theta hat (KM)					0.19	theta star (KM)					0.227
1183	80% gamma percentile (KM)					0.116	90% gamma percentile (KM)					0.216
1184	95% gamma percentile (KM)					0.329	99% gamma percentile (KM)					0.621
1185												
1186	Gamma Kaplan-Meier (KM) Statistics											
1187	Approximate Chi Square Value (5.22, α)					1.253	Adjusted Chi Square Value (5.22, β)					0.831
1188	95% Gamma Approximate KM-UCL (use when n \geq 50)					0.308	95% Gamma Adjusted KM-UCL (use when n<50)					0.464
1189												
1190	Lognormal GOF Test on Detected Observations Only											
1191	Shapiro Wilk Test Statistic					0.901	Shapiro Wilk GOF Test					
1192	5% Shapiro Wilk Critical Value					0.762	Detected Data appear Lognormal at 5% Significance Level					
1193	Lilliefors Test Statistic					0.282	Lilliefors GOF Test					
1194	5% Lilliefors Critical Value					0.343	Detected Data appear Lognormal at 5% Significance Level					
1195	Detected Data appear Lognormal at 5% Significance Level											
1196												

	A	B	C	D	E	F	G	H	I	J	K	L	
1197	Lognormal ROS Statistics Using Imputed Non-Detects												
1198	Mean in Original Scale					0.0719	Mean in Log Scale					-3.612	
1199	SD in Original Scale					0.128	SD in Log Scale					1.43	
1200	95% t UCL (assumes normality of ROS data)					0.158	95% Percentile Bootstrap UCL					0.158	
1201	95% BCA Bootstrap UCL					0.181	95% Bootstrap t UCL					0.457	
1202	95% H-UCL (Log ROS)					0.878							
1203													
1204	Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution												
1205	KM Mean (logged)					-3.415	KM Geo Mean					0.0329	
1206	KM SD (logged)					1.148	95% Critical H Value (KM-Log)					3.801	
1207	KM Standard Error of Mean (logged)					0.467	95% H-UCL (KM -Log)					0.331	
1208	KM SD (logged)					1.148	95% Critical H Value (KM-Log)					3.801	
1209	KM Standard Error of Mean (logged)					0.467							
1210													
1211	DL/2 Statistics												
1212	DL/2 Normal					DL/2 Log-Transformed							
1213	Mean in Original Scale					0.0732	Mean in Log Scale					-3.489	
1214	SD in Original Scale					0.127	SD in Log Scale					1.323	
1215	95% t UCL (Assumes normality)					0.158	95% H-Stat UCL					0.618	
1216	DL/2 is not a recommended method, provided for comparisons and historical reasons												
1217													
1218	Nonparametric Distribution Free UCL Statistics												
1219	Detected Data appear Gamma Distributed at 5% Significance Level												
1220													
1221	Suggested UCL to Use												
1222	95% KM Bootstrap t UCL					0.431	Adjusted KM-UCL (use when $k \leq 1$ and $15 < n < 50$ but $k \leq 1$)					0.464	
1223													
1224	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.												
1225	Recommendations are based upon data size, data distribution, and skewness.												
1226	These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).												
1227	However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.												
1228													
1229													
1230	Plutonium-239/240												
1231													
1232	General Statistics												
1233	Total Number of Observations					8	Number of Distinct Observations					8	
1234							Number of Missing Observations					0	
1235	Minimum					0.501	Mean					5.134	
1236	Maximum					21.5	Median					1.29	
1237	SD					7.622	Std. Error of Mean					2.695	
1238	Coefficient of Variation					1.485	Skewness					1.867	
1239													
1240	Note: Sample size is small (e.g., <10), if data are collected using ISM approach, you should use												
1241	guidance provided in ITRC Tech Reg Guide on ISM (ITRC, 2012) to compute statistics of interest.												
1242	For example, you may want to use Chebyshev UCL to estimate EPC (ITRC, 2012).												
1243	Chebyshev UCL can be computed using the Nonparametric and All UCL Options of ProUCL 5.1												
1244													
1245	Normal GOF Test												
1246	Shapiro Wilk Test Statistic					0.66	Shapiro Wilk GOF Test						
1247	5% Shapiro Wilk Critical Value					0.818	Data Not Normal at 5% Significance Level						
1248	Lilliefors Test Statistic					0.396	Lilliefors GOF Test						

	A	B	C	D	E	F	G	H	I	J	K	L	
1249	5% Lilliefors Critical Value					0.283	Data Not Normal at 5% Significance Level						
1250	Data Not Normal at 5% Significance Level												
1251													
1252	Assuming Normal Distribution												
1253	95% Normal UCL					95% UCLs (Adjusted for Skewness)							
1254	95% Student's-t UCL				10.24	95% Adjusted-CLT UCL (Chen-1995)					11.47		
1255						95% Modified-t UCL (Johnson-1978)					10.54		
1256													
1257	Gamma GOF Test												
1258	A-D Test Statistic				0.959	Anderson-Darling Gamma GOF Test							
1259	5% A-D Critical Value				0.747	Data Not Gamma Distributed at 5% Significance Level							
1260	K-S Test Statistic				0.326	Kolmogorov-Smirnov Gamma GOF Test							
1261	5% K-S Critical Value				0.305	Data Not Gamma Distributed at 5% Significance Level							
1262	Data Not Gamma Distributed at 5% Significance Level												
1263													
1264	Gamma Statistics												
1265	k hat (MLE)				0.719	k star (bias corrected MLE)					0.532		
1266	Theta hat (MLE)				7.144	Theta star (bias corrected MLE)					9.642		
1267	nu hat (MLE)				11.5	nu star (bias corrected)					8.519		
1268	MLE Mean (bias corrected)				5.134	MLE Sd (bias corrected)					7.036		
1269						Approximate Chi Square Value (0.05)					3.039		
1270	Adjusted Level of Significance				0.0195	Adjusted Chi Square Value					2.274		
1271													
1272	Assuming Gamma Distribution												
1273	95% Approximate Gamma UCL (use when n>=50))				14.39	95% Adjusted Gamma UCL (use when n<50)					19.23		
1274													
1275	Lognormal GOF Test												
1276	Shapiro Wilk Test Statistic				0.85	Shapiro Wilk Lognormal GOF Test							
1277	5% Shapiro Wilk Critical Value				0.818	Data appear Lognormal at 5% Significance Level							
1278	Lilliefors Test Statistic				0.258	Lilliefors Lognormal GOF Test							
1279	5% Lilliefors Critical Value				0.283	Data appear Lognormal at 5% Significance Level							
1280	Data appear Lognormal at 5% Significance Level												
1281													
1282	Lognormal Statistics												
1283	Minimum of Logged Data				-0.691	Mean of logged Data					0.798		
1284	Maximum of Logged Data				3.068	SD of logged Data					1.299		
1285													
1286	Assuming Lognormal Distribution												
1287	95% H-UCL				40.61	90% Chebyshev (MVUE) UCL					10.6		
1288	95% Chebyshev (MVUE) UCL				13.4	97.5% Chebyshev (MVUE) UCL					17.29		
1289	99% Chebyshev (MVUE) UCL				24.92								
1290													
1291	Nonparametric Distribution Free UCL Statistics												
1292	Data appear to follow a Discernible Distribution at 5% Significance Level												
1293													
1294	Nonparametric Distribution Free UCLs												
1295	95% CLT UCL				9.566	95% Jackknife UCL					10.24		
1296	95% Standard Bootstrap UCL				9.297	95% Bootstrap-t UCL					60.92		
1297	95% Hall's Bootstrap UCL				48	95% Percentile Bootstrap UCL					10.12		
1298	95% BCA Bootstrap UCL				11.4								
1299	90% Chebyshev(Mean, Sd) UCL				13.22	95% Chebyshev(Mean, Sd) UCL					16.88		
1300	97.5% Chebyshev(Mean, Sd) UCL				21.96	99% Chebyshev(Mean, Sd) UCL					31.95		

	A	B	C	D	E	F	G	H	I	J	K	L
1301												
1302	Suggested UCL to Use											
1303	95% Chebyshev (Mean, Sd) UCL					16.88						
1304												
1305	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
1306	Recommendations are based upon data size, data distribution, and skewness.											
1307	These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).											
1308	However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.											
1309												