	A	B	C	D	E	F	G	H	I	J	K	L
1	**UCL Statistics for Uncensored Full Data Sets**											
2												
3	User Selected Options											
4	Date/Time of Computation			3/10/2015 11:13:39 AM								
5	From File			EPC_026SubR1_EU2.xls								
6	Full Precision			OFF								
7	Confidence Coefficient			95%								
8	Number of Bootstrap Operations			2000								
9												
10												
11	**Aluminum**											
12												
13	**General Statistics**											
14	Total Number of Observations					10	Number of Distinct Observations					7
15							Number of Missing Observations					0
16	Minimum					4300	Mean					13627
17	Maximum					34600	Median					13627
18	SD					8282	Std. Error of Mean					2619
19	Coefficient of Variation					0.608	Skewness					1.911
20												
21	**Normal GOF Test**											
22	Shapiro Wilk Test Statistic					0.752	**Shapiro Wilk GOF Test**					
23	5% Shapiro Wilk Critical Value					0.842	Data Not Normal at 5% Significance Level					
24	Lilliefors Test Statistic					0.348	**Lilliefors GOF Test**					
25	5% Lilliefors Critical Value					0.28	Data Not Normal at 5% Significance Level					
26	**Data Not Normal at 5% Significance Level**											
27												
28	**Assuming Normal Distribution**											
29	**95% Normal UCL**						**95% UCLs (Adjusted for Skewness)**					
30	95% Student's-t UCL					18428	95% Adjusted-CLT UCL (Chen-1995)					19626
31							95% Modified-t UCL (Johnson-1978)					18691
32												
33	**Gamma GOF Test**											
34	A-D Test Statistic					0.787	**Anderson-Darling Gamma GOF Test**					
35	5% A-D Critical Value					0.73	Data Not Gamma Distributed at 5% Significance Level					
36	K-S Test Statistic					0.274	**Kolmogrov-Smirnoff Gamma GOF Test**					
37	5% K-S Critical Value					0.268	Data Not Gamma Distributed at 5% Significance Level					
38	**Data Not Gamma Distributed at 5% Significance Level**											
39												
40	**Gamma Statistics**											
41	k hat (MLE)					3.609	k star (bias corrected MLE)					2.593
42	Theta hat (MLE)					3776	Theta star (bias corrected MLE)					5255
43	nu hat (MLE)					72.18	nu star (bias corrected)					51.86
44	MLE Mean (bias corrected)					13627	MLE Sd (bias corrected)					8462
45							Approximate Chi Square Value (0.05)					36.32
46	Adjusted Level of Significance					0.0267	Adjusted Chi Square Value					34.07
47												
48	**Assuming Gamma Distribution**											
49	95% Approximate Gamma UCL (use when n>=50))					19457	95% Adjusted Gamma UCL (use when n<50)					20741
50												
51	**Lognormal GOF Test**											
52	Shapiro Wilk Test Statistic					0.884	**Shapiro Wilk Lognormal GOF Test**					

	A	B	C	D	E	F	G	H	I	J	K	L
53					5% Shapiro Wilk Critical Value	0.842	Data appear Lognormal at 5% Significance Level					
54					Lilliefors Test Statistic	0.301	**Lilliefors Lognormal GOF Test**					
55					5% Lilliefors Critical Value	0.28	Data Not Lognormal at 5% Significance Level					
56	**Data appear Approximate Lognormal at 5% Significance Level**											
57												
58	**Lognormal Statistics**											
59					Minimum of Logged Data	8.366	Mean of logged Data					9.375
60					Maximum of Logged Data	10.45	SD of logged Data					0.569
61												
62	**Assuming Lognormal Distribution**											
63					95% H-UCL	21519	90% Chebyshev (MVUE) UCL					21121
64					95% Chebyshev (MVUE) UCL	24523	97.5% Chebyshev (MVUE) UCL					29244
65					99% Chebyshev (MVUE) UCL	38519						
66												
67	**Nonparametric Distribution Free UCL Statistics**											
68	**Data appear to follow a Discernible Distribution at 5% Significance Level**											
69												
70	**Nonparametric Distribution Free UCLs**											
71					95% CLT UCL	17935	95% Jackknife UCL					18428
72					95% Standard Bootstrap UCL	17739	95% Bootstrap-t UCL					20715
73					95% Hall's Bootstrap UCL	38658	95% Percentile Bootstrap UCL					17926
74					95% BCA Bootstrap UCL	19525						
75					90% Chebyshev(Mean, Sd) UCL	21484	95% Chebyshev(Mean, Sd) UCL					25043
76					97.5% Chebyshev(Mean, Sd) UCL	29982	99% Chebyshev(Mean, Sd) UCL					39686
77												
78	**Suggested UCL to Use**											
79					95% Chebyshev (Mean, Sd) UCL	25043						
80												
81	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
82	These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)											
83	and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.											
84	For additional insight the user may want to consult a statistician.											
85												
86												
87	**Antimony**											
88												
89	**General Statistics**											
90					Total Number of Observations	10	Number of Distinct Observations					10
91							Number of Missing Observations					0
92					Minimum	0.12	Mean					102
93					Maximum	156.7	Median					121
94					SD	54.43	Std. Error of Mean					17.21
95					Coefficient of Variation	0.533	Skewness					-1.496
96												
97	**Normal GOF Test**											
98					Shapiro Wilk Test Statistic	0.74	**Shapiro Wilk GOF Test**					
99					5% Shapiro Wilk Critical Value	0.842	Data Not Normal at 5% Significance Level					
100					Lilliefors Test Statistic	0.356	**Lilliefors GOF Test**					
101					5% Lilliefors Critical Value	0.28	Data Not Normal at 5% Significance Level					
102	**Data Not Normal at 5% Significance Level**											
103												
104	**Assuming Normal Distribution**											

	A	B	C	D	E	F	G	H	I	J	K	L
105	95% Normal UCL						95% UCLs (Adjusted for Skewness)					
106					95% Student's-t UCL	133.6				95% Adjusted-CLT UCL (Chen-1995)		121.6
107										95% Modified-t UCL (Johnson-1978)		132.2
108												
109	Gamma GOF Test											
110					A-D Test Statistic	2.181	Anderson-Darling Gamma GOF Test					
111					5% A-D Critical Value	0.759	Data Not Gamma Distributed at 5% Significance Level					
112					K-S Test Statistic	0.476	Kolmogrov-Smirnoff Gamma GOF Test					
113					5% K-S Critical Value	0.276	Data Not Gamma Distributed at 5% Significance Level					
114	Data Not Gamma Distributed at 5% Significance Level											
115												
116	Gamma Statistics											
117					k hat (MLE)	0.724				k star (bias corrected MLE)		0.573
118					Theta hat (MLE)	141				Theta star (bias corrected MLE)		178
119					nu hat (MLE)	14.47				nu star (bias corrected)		11.46
120					MLE Mean (bias corrected)	102				MLE Sd (bias corrected)		134.8
121										Approximate Chi Square Value (0.05)		4.875
122					Adjusted Level of Significance	0.0267				Adjusted Chi Square Value		4.154
123												
124	Assuming Gamma Distribution											
125				95% Approximate Gamma UCL (use when n>=50))		239.9				95% Adjusted Gamma UCL (use when n<50)		281.5
126												
127	Lognormal GOF Test											
128					Shapiro Wilk Test Statistic	0.575	Shapiro Wilk Lognormal GOF Test					
129					5% Shapiro Wilk Critical Value	0.842	Data Not Lognormal at 5% Significance Level					
130					Lilliefors Test Statistic	0.45	Lilliefors Lognormal GOF Test					
131					5% Lilliefors Critical Value	0.28	Data Not Lognormal at 5% Significance Level					
132	Data Not Lognormal at 5% Significance Level											
133												
134	Lognormal Statistics											
135					Minimum of Logged Data	-2.12				Mean of logged Data		3.794
136					Maximum of Logged Data	5.054				SD of logged Data		2.352
137												
138	Assuming Lognormal Distribution											
139					95% H-UCL	94949				90% Chebyshev (MVUE) UCL		1168
140					95% Chebyshev (MVUE) UCL	1532				97.5% Chebyshev (MVUE) UCL		2038
141					99% Chebyshev (MVUE) UCL	3031						
142												
143	Nonparametric Distribution Free UCL Statistics											
144	Data do not follow a Discernible Distribution (0.05)											
145												
146	Nonparametric Distribution Free UCLs											
147					95% CLT UCL	130.3				95% Jackknife UCL		133.6
148					95% Standard Bootstrap UCL	128.7				95% Bootstrap-t UCL		127.1
149					95% Hall's Bootstrap UCL	122.4				95% Percentile Bootstrap UCL		127.3
150					95% BCA Bootstrap UCL	123.3						
151					90% Chebyshev(Mean, Sd) UCL	153.7				95% Chebyshev(Mean, Sd) UCL		177.1
152					97.5% Chebyshev(Mean, Sd) UCL	209.5				99% Chebyshev(Mean, Sd) UCL		273.3
153												
154	Suggested UCL to Use											
155					99% Chebyshev (Mean, Sd) UCL	273.3						
156												

	A	B	C	D	E	F	G	H	I	J	K	L
157	**Recommended UCL exceeds the maximum observation**											
158												
159	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
160	These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)											
161	and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.											
162	For additional insight the user may want to consult a statistician.											
163												
164	**Note: For highly negatively-skewed data, confidence limits (e.g., Chen, Johnson, Lognormal, and Gamma) may not be**											
165	**reliable. Chen's and Johnson's methods provide adjustments for positvely skewed data sets.**											
166												
167												
168	**Arsenic**											
169												
170	**General Statistics**											
171	Total Number of Observations					10	Number of Distinct Observations					8
172							Number of Missing Observations					0
173	Minimum					5.99	Mean					15.96
174	Maximum					81.4	Median					9.055
175	SD					23.09	Std. Error of Mean					7.301
176	Coefficient of Variation					1.447	Skewness					3.115
177												
178	**Normal GOF Test**											
179	Shapiro Wilk Test Statistic					0.443	**Shapiro Wilk GOF Test**					
180	5% Shapiro Wilk Critical Value					0.842	Data Not Normal at 5% Significance Level					
181	Lilliefors Test Statistic					0.485	**Lilliefors GOF Test**					
182	5% Lilliefors Critical Value					0.28	Data Not Normal at 5% Significance Level					
183	**Data Not Normal at 5% Significance Level**											
184												
185	**Assuming Normal Distribution**											
186	**95% Normal UCL**						**95% UCLs (Adjusted for Skewness)**					
187	95% Student's-t UCL					29.34	95% Adjusted-CLT UCL (Chen-1995)					35.65
188							95% Modified-t UCL (Johnson-1978)					30.54
189												
190	**Gamma GOF Test**											
191	A-D Test Statistic					2.021	**Anderson-Darling Gamma GOF Test**					
192	5% A-D Critical Value					0.742	Data Not Gamma Distributed at 5% Significance Level					
193	K-S Test Statistic					0.445	**Kolmogrov-Smirnoff Gamma GOF Test**					
194	5% K-S Critical Value					0.272	Data Not Gamma Distributed at 5% Significance Level					
195	**Data Not Gamma Distributed at 5% Significance Level**											
196												
197	**Gamma Statistics**											
198	k hat (MLE)					1.362	k star (bias corrected MLE)					1.02
199	Theta hat (MLE)					11.72	Theta star (bias corrected MLE)					15.64
200	nu hat (MLE)					27.24	nu star (bias corrected)					20.4
201	MLE Mean (bias corrected)					15.96	MLE Sd (bias corrected)					15.8
202							Approximate Chi Square Value (0.05)					11.15
203	Adjusted Level of Significance					0.0267	Adjusted Chi Square Value					9.977
204												
205	**Assuming Gamma Distribution**											
206	95% Approximate Gamma UCL (use when n>=50))					29.2	95% Adjusted Gamma UCL (use when n<50)					32.62
207												
208	**Lognormal GOF Test**											

209				Shapiro Wilk Test Statistic		0.643		**Shapiro Wilk Lognormal GOF Test**				
210				5% Shapiro Wilk Critical Value		0.842		Data Not Lognormal at 5% Significance Level				
211				Lilliefors Test Statistic		0.38		**Lilliefors Lognormal GOF Test**				
212				5% Lilliefors Critical Value		0.28		Data Not Lognormal at 5% Significance Level				
213				**Data Not Lognormal at 5% Significance Level**								
214												
215				**Lognormal Statistics**								
216				Minimum of Logged Data		1.79		Mean of logged Data				2.36
217				Maximum of Logged Data		4.399		SD of logged Data				0.755
218												
219				**Assuming Lognormal Distribution**								
220				95% H-UCL		27.3		90% Chebyshev (MVUE) UCL				23.7
221				95% Chebyshev (MVUE) UCL		28.27		97.5% Chebyshev (MVUE) UCL				34.62
222				99% Chebyshev (MVUE) UCL		47.08						
223												
224				**Nonparametric Distribution Free UCL Statistics**								
225				**Data do not follow a Discernible Distribution (0.05)**								
226												
227				**Nonparametric Distribution Free UCLs**								
228				95% CLT UCL		27.96		95% Jackknife UCL				29.34
229				95% Standard Bootstrap UCL		27.25		95% Bootstrap-t UCL				110.5
230				95% Hall's Bootstrap UCL		94.57		95% Percentile Bootstrap UCL				30.12
231				95% BCA Bootstrap UCL		37.85						
232				90% Chebyshev(Mean, Sd) UCL		37.86		95% Chebyshev(Mean, Sd) UCL				47.78
233				97.5% Chebyshev(Mean, Sd) UCL		61.55		99% Chebyshev(Mean, Sd) UCL				88.6
234												
235				**Suggested UCL to Use**								
236				95% Chebyshev (Mean, Sd) UCL		47.78						
237												
238				Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.								
239				These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)								
240				and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.								
241				For additional insight the user may want to consult a statistician.								
242												
243												
244	**Beryllium**											
245												
246				**General Statistics**								
247				Total Number of Observations		10		Number of Distinct Observations				6
248								Number of Missing Observations				0
249				Minimum		0.37		Mean				5.744
250				Maximum		16.8		Median				5.744
251				SD		6.072		Std. Error of Mean				1.92
252				Coefficient of Variation		1.057		Skewness				1.091
253												
254				**Normal GOF Test**								
255				Shapiro Wilk Test Statistic		0.789		**Shapiro Wilk GOF Test**				
256				5% Shapiro Wilk Critical Value		0.842		Data Not Normal at 5% Significance Level				
257				Lilliefors Test Statistic		0.3		**Lilliefors GOF Test**				
258				5% Lilliefors Critical Value		0.28		Data Not Normal at 5% Significance Level				
259				**Data Not Normal at 5% Significance Level**								
260												

	A	B	C	D	E	F	G	H	I	J	K	L
261	Assuming Normal Distribution											
262	95% Normal UCL						95% UCLs (Adjusted for Skewness)					
263					95% Student's-t UCL	9.263				95% Adjusted-CLT UCL (Chen-1995)		9.61
264										95% Modified-t UCL (Johnson-1978)		9.374
265												
266	Gamma GOF Test											
267					A-D Test Statistic	0.795	Anderson-Darling Gamma GOF Test					
268					5% A-D Critical Value	0.756	Data Not Gamma Distributed at 5% Significance Level					
269					K-S Test Statistic	0.26	Kolmogrov-Smirnoff Gamma GOF Test					
270					5% K-S Critical Value	0.276	Detected data appear Gamma Distributed at 5% Significance Level					
271	Detected data follow Appr. Gamma Distribution at 5% Significance Level											
272												
273	Gamma Statistics											
274					k hat (MLE)	0.765				k star (bias corrected MLE)		0.602
275					Theta hat (MLE)	7.512				Theta star (bias corrected MLE)		9.543
276					nu hat (MLE)	15.29				nu star (bias corrected)		12.04
277					MLE Mean (bias corrected)	5.744				MLE Sd (bias corrected)		7.404
278										Approximate Chi Square Value (0.05)		5.251
279					Adjusted Level of Significance	0.0267				Adjusted Chi Square Value		4.497
280												
281	Assuming Gamma Distribution											
282					95% Approximate Gamma UCL (use when n>=50)	13.17				95% Adjusted Gamma UCL (use when n<50)		15.37
283												
284	Lognormal GOF Test											
285					Shapiro Wilk Test Statistic	0.82	Shapiro Wilk Lognormal GOF Test					
286					5% Shapiro Wilk Critical Value	0.842	Data Not Lognormal at 5% Significance Level					
287					Lilliefors Test Statistic	0.297	Lilliefors Lognormal GOF Test					
288					5% Lilliefors Critical Value	0.28	Data Not Lognormal at 5% Significance Level					
289	Data Not Lognormal at 5% Significance Level											
290												
291	Lognormal Statistics											
292					Minimum of Logged Data	-0.994				Mean of logged Data		0.967
293					Maximum of Logged Data	2.821				SD of logged Data		1.513
294												
295	Assuming Lognormal Distribution											
296					95% H-UCL	70.07				90% Chebyshev (MVUE) UCL		17.11
297					95% Chebyshev (MVUE) UCL	21.78				97.5% Chebyshev (MVUE) UCL		28.26
298					99% Chebyshev (MVUE) UCL	40.99						
299												
300	Nonparametric Distribution Free UCL Statistics											
301	Data appear to follow a Discernible Distribution at 5% Significance Level											
302												
303	Nonparametric Distribution Free UCLs											
304					95% CLT UCL	8.902				95% Jackknife UCL		9.263
305					95% Standard Bootstrap UCL	8.762				95% Bootstrap-t UCL		11.5
306					95% Hall's Bootstrap UCL	18.23				95% Percentile Bootstrap UCL		8.841
307					95% BCA Bootstrap UCL	9.423						
308					90% Chebyshev(Mean, Sd) UCL	11.5				95% Chebyshev(Mean, Sd) UCL		14.11
309					97.5% Chebyshev(Mean, Sd) UCL	17.73				99% Chebyshev(Mean, Sd) UCL		24.85
310												
311	Suggested UCL to Use											
312					95% Adjusted Gamma UCL	15.37						

	A	B	C	D	E	F	G	H	I	J	K	L
313												
314	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
315	These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)											
316	and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.											
317	For additional insight the user may want to consult a statistician.											
318												
319												
320	**Cadmium**											
321												
322	**General Statistics**											
323	Total Number of Observations					10	Number of Distinct Observations					10
324							Number of Missing Observations					0
325	Minimum					0.039	Mean					10.19
326	Maximum					28.31	Median					8.725
327	SD					10.01	Std. Error of Mean					3.166
328	Coefficient of Variation					0.983	Skewness					0.526
329												
330	**Normal GOF Test**											
331	Shapiro Wilk Test Statistic					0.859	**Shapiro Wilk GOF Test**					
332	5% Shapiro Wilk Critical Value					0.842	Data appear Normal at 5% Significance Level					
333	Lilliefors Test Statistic					0.279	**Lilliefors GOF Test**					
334	5% Lilliefors Critical Value					0.28	Data appear Normal at 5% Significance Level					
335	**Data appear Normal at 5% Significance Level**											
336												
337	**Assuming Normal Distribution**											
338	**95% Normal UCL**						**95% UCLs (Adjusted for Skewness)**					
339	95% Student's-t UCL					16	95% Adjusted-CLT UCL (Chen-1995)					15.96
340							95% Modified-t UCL (Johnson-1978)					16.08
341												
342	**Gamma GOF Test**											
343	A-D Test Statistic					0.513	**Anderson-Darling Gamma GOF Test**					
344	5% A-D Critical Value					0.768	Detected data appear Gamma Distributed at 5% Significance Level					
345	K-S Test Statistic					0.27	**Kolmogrov-Smirnoff Gamma GOF Test**					
346	5% K-S Critical Value					0.279	Detected data appear Gamma Distributed at 5% Significance Level					
347	**Detected data appear Gamma Distributed at 5% Significance Level**											
348												
349	**Gamma Statistics**											
350	k hat (MLE)					0.608	k star (bias corrected MLE)					0.493
351	Theta hat (MLE)					16.75	Theta star (bias corrected MLE)					20.69
352	nu hat (MLE)					12.17	nu star (bias corrected)					9.851
353	MLE Mean (bias corrected)					10.19	MLE Sd (bias corrected)					14.52
354							Approximate Chi Square Value (0.05)					3.849
355	Adjusted Level of Significance					0.0267	Adjusted Chi Square Value					3.224
356												
357	**Assuming Gamma Distribution**											
358	95% Approximate Gamma UCL (use when n>=50))					26.08	95% Adjusted Gamma UCL (use when n<50)					31.14
359												
360	**Lognormal GOF Test**											
361	Shapiro Wilk Test Statistic					0.858	**Shapiro Wilk Lognormal GOF Test**					
362	5% Shapiro Wilk Critical Value					0.842	Data appear Lognormal at 5% Significance Level					
363	Lilliefors Test Statistic					0.252	**Lilliefors Lognormal GOF Test**					
364	5% Lilliefors Critical Value					0.28	Data appear Lognormal at 5% Significance Level					

	A	B	C	D	E	F	G	H	I	J	K	L
365	Data appear Lognormal at 5% Significance Level											
366												
367	Lognormal Statistics											
368					Minimum of Logged Data	-3.244				Mean of logged Data		1.308
369					Maximum of Logged Data	3.343				SD of logged Data		2.051
370												
371	Assuming Lognormal Distribution											
372					95% H-UCL	1322				90% Chebyshev (MVUE) UCL		57.82
373					95% Chebyshev (MVUE) UCL	75.25				97.5% Chebyshev (MVUE) UCL		99.45
374					99% Chebyshev (MVUE) UCL	147						
375												
376	Nonparametric Distribution Free UCL Statistics											
377	Data appear to follow a Discernible Distribution at 5% Significance Level											
378												
379	Nonparametric Distribution Free UCLs											
380					95% CLT UCL	15.4				95% Jackknife UCL		16
381					95% Standard Bootstrap UCL	15.22				95% Bootstrap-t UCL		16.77
382					95% Hall's Bootstrap UCL	15.12				95% Percentile Bootstrap UCL		15.05
383					95% BCA Bootstrap UCL	15.46						
384					90% Chebyshev(Mean, Sd) UCL	19.69				95% Chebyshev(Mean, Sd) UCL		23.99
385					97.5% Chebyshev(Mean, Sd) UCL	29.97				99% Chebyshev(Mean, Sd) UCL		41.7
386												
387	Suggested UCL to Use											
388					95% Student's-t UCL	16						
389												
390	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
391	These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)											
392	and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.											
393	For additional insight the user may want to consult a statistician.											
394												
395												
396	Cesium-137											
397												
398	General Statistics											
399					Total Number of Observations	10				Number of Distinct Observations		6
400										Number of Missing Observations		0
401					Minimum	-0.00934				Mean		3.563
402					Maximum	11.2				Median		3.563
403					SD	3.384				Std. Error of Mean		1.07
404					Coefficient of Variation	0.95				Skewness		1.22
405												
406	Normal GOF Test											
407					Shapiro Wilk Test Statistic	0.83				Shapiro Wilk GOF Test		
408					5% Shapiro Wilk Critical Value	0.842				Data Not Normal at 5% Significance Level		
409					Lilliefors Test Statistic	0.3				Lilliefors GOF Test		
410					5% Lilliefors Critical Value	0.28				Data Not Normal at 5% Significance Level		
411	Data Not Normal at 5% Significance Level											
412												
413	Assuming Normal Distribution											
414	95% Normal UCL						95% UCLs (Adjusted for Skewness)					
415					95% Student's-t UCL	5.524				95% Adjusted-CLT UCL (Chen-1995)		5.764
416										95% Modified-t UCL (Johnson-1978)		5.593

	A	B	C	D	E	F	G	H	I	J	K	L
417	Gamma Statistics Not Available											
418	Lognormal Statistics Not Available											
419												
420	Nonparametric Distribution Free UCL Statistics											
421	Data do not follow a Discernible Distribution (0.05)											
422												
423	Nonparametric Distribution Free UCLs											
424					95% CLT UCL	5.323			95% Jackknife UCL			5.524
425					95% Standard Bootstrap UCL	5.253			95% Bootstrap-t UCL			6.184
426					95% Hall's Bootstrap UCL	15.78			95% Percentile Bootstrap UCL			5.375
427					95% BCA Bootstrap UCL	5.781						
428					90% Chebyshev(Mean, Sd) UCL	6.773			95% Chebyshev(Mean, Sd) UCL			8.228
429					97.5% Chebyshev(Mean, Sd) UCL	10.25			99% Chebyshev(Mean, Sd) UCL			14.21
430												
431	Suggested UCL to Use											
432					95% Chebyshev (Mean, Sd) UCL	8.228						
433												
434	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
435	These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)											
436	and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.											
437	For additional insight the user may want to consult a statistician.											
438												
439												
440	Chromium											
441												
442	General Statistics											
443					Total Number of Observations	10			Number of Distinct Observations			7
444									Number of Missing Observations			0
445					Minimum	8.2			Mean			54.65
446					Maximum	85			Median			59.4
447					SD	31.03			Std. Error of Mean			9.814
448					Coefficient of Variation	0.568			Skewness			-0.404
449												
450	Normal GOF Test											
451					Shapiro Wilk Test Statistic	0.851			Shapiro Wilk GOF Test			
452					5% Shapiro Wilk Critical Value	0.842			Data appear Normal at 5% Significance Level			
453					Lilliefors Test Statistic	0.236			Lilliefors GOF Test			
454					5% Lilliefors Critical Value	0.28			Data appear Normal at 5% Significance Level			
455	Data appear Normal at 5% Significance Level											
456												
457	Assuming Normal Distribution											
458	95% Normal UCL						95% UCLs (Adjusted for Skewness)					
459					95% Student's-t UCL	72.64			95% Adjusted-CLT UCL (Chen-1995)			69.45
460									95% Modified-t UCL (Johnson-1978)			72.43
461												
462	Gamma GOF Test											
463					A-D Test Statistic	0.726			Anderson-Darling Gamma GOF Test			
464					5% A-D Critical Value	0.735			Detected data appear Gamma Distributed at 5% Significance Level			
465					K-S Test Statistic	0.232			Kolmogrov-Smirnoff Gamma GOF Test			
466					5% K-S Critical Value	0.27			Detected data appear Gamma Distributed at 5% Significance Level			
467	Detected data appear Gamma Distributed at 5% Significance Level											
468												

	A	B	C	D	E	F	G	H	I	J	K	L
469						Gamma Statistics						
470					k hat (MLE)	2.215					k star (bias corrected MLE)	1.617
471					Theta hat (MLE)	24.67					Theta star (bias corrected MLE)	33.79
472					nu hat (MLE)	44.3					nu star (bias corrected)	32.35
473					MLE Mean (bias corrected)	54.65					MLE Sd (bias corrected)	42.97
474											Approximate Chi Square Value (0.05)	20.35
475					Adjusted Level of Significance	0.0267					Adjusted Chi Square Value	18.71
476												
477						Assuming Gamma Distribution						
478					95% Approximate Gamma UCL (use when n>=50))	86.87					95% Adjusted Gamma UCL (use when n<50)	94.48
479												
480						Lognormal GOF Test						
481					Shapiro Wilk Test Statistic	0.821					Shapiro Wilk Lognormal GOF Test	
482					5% Shapiro Wilk Critical Value	0.842					Data Not Lognormal at 5% Significance Level	
483					Lilliefors Test Statistic	0.247					Lilliefors Lognormal GOF Test	
484					5% Lilliefors Critical Value	0.28					Data appear Lognormal at 5% Significance Level	
485						Data appear Approximate Lognormal at 5% Significance Level						
486												
487						Lognormal Statistics						
488					Minimum of Logged Data	2.104					Mean of logged Data	3.758
489					Maximum of Logged Data	4.443					SD of logged Data	0.843
490												
491						Assuming Lognormal Distribution						
492					95% H-UCL	134.1					90% Chebyshev (MVUE) UCL	107.3
493					95% Chebyshev (MVUE) UCL	129.3					97.5% Chebyshev (MVUE) UCL	160
494					99% Chebyshev (MVUE) UCL	220.1						
495												
496						Nonparametric Distribution Free UCL Statistics						
497						Data appear to follow a Discernible Distribution at 5% Significance Level						
498												
499						Nonparametric Distribution Free UCLs						
500					95% CLT UCL	70.79					95% Jackknife UCL	72.64
501					95% Standard Bootstrap UCL	69.96					95% Bootstrap-t UCL	71.49
502					95% Hall's Bootstrap UCL	68.17					95% Percentile Bootstrap UCL	69.61
503					95% BCA Bootstrap UCL	68.73						
504					90% Chebyshev(Mean, Sd) UCL	84.09					95% Chebyshev(Mean, Sd) UCL	97.42
505					97.5% Chebyshev(Mean, Sd) UCL	115.9					99% Chebyshev(Mean, Sd) UCL	152.3
506												
507						Suggested UCL to Use						
508					95% Student's-t UCL	72.64						
509												
510						Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.						
511						These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)						
512						and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.						
513						For additional insight the user may want to consult a statistician.						
514												
515						Note: For highly negatively-skewed data, confidence limits (e.g., Chen, Johnson, Lognormal, and Gamma) may not be						
516						reliable. Chen's and Johnson's methods provide adjustments for positvely skewed data sets.						
517												
518												
519	Cobalt											
520												

	A	B	C	D	E	F	G	H	I	J	K	L
521	General Statistics											
522	Total Number of Observations					10	Number of Distinct Observations					7
523							Number of Missing Observations					0
524	Minimum					5.5	Mean					21.67
525	Maximum					90.5	Median					16.29
526	SD					25.19	Std. Error of Mean					7.967
527	Coefficient of Variation					1.162	Skewness					2.709
528												
529	Normal GOF Test											
530	Shapiro Wilk Test Statistic					0.609	**Shapiro Wilk GOF Test**					
531	5% Shapiro Wilk Critical Value					0.842	Data Not Normal at 5% Significance Level					
532	Lilliefors Test Statistic					0.4	**Lilliefors GOF Test**					
533	5% Lilliefors Critical Value					0.28	Data Not Normal at 5% Significance Level					
534	Data Not Normal at 5% Significance Level											
535												
536	Assuming Normal Distribution											
537	**95% Normal UCL**						**95% UCLs (Adjusted for Skewness)**					
538	95% Student's-t UCL					36.28	95% Adjusted-CLT UCL (Chen-1995)					42.07
539							95% Modified-t UCL (Johnson-1978)					37.41
540												
541	Gamma GOF Test											
542	A-D Test Statistic					0.779	**Anderson-Darling Gamma GOF Test**					
543	5% A-D Critical Value					0.74	Data Not Gamma Distributed at 5% Significance Level					
544	K-S Test Statistic					0.29	**Kolmogrov-Smirnoff Gamma GOF Test**					
545	5% K-S Critical Value					0.271	Data Not Gamma Distributed at 5% Significance Level					
546	Data Not Gamma Distributed at 5% Significance Level											
547												
548	Gamma Statistics											
549	k hat (MLE)					1.45	k star (bias corrected MLE)					1.082
550	Theta hat (MLE)					14.95	Theta star (bias corrected MLE)					20.04
551	nu hat (MLE)					29	nu star (bias corrected)					21.63
552	MLE Mean (bias corrected)					21.67	MLE Sd (bias corrected)					20.84
553							Approximate Chi Square Value (0.05)					12.06
554	Adjusted Level of Significance					0.0267	Adjusted Chi Square Value					10.84
555												
556	Assuming Gamma Distribution											
557	95% Approximate Gamma UCL (use when n>=50))					38.87	95% Adjusted Gamma UCL (use when n<50)					43.25
558												
559	Lognormal GOF Test											
560	Shapiro Wilk Test Statistic					0.884	**Shapiro Wilk Lognormal GOF Test**					
561	5% Shapiro Wilk Critical Value					0.842	Data appear Lognormal at 5% Significance Level					
562	Lilliefors Test Statistic					0.227	**Lilliefors Lognormal GOF Test**					
563	5% Lilliefors Critical Value					0.28	Data appear Lognormal at 5% Significance Level					
564	Data appear Lognormal at 5% Significance Level											
565												
566	Lognormal Statistics											
567	Minimum of Logged Data					1.705	Mean of logged Data					2.693
568	Maximum of Logged Data					4.505	SD of logged Data					0.852
569												
570	Assuming Lognormal Distribution											
571	95% H-UCL					47.17	90% Chebyshev (MVUE) UCL					37.38
572	95% Chebyshev (MVUE) UCL					45.12	97.5% Chebyshev (MVUE) UCL					55.85

	A	B	C	D	E	F	G	H	I	J	K	L
573					99% Chebyshev (MVUE) UCL	76.95						
574												
575					Nonparametric Distribution Free UCL Statistics							
576					Data appear to follow a Discernible Distribution at 5% Significance Level							
577												
578					Nonparametric Distribution Free UCLs							
579					95% CLT UCL	34.78				95% Jackknife UCL		36.28
580					95% Standard Bootstrap UCL	34.1				95% Bootstrap-t UCL		57.03
581					95% Hall's Bootstrap UCL	83.82				95% Percentile Bootstrap UCL		36.52
582					95% BCA Bootstrap UCL	42.93						
583					90% Chebyshev(Mean, Sd) UCL	45.57				95% Chebyshev(Mean, Sd) UCL		56.4
584					97.5% Chebyshev(Mean, Sd) UCL	71.43				99% Chebyshev(Mean, Sd) UCL		100.9
585												
586					Suggested UCL to Use							
587					95% H-UCL	47.17						
588												
589					Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.							
590					These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)							
591					and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.							
592					For additional insight the user may want to consult a statistician.							
593												
594					ProUCL computes and outputs H-statistic based UCLs for historical reasons only.							
595					H-statistic often results in unstable (both high and low) values of UCL95 as shown in examples in the Technical Guide.							
596					It is therefore recommended to avoid the use of H-statistic based 95% UCLs.							
597					Use of nonparametric methods are preferred to compute UCL95 for skewed data sets which do not follow a gamma distribution.							
598												
599												
600	Iron											
601												
602					General Statistics							
603					Total Number of Observations	10				Number of Distinct Observations		10
604										Number of Missing Observations		0
605					Minimum	6162				Mean		24313
606					Maximum	85100				Median		17713
607					SD	23538				Std. Error of Mean		7443
608					Coefficient of Variation	0.968				Skewness		2.294
609												
610					Normal GOF Test							
611					Shapiro Wilk Test Statistic	0.705				Shapiro Wilk GOF Test		
612					5% Shapiro Wilk Critical Value	0.842				Data Not Normal at 5% Significance Level		
613					Lilliefors Test Statistic	0.334				Lilliefors GOF Test		
614					5% Lilliefors Critical Value	0.28				Data Not Normal at 5% Significance Level		
615					Data Not Normal at 5% Significance Level							
616												
617					Assuming Normal Distribution							
618					95% Normal UCL					95% UCLs (Adjusted for Skewness)		
619					95% Student's-t UCL	37958				95% Adjusted-CLT UCL (Chen-1995)		42326
620										95% Modified-t UCL (Johnson-1978)		38858
621												
622					Gamma GOF Test							
623					A-D Test Statistic	0.572				Anderson-Darling Gamma GOF Test		
624					5% A-D Critical Value	0.737				Detected data appear Gamma Distributed at 5% Significance Level		

	A	B	C	D	E	F	G	H	I	J	K	L
625					K-S Test Statistic	0.246	**Kolmogrov-Smirnoff Gamma GOF Test**					
626					5% K-S Critical Value	0.27	Detected data appear Gamma Distributed at 5% Significance Level					
627	**Detected data appear Gamma Distributed at 5% Significance Level**											
628												
629	**Gamma Statistics**											
630					k hat (MLE)	1.831	k star (bias corrected MLE)					1.348
631					Theta hat (MLE)	13280	Theta star (bias corrected MLE)					18033
632					nu hat (MLE)	36.62	nu star (bias corrected)					26.96
633					MLE Mean (bias corrected)	24313	MLE Sd (bias corrected)					20939
634							Approximate Chi Square Value (0.05)					16.12
635					Adjusted Level of Significance	0.0267	Adjusted Chi Square Value					14.68
636												
637	**Assuming Gamma Distribution**											
638					95% Approximate Gamma UCL (use when n>=50)	40659	95% Adjusted Gamma UCL (use when n<50)					44645
639												
640	**Lognormal GOF Test**											
641					Shapiro Wilk Test Statistic	0.943	**Shapiro Wilk Lognormal GOF Test**					
642					5% Shapiro Wilk Critical Value	0.842	Data appear Lognormal at 5% Significance Level					
643					Lilliefors Test Statistic	0.191	**Lilliefors Lognormal GOF Test**					
644					5% Lilliefors Critical Value	0.28	Data appear Lognormal at 5% Significance Level					
645	**Data appear Lognormal at 5% Significance Level**											
646												
647	**Lognormal Statistics**											
648					Minimum of Logged Data	8.726	Mean of logged Data					9.801
649					Maximum of Logged Data	11.35	SD of logged Data					0.765
650												
651	**Assuming Lognormal Distribution**											
652					95% H-UCL	47502	90% Chebyshev (MVUE) UCL					40905
653					95% Chebyshev (MVUE) UCL	48853	97.5% Chebyshev (MVUE) UCL					59884
654					99% Chebyshev (MVUE) UCL	81553						
655												
656	**Nonparametric Distribution Free UCL Statistics**											
657	**Data appear to follow a Discernible Distribution at 5% Significance Level**											
658												
659	**Nonparametric Distribution Free UCLs**											
660					95% CLT UCL	36557	95% Jackknife UCL					37958
661					95% Standard Bootstrap UCL	35937	95% Bootstrap-t UCL					66455
662					95% Hall's Bootstrap UCL	102130	95% Percentile Bootstrap UCL					37417
663					95% BCA Bootstrap UCL	42194						
664					90% Chebyshev(Mean, Sd) UCL	46644	95% Chebyshev(Mean, Sd) UCL					56759
665					97.5% Chebyshev(Mean, Sd) UCL	70798	99% Chebyshev(Mean, Sd) UCL					98374
666												
667	**Suggested UCL to Use**											
668					95% Adjusted Gamma UCL	44645						
669												
670	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
671	These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)											
672	and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.											
673	For additional insight the user may want to consult a statistician.											
674												
675												
676	**Manganese**											

	A	B	C	D	E	F	G	H	I	J	K	L
677												
678						General Statistics						
679					Total Number of Observations	10				Number of Distinct Observations		10
680										Number of Missing Observations		0
681					Minimum	201.4				Mean		662.1
682					Maximum	1506				Median		531
683					SD	433.8				Std. Error of Mean		137.2
684					Coefficient of Variation	0.655				Skewness		0.966
685												
686						Normal GOF Test						
687					Shapiro Wilk Test Statistic	0.899				Shapiro Wilk GOF Test		
688					5% Shapiro Wilk Critical Value	0.842				Data appear Normal at 5% Significance Level		
689					Lilliefors Test Statistic	0.201				Lilliefors GOF Test		
690					5% Lilliefors Critical Value	0.28				Data appear Normal at 5% Significance Level		
691						Data appear Normal at 5% Significance Level						
692												
693						Assuming Normal Distribution						
694					95% Normal UCL					95% UCLs (Adjusted for Skewness)		
695					95% Student's-t UCL	913.6				95% Adjusted-CLT UCL (Chen-1995)		932.6
696										95% Modified-t UCL (Johnson-1978)		920.6
697												
698						Gamma GOF Test						
699					A-D Test Statistic	0.236				Anderson-Darling Gamma GOF Test		
700					5% A-D Critical Value	0.733				Detected data appear Gamma Distributed at 5% Significance Level		
701					K-S Test Statistic	0.133				Kolmogrov-Smirnoff Gamma GOF Test		
702					5% K-S Critical Value	0.269				Detected data appear Gamma Distributed at 5% Significance Level		
703						Detected data appear Gamma Distributed at 5% Significance Level						
704												
705						Gamma Statistics						
706					k hat (MLE)	2.684				k star (bias corrected MLE)		1.945
707					Theta hat (MLE)	246.7				Theta star (bias corrected MLE)		340.4
708					nu hat (MLE)	53.67				nu star (bias corrected)		38.91
709					MLE Mean (bias corrected)	662.1				MLE Sd (bias corrected)		474.7
710										Approximate Chi Square Value (0.05)		25.62
711					Adjusted Level of Significance	0.0267				Adjusted Chi Square Value		23.76
712												
713						Assuming Gamma Distribution						
714					95% Approximate Gamma UCL (use when n>=50))	1006				95% Adjusted Gamma UCL (use when n<50)		1084
715												
716						Lognormal GOF Test						
717					Shapiro Wilk Test Statistic	0.957				Shapiro Wilk Lognormal GOF Test		
718					5% Shapiro Wilk Critical Value	0.842				Data appear Lognormal at 5% Significance Level		
719					Lilliefors Test Statistic	0.119				Lilliefors Lognormal GOF Test		
720					5% Lilliefors Critical Value	0.28				Data appear Lognormal at 5% Significance Level		
721						Data appear Lognormal at 5% Significance Level						
722												
723						Lognormal Statistics						
724					Minimum of Logged Data	5.305				Mean of logged Data		6.298
725					Maximum of Logged Data	7.317				SD of logged Data		0.677
726												
727						Assuming Lognormal Distribution						
728					95% H-UCL	1199				90% Chebyshev (MVUE) UCL		1105

729	95% Chebyshev (MVUE) UCL					1304	97.5% Chebyshev (MVUE) UCL					1580
730	99% Chebyshev (MVUE) UCL					2123						
731												
732	**Nonparametric Distribution Free UCL Statistics**											
733	**Data appear to follow a Discernible Distribution at 5% Significance Level**											
734												
735	**Nonparametric Distribution Free UCLs**											
736	95% CLT UCL					887.8	95% Jackknife UCL					913.6
737	95% Standard Bootstrap UCL					872.4	95% Bootstrap-t UCL					1016
738	95% Hall's Bootstrap UCL					1033	95% Percentile Bootstrap UCL					874
739	95% BCA Bootstrap UCL					924.9						
740	90% Chebyshev(Mean, Sd) UCL					1074	95% Chebyshev(Mean, Sd) UCL					1260
741	97.5% Chebyshev(Mean, Sd) UCL					1519	99% Chebyshev(Mean, Sd) UCL					2027
742												
743	**Suggested UCL to Use**											
744	95% Student's-t UCL					913.6						
745												
746	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
747	These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)											
748	and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.											
749	For additional insight the user may want to consult a statistician.											
750												
751												
752	**Mercury**											
753												
754	**General Statistics**											
755	Total Number of Observations					10	Number of Distinct Observations					7
756							Number of Missing Observations					0
757	Minimum					0.023	Mean					5.441
758	Maximum					14.04	Median					5.056
759	SD					5.784	Std. Error of Mean					1.829
760	Coefficient of Variation					1.063	Skewness					0.174
761												
762	**Normal GOF Test**											
763	Shapiro Wilk Test Statistic					0.752	**Shapiro Wilk GOF Test**					
764	5% Shapiro Wilk Critical Value					0.842	Data Not Normal at 5% Significance Level					
765	Lilliefors Test Statistic					0.322	**Lilliefors GOF Test**					
766	5% Lilliefors Critical Value					0.28	Data Not Normal at 5% Significance Level					
767	**Data Not Normal at 5% Significance Level**											
768												
769	**Assuming Normal Distribution**											
770	**95% Normal UCL**						**95% UCLs (Adjusted for Skewness)**					
771	95% Student's-t UCL					8.794	95% Adjusted-CLT UCL (Chen-1995)					8.557
772							95% Modified-t UCL (Johnson-1978)					8.811
773												
774	**Gamma GOF Test**											
775	A-D Test Statistic					1.309	**Anderson-Darling Gamma GOF Test**					
776	5% A-D Critical Value					0.804	Data Not Gamma Distributed at 5% Significance Level					
777	K-S Test Statistic					0.327	**Kolmogrov-Smirnoff Gamma GOF Test**					
778	5% K-S Critical Value					0.286	Data Not Gamma Distributed at 5% Significance Level					
779	**Data Not Gamma Distributed at 5% Significance Level**											
780												

	A	B	C	D	E	F	G	H	I	J	K	L
781						Gamma Statistics						
782					k hat (MLE)	0.353					k star (bias corrected MLE)	0.314
783					Theta hat (MLE)	15.41					Theta star (bias corrected MLE)	17.34
784					nu hat (MLE)	7.062					nu star (bias corrected)	6.277
785					MLE Mean (bias corrected)	5.441					MLE Sd (bias corrected)	9.712
786											Approximate Chi Square Value (0.05)	1.783
787					Adjusted Level of Significance	0.0267					Adjusted Chi Square Value	1.399
788												
789						Assuming Gamma Distribution						
790					95% Approximate Gamma UCL (use when n>=50))	19.15					95% Adjusted Gamma UCL (use when n<50)	24.41
791												
792						Lognormal GOF Test						
793					Shapiro Wilk Test Statistic	0.77					Shapiro Wilk Lognormal GOF Test	
794					5% Shapiro Wilk Critical Value	0.842					Data Not Lognormal at 5% Significance Level	
795					Lilliefors Test Statistic	0.318					Lilliefors Lognormal GOF Test	
796					5% Lilliefors Critical Value	0.28					Data Not Lognormal at 5% Significance Level	
797						Data Not Lognormal at 5% Significance Level						
798												
799						Lognormal Statistics						
800					Minimum of Logged Data	-3.772					Mean of logged Data	-0.208
801					Maximum of Logged Data	2.642					SD of logged Data	2.761
802												
803						Assuming Lognormal Distribution						
804					95% H-UCL	29529					90% Chebyshev (MVUE) UCL	44.74
805					95% Chebyshev (MVUE) UCL	59.13					97.5% Chebyshev (MVUE) UCL	79.1
806					99% Chebyshev (MVUE) UCL	118.3						
807												
808						Nonparametric Distribution Free UCL Statistics						
809						Data do not follow a Discernible Distribution (0.05)						
810												
811						Nonparametric Distribution Free UCLs						
812					95% CLT UCL	8.449					95% Jackknife UCL	8.794
813					95% Standard Bootstrap UCL	8.286					95% Bootstrap-t UCL	8.785
814					95% Hall's Bootstrap UCL	7.83					95% Percentile Bootstrap UCL	8.235
815					95% BCA Bootstrap UCL	8.425						
816					90% Chebyshev(Mean, Sd) UCL	10.93					95% Chebyshev(Mean, Sd) UCL	13.41
817					97.5% Chebyshev(Mean, Sd) UCL	16.86					99% Chebyshev(Mean, Sd) UCL	23.64
818												
819						Suggested UCL to Use						
820					99% Chebyshev (Mean, Sd) UCL	23.64						
821												
822						Recommended UCL exceeds the maximum observation						
823												
824						Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.						
825						These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)						
826						and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.						
827						For additional insight the user may want to consult a statistician.						
828												
829												
830	Neptunium-237											
831												
832						General Statistics						

	A	B	C	D	E	F	G	H	I	J	K	L
833					Total Number of Observations	10					Number of Distinct Observations	5
834											Number of Missing Observations	0
835					Minimum	0.00303					Mean	0.119
836					Maximum	0.26					Median	0.119
837					SD	0.0616					Std. Error of Mean	0.0195
838					Coefficient of Variation	0.519					Skewness	0.742
839												
840					**Normal GOF Test**							
841					Shapiro Wilk Test Statistic	0.765			**Shapiro Wilk GOF Test**			
842					5% Shapiro Wilk Critical Value	0.842			Data Not Normal at 5% Significance Level			
843					Lilliefors Test Statistic	0.322			**Lilliefors GOF Test**			
844					5% Lilliefors Critical Value	0.28			Data Not Normal at 5% Significance Level			
845					**Data Not Normal at 5% Significance Level**							
846												
847					**Assuming Normal Distribution**							
848			**95% Normal UCL**						**95% UCLs (Adjusted for Skewness)**			
849					95% Student's-t UCL	0.155			95% Adjusted-CLT UCL (Chen-1995)			0.156
850									95% Modified-t UCL (Johnson-1978)			0.155
851												
852					**Gamma GOF Test**							
853					A-D Test Statistic	1.834			**Anderson-Darling Gamma GOF Test**			
854					5% A-D Critical Value	0.737			Data Not Gamma Distributed at 5% Significance Level			
855					K-S Test Statistic	0.415			**Kolmogrov-Smirnoff Gamma GOF Test**			
856					5% K-S Critical Value	0.27			Data Not Gamma Distributed at 5% Significance Level			
857					**Data Not Gamma Distributed at 5% Significance Level**							
858												
859					**Gamma Statistics**							
860					k hat (MLE)	1.744			k star (bias corrected MLE)			1.288
861					Theta hat (MLE)	0.0681			Theta star (bias corrected MLE)			0.0923
862					nu hat (MLE)	34.88			nu star (bias corrected)			25.75
863					MLE Mean (bias corrected)	0.119			MLE Sd (bias corrected)			0.105
864									Approximate Chi Square Value (0.05)			15.19
865					Adjusted Level of Significance	0.0267			Adjusted Chi Square Value			13.8
866												
867					**Assuming Gamma Distribution**							
868					95% Approximate Gamma UCL (use when n>=50))	0.201			95% Adjusted Gamma UCL (use when n<50)			0.222
869												
870					**Lognormal GOF Test**							
871					Shapiro Wilk Test Statistic	0.546			**Shapiro Wilk Lognormal GOF Test**			
872					5% Shapiro Wilk Critical Value	0.842			Data Not Lognormal at 5% Significance Level			
873					Lilliefors Test Statistic	0.446			**Lilliefors Lognormal GOF Test**			
874					5% Lilliefors Critical Value	0.28			Data Not Lognormal at 5% Significance Level			
875					**Data Not Lognormal at 5% Significance Level**							
876												
877					**Lognormal Statistics**							
878					Minimum of Logged Data	-5.799			Mean of logged Data			-2.444
879					Maximum of Logged Data	-1.347			SD of logged Data			1.209
880												
881					**Assuming Lognormal Distribution**							
882					95% H-UCL	0.754			90% Chebyshev (MVUE) UCL			0.358
883					95% Chebyshev (MVUE) UCL	0.447			97.5% Chebyshev (MVUE) UCL			0.57
884					99% Chebyshev (MVUE) UCL	0.813						

	A	B	C	D	E	F	G	H	I	J	K	L
885												
886					**Nonparametric Distribution Free UCL Statistics**							
887					**Data do not follow a Discernible Distribution (0.05)**							
888												
889					**Nonparametric Distribution Free UCLs**							
890					95% CLT UCL	0.151				95% Jackknife UCL		0.155
891					95% Standard Bootstrap UCL	0.15				95% Bootstrap-t UCL		0.157
892					95% Hall's Bootstrap UCL	0.194				95% Percentile Bootstrap UCL		0.148
893					95% BCA Bootstrap UCL	0.157						
894					90% Chebyshev(Mean, Sd) UCL	0.177				95% Chebyshev(Mean, Sd) UCL		0.204
895					97.5% Chebyshev(Mean, Sd) UCL	0.241				99% Chebyshev(Mean, Sd) UCL		0.313
896												
897					**Suggested UCL to Use**							
898					95% Chebyshev (Mean, Sd) UCL	0.204						
899												
900					Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.							
901					These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)							
902					and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.							
903					For additional insight the user may want to consult a statistician.							
904												
905												
906	**Nickel**											
907												
908					**General Statistics**							
909					Total Number of Observations	10				Number of Distinct Observations		7
910										Number of Missing Observations		0
911					Minimum	14				Mean		60.64
912					Maximum	188				Median		65
913					SD	50.33				Std. Error of Mean		15.91
914					Coefficient of Variation	0.83				Skewness		1.974
915												
916					**Normal GOF Test**							
917					Shapiro Wilk Test Statistic	0.752				**Shapiro Wilk GOF Test**		
918					5% Shapiro Wilk Critical Value	0.842				Data Not Normal at 5% Significance Level		
919					Lilliefors Test Statistic	0.297				**Lilliefors GOF Test**		
920					5% Lilliefors Critical Value	0.28				Data Not Normal at 5% Significance Level		
921					**Data Not Normal at 5% Significance Level**							
922												
923					**Assuming Normal Distribution**							
924					**95% Normal UCL**					**95% UCLs (Adjusted for Skewness)**		
925					95% Student's-t UCL	89.81				95% Adjusted-CLT UCL (Chen-1995)		97.43
926										95% Modified-t UCL (Johnson-1978)		91.47
927												
928					**Gamma GOF Test**							
929					A-D Test Statistic	0.618				**Anderson-Darling Gamma GOF Test**		
930					5% A-D Critical Value	0.736				Detected data appear Gamma Distributed at 5% Significance Level		
931					K-S Test Statistic	0.232				**Kolmogrov-Smirnoff Gamma GOF Test**		
932					5% K-S Critical Value	0.27				Detected data appear Gamma Distributed at 5% Significance Level		
933					**Detected data appear Gamma Distributed at 5% Significance Level**							
934												
935					**Gamma Statistics**							
936					k hat (MLE)	1.99				k star (bias corrected MLE)		1.46

	A	B	C	D	E	F	G	H	I	J	K	L
937					Theta hat (MLE)	30.47					Theta star (bias corrected MLE)	41.54
938					nu hat (MLE)	39.8					nu star (bias corrected)	29.2
939					MLE Mean (bias corrected)	60.64					MLE Sd (bias corrected)	50.19
940											Approximate Chi Square Value (0.05)	17.86
941					Adjusted Level of Significance	0.0267					Adjusted Chi Square Value	16.34
942												
943					**Assuming Gamma Distribution**							
944					95% Approximate Gamma UCL (use when n>=50)	99.11					95% Adjusted Gamma UCL (use when n<50)	108.4
945												
946					**Lognormal GOF Test**							
947					Shapiro Wilk Test Statistic	0.91			**Shapiro Wilk Lognormal GOF Test**			
948					5% Shapiro Wilk Critical Value	0.842			Data appear Lognormal at 5% Significance Level			
949					Lilliefors Test Statistic	0.269			**Lilliefors Lognormal GOF Test**			
950					5% Lilliefors Critical Value	0.28			Data appear Lognormal at 5% Significance Level			
951					**Data appear Lognormal at 5% Significance Level**							
952												
953					**Lognormal Statistics**							
954					Minimum of Logged Data	2.639					Mean of logged Data	3.833
955					Maximum of Logged Data	5.236					SD of logged Data	0.782
956												
957					**Assuming Lognormal Distribution**							
958					95% H-UCL	126.1					90% Chebyshev (MVUE) UCL	107
959					95% Chebyshev (MVUE) UCL	128					97.5% Chebyshev (MVUE) UCL	157.2
960					99% Chebyshev (MVUE) UCL	214.7						
961												
962					**Nonparametric Distribution Free UCL Statistics**							
963					**Data appear to follow a Discernible Distribution at 5% Significance Level**							
964												
965					**Nonparametric Distribution Free UCLs**							
966					95% CLT UCL	86.81					95% Jackknife UCL	89.81
967					95% Standard Bootstrap UCL	85.44					95% Bootstrap-t UCL	108.5
968					95% Hall's Bootstrap UCL	200.5					95% Percentile Bootstrap UCL	87.76
969					95% BCA Bootstrap UCL	95.77						
970					90% Chebyshev(Mean, Sd) UCL	108.4					95% Chebyshev(Mean, Sd) UCL	130
971					97.5% Chebyshev(Mean, Sd) UCL	160					99% Chebyshev(Mean, Sd) UCL	219
972												
973					**Suggested UCL to Use**							
974					95% Adjusted Gamma UCL	108.4						
975												
976					Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.							
977					These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)							
978					and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.							
979					For additional insight the user may want to consult a statistician.							
980												
981												
982	**PAH, Total**											
983												
984					**General Statistics**							
985					Total Number of Observations	10					Number of Distinct Observations	6
986											Number of Missing Observations	0
987					Minimum	0.0076					Mean	0.288
988					Maximum	0.5					Median	0.288

	A	B	C	D	E	F	G	H	I	J	K	L
989					SD	0.167					Std. Error of Mean	0.0528
990					Coefficient of Variation	0.579					Skewness	-0.635
991												
992					Normal GOF Test							
993					Shapiro Wilk Test Statistic	0.856	Shapiro Wilk GOF Test					
994					5% Shapiro Wilk Critical Value	0.842	Data appear Normal at 5% Significance Level					
995					Lilliefors Test Statistic	0.3	Lilliefors GOF Test					
996					5% Lilliefors Critical Value	0.28	Data Not Normal at 5% Significance Level					
997					Data appear Approximate Normal at 5% Significance Level							
998												
999					Assuming Normal Distribution							
1000			95% Normal UCL				95% UCLs (Adjusted for Skewness)					
1001					95% Student's-t UCL	0.385					95% Adjusted-CLT UCL (Chen-1995)	0.364
1002											95% Modified-t UCL (Johnson-1978)	0.383
1003												
1004					Gamma GOF Test							
1005					A-D Test Statistic	1.424	Anderson-Darling Gamma GOF Test					
1006					5% A-D Critical Value	0.745	Data Not Gamma Distributed at 5% Significance Level					
1007					K-S Test Statistic	0.421	Kolmogrov-Smirnoff Gamma GOF Test					
1008					5% K-S Critical Value	0.273	Data Not Gamma Distributed at 5% Significance Level					
1009					Data Not Gamma Distributed at 5% Significance Level							
1010												
1011					Gamma Statistics							
1012					k hat (MLE)	1.203					k star (bias corrected MLE)	0.909
1013					Theta hat (MLE)	0.24					Theta star (bias corrected MLE)	0.317
1014					nu hat (MLE)	24.06					nu star (bias corrected)	18.17
1015					MLE Mean (bias corrected)	0.288					MLE Sd (bias corrected)	0.302
1016											Approximate Chi Square Value (0.05)	9.517
1017					Adjusted Level of Significance	0.0267					Adjusted Chi Square Value	8.449
1018												
1019					Assuming Gamma Distribution							
1020					95% Approximate Gamma UCL (use when n>=50))	0.55					95% Adjusted Gamma UCL (use when n<50)	0.62
1021												
1022					Lognormal GOF Test							
1023					Shapiro Wilk Test Statistic	0.672	Shapiro Wilk Lognormal GOF Test					
1024					5% Shapiro Wilk Critical Value	0.842	Data Not Lognormal at 5% Significance Level					
1025					Lilliefors Test Statistic	0.43	Lilliefors Lognormal GOF Test					
1026					5% Lilliefors Critical Value	0.28	Data Not Lognormal at 5% Significance Level					
1027					Data Not Lognormal at 5% Significance Level							
1028												
1029					Lognormal Statistics							
1030					Minimum of Logged Data	-4.88					Mean of logged Data	-1.714
1031					Maximum of Logged Data	-0.693					SD of logged Data	1.419
1032												
1033					Assuming Lognormal Distribution							
1034					95% H-UCL	3.297					90% Chebyshev (MVUE) UCL	1.013
1035					95% Chebyshev (MVUE) UCL	1.283					97.5% Chebyshev (MVUE) UCL	1.657
1036					99% Chebyshev (MVUE) UCL	2.392						
1037												
1038					Nonparametric Distribution Free UCL Statistics							
1039					Data appear to follow a Discernible Distribution at 5% Significance Level							
1040												

	A	B	C	D	E	F	G	H	I	J	K	L
1041	**Nonparametric Distribution Free UCLs**											
1042					95% CLT UCL	0.375				95% Jackknife UCL		0.385
1043					95% Standard Bootstrap UCL	0.372				95% Bootstrap-t UCL		0.376
1044					95% Hall's Bootstrap UCL	0.364				95% Percentile Bootstrap UCL		0.367
1045					95% BCA Bootstrap UCL	0.369						
1046					90% Chebyshev(Mean, Sd) UCL	0.446				95% Chebyshev(Mean, Sd) UCL		0.518
1047					97.5% Chebyshev(Mean, Sd) UCL	0.618				99% Chebyshev(Mean, Sd) UCL		0.813
1048												
1049	**Suggested UCL to Use**											
1050					95% Student's-t UCL	0.385						
1051												
1052	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
1053	These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)											
1054	and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.											
1055	For additional insight the user may want to consult a statistician.											
1056												
1057	**Note: For highly negatively-skewed data, confidence limits (e.g., Chen, Johnson, Lognormal, and Gamma) may not be**											
1058	**reliable. Chen's and Johnson's methods provide adjustments for positvely skewed data sets.**											
1059												
1060												
1061	**PCB, Total**											
1062												
1063	**General Statistics**											
1064					Total Number of Observations	10				Number of Distinct Observations		6
1065										Number of Missing Observations		0
1066					Minimum	0.021				Mean		2.158
1067					Maximum	5				Median		0.7
1068					SD	2.459				Std. Error of Mean		0.778
1069					Coefficient of Variation	1.139				Skewness		0.446
1070												
1071	**Normal GOF Test**											
1072					Shapiro Wilk Test Statistic	0.698				**Shapiro Wilk GOF Test**		
1073					5% Shapiro Wilk Critical Value	0.842				Data Not Normal at 5% Significance Level		
1074					Lilliefors Test Statistic	0.308				**Lilliefors GOF Test**		
1075					5% Lilliefors Critical Value	0.28				Data Not Normal at 5% Significance Level		
1076	**Data Not Normal at 5% Significance Level**											
1077												
1078	**Assuming Normal Distribution**											
1079					**95% Normal UCL**					**95% UCLs (Adjusted for Skewness)**		
1080					95% Student's-t UCL	3.584				95% Adjusted-CLT UCL (Chen-1995)		3.555
1081										95% Modified-t UCL (Johnson-1978)		3.602
1082												
1083	**Gamma GOF Test**											
1084					A-D Test Statistic	0.82				**Anderson-Darling Gamma GOF Test**		
1085					5% A-D Critical Value	0.79				Data Not Gamma Distributed at 5% Significance Level		
1086					K-S Test Statistic	0.269				**Kolmogrov-Smirnoff Gamma GOF Test**		
1087					5% K-S Critical Value	0.283				Detected data appear Gamma Distributed at 5% Significance Level		
1088	**Detected data follow Appr. Gamma Distribution at 5% Significance Level**											
1089												
1090	**Gamma Statistics**											
1091					k hat (MLE)	0.43				k star (bias corrected MLE)		0.368
1092					Theta hat (MLE)	5.015				Theta star (bias corrected MLE)		5.866

	A	B	C	D	E	F	G	H	I	J	K	L
1093					nu hat (MLE)	8.607					nu star (bias corrected)	7.358
1094					MLE Mean (bias corrected)	2.158					MLE Sd (bias corrected)	3.558
1095											Approximate Chi Square Value (0.05)	2.369
1096					Adjusted Level of Significance	0.0267					Adjusted Chi Square Value	1.908
1097												
1098					**Assuming Gamma Distribution**							
1099					95% Approximate Gamma UCL (use when n>=50)	6.703					95% Adjusted Gamma UCL (use when n<50)	8.325
1100												
1101					**Lognormal GOF Test**							
1102					Shapiro Wilk Test Statistic	0.831			**Shapiro Wilk Lognormal GOF Test**			
1103					5% Shapiro Wilk Critical Value	0.842			Data Not Lognormal at 5% Significance Level			
1104					Lilliefors Test Statistic	0.241			**Lilliefors Lognormal GOF Test**			
1105					5% Lilliefors Critical Value	0.28			Data appear Lognormal at 5% Significance Level			
1106					**Data appear Approximate Lognormal at 5% Significance Level**							
1107												
1108					**Lognormal Statistics**							
1109					Minimum of Logged Data	-3.863					Mean of logged Data	-0.742
1110					Maximum of Logged Data	1.609					SD of logged Data	2.351
1111												
1112					**Assuming Lognormal Distribution**							
1113					95% H-UCL	1014					90% Chebyshev (MVUE) UCL	12.51
1114					95% Chebyshev (MVUE) UCL	16.41					97.5% Chebyshev (MVUE) UCL	21.83
1115					99% Chebyshev (MVUE) UCL	32.46						
1116												
1117					**Nonparametric Distribution Free UCL Statistics**							
1118					**Data appear to follow a Discernible Distribution at 5% Significance Level**							
1119												
1120					**Nonparametric Distribution Free UCLs**							
1121					95% CLT UCL	3.437					95% Jackknife UCL	3.584
1122					95% Standard Bootstrap UCL	3.345					95% Bootstrap-t UCL	3.434
1123					95% Hall's Bootstrap UCL	3.049					95% Percentile Bootstrap UCL	3.509
1124					95% BCA Bootstrap UCL	3.52						
1125					90% Chebyshev(Mean, Sd) UCL	4.491					95% Chebyshev(Mean, Sd) UCL	5.548
1126					97.5% Chebyshev(Mean, Sd) UCL	7.015					99% Chebyshev(Mean, Sd) UCL	9.896
1127												
1128					**Suggested UCL to Use**							
1129					95% Adjusted Gamma UCL	8.325						
1130												
1131					**Recommended UCL exceeds the maximum observation**							
1132												
1133					Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.							
1134					These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)							
1135					and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.							
1136					For additional insight the user may want to consult a statistician.							
1137												
1138												
1139	**Radium-228**											
1140												
1141					**General Statistics**							
1142					Total Number of Observations	10					Number of Distinct Observations	1
1143											Number of Missing Observations	0
1144					Minimum	1.69					Mean	1.69

	A	B	C	D	E	F	G	H	I	J	K	L
1145					Maximum	1.69					Median	1.69
1146												
1147	Warning: There is only one distinct observation value in this data set - resulting in '0' variance!											
1148	ProUCL (or any other software) should not be used on such a data set!											
1149	The data set for variable Radium-228 was not processed!											
1150												
1151	If possible, compute and collect Data Quality Objectives (DQOs) based sample size and analytical results.											
1152	The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).											
1153												
1154												
1155												
1156	Thallium											
1157												
1158	General Statistics											
1159					Total Number of Observations	10					Number of Distinct Observations	7
1160											Number of Missing Observations	0
1161					Minimum	0.095					Mean	5.38
1162					Maximum	17.1					Median	5.38
1163					SD	5.894					Std. Error of Mean	1.864
1164					Coefficient of Variation	1.096					Skewness	1.157
1165												
1166	Normal GOF Test											
1167					Shapiro Wilk Test Statistic	0.813					Shapiro Wilk GOF Test	
1168					5% Shapiro Wilk Critical Value	0.842					Data Not Normal at 5% Significance Level	
1169					Lilliefors Test Statistic	0.3					Lilliefors GOF Test	
1170					5% Lilliefors Critical Value	0.28					Data Not Normal at 5% Significance Level	
1171	Data Not Normal at 5% Significance Level											
1172												
1173	Assuming Normal Distribution											
1174					95% Normal UCL						95% UCLs (Adjusted for Skewness)	
1175					95% Student's-t UCL	8.796					95% Adjusted-CLT UCL (Chen-1995)	9.174
1176											95% Modified-t UCL (Johnson-1978)	8.91
1177												
1178	Gamma GOF Test											
1179					A-D Test Statistic	0.57					Anderson-Darling Gamma GOF Test	
1180					5% A-D Critical Value	0.77					Detected data appear Gamma Distributed at 5% Significance Level	
1181					K-S Test Statistic	0.27					Kolmogrov-Smirnoff Gamma GOF Test	
1182					5% K-S Critical Value	0.279					Detected data appear Gamma Distributed at 5% Significance Level	
1183	Detected data appear Gamma Distributed at 5% Significance Level											
1184												
1185	Gamma Statistics											
1186					k hat (MLE)	0.586					k star (bias corrected MLE)	0.477
1187					Theta hat (MLE)	9.175					Theta star (bias corrected MLE)	11.28
1188					nu hat (MLE)	11.73					nu star (bias corrected)	9.542
1189					MLE Mean (bias corrected)	5.38					MLE Sd (bias corrected)	7.788
1190											Approximate Chi Square Value (0.05)	3.657
1191					Adjusted Level of Significance	0.0267					Adjusted Chi Square Value	3.052
1192												
1193	Assuming Gamma Distribution											
1194					95% Approximate Gamma UCL (use when n>=50)	14.03					95% Adjusted Gamma UCL (use when n<50)	16.82
1195												
1196	Lognormal GOF Test											

1197				Shapiro Wilk Test Statistic		0.859		**Shapiro Wilk Lognormal GOF Test**				
1198				5% Shapiro Wilk Critical Value		0.842		Data appear Lognormal at 5% Significance Level				
1199				Lilliefors Test Statistic		0.307		**Lilliefors Lognormal GOF Test**				
1200				5% Lilliefors Critical Value		0.28		Data Not Lognormal at 5% Significance Level				
1201				**Data appear Approximate Lognormal at 5% Significance Level**								
1202												
1203				**Lognormal Statistics**								
1204				Minimum of Logged Data		-2.354		Mean of logged Data				0.625
1205				Maximum of Logged Data		2.839		SD of logged Data				1.943
1206												
1207				**Assuming Lognormal Distribution**								
1208				95% H-UCL		370.9		90% Chebyshev (MVUE) UCL				24.31
1209				95% Chebyshev (MVUE) UCL		31.53		97.5% Chebyshev (MVUE) UCL				41.55
1210				99% Chebyshev (MVUE) UCL		61.24						
1211												
1212				**Nonparametric Distribution Free UCL Statistics**								
1213				**Data appear to follow a Discernible Distribution at 5% Significance Level**								
1214												
1215				**Nonparametric Distribution Free UCLs**								
1216				95% CLT UCL		8.445		95% Jackknife UCL				8.796
1217				95% Standard Bootstrap UCL		8.257		95% Bootstrap-t UCL				10.96
1218				95% Hall's Bootstrap UCL		28.24		95% Percentile Bootstrap UCL				8.394
1219				95% BCA Bootstrap UCL		9.013						
1220				90% Chebyshev(Mean, Sd) UCL		10.97		95% Chebyshev(Mean, Sd) UCL				13.5
1221				97.5% Chebyshev(Mean, Sd) UCL		17.02		99% Chebyshev(Mean, Sd) UCL				23.93
1222												
1223				**Suggested UCL to Use**								
1224				95% Adjusted Gamma UCL		16.82						
1225												
1226				Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.								
1227				These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)								
1228				and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.								
1229				For additional insight the user may want to consult a statistician.								
1230												
1231												
1232	**Thorium-230**											
1233												
1234				**General Statistics**								
1235				Total Number of Observations		10		Number of Distinct Observations				6
1236								Number of Missing Observations				0
1237				Minimum		1.14		Mean				2.316
1238				Maximum		5.42		Median				2.316
1239				SD		1.207		Std. Error of Mean				0.382
1240				Coefficient of Variation		0.521		Skewness				2.063
1241												
1242				**Normal GOF Test**								
1243				Shapiro Wilk Test Statistic		0.711		**Shapiro Wilk GOF Test**				
1244				5% Shapiro Wilk Critical Value		0.842		Data Not Normal at 5% Significance Level				
1245				Lilliefors Test Statistic		0.366		**Lilliefors GOF Test**				
1246				5% Lilliefors Critical Value		0.28		Data Not Normal at 5% Significance Level				
1247				**Data Not Normal at 5% Significance Level**								
1248												

	A	B	C	D	E	F	G	H	I	J	K	L
1249					Assuming Normal Distribution							
1250				95% Normal UCL					95% UCLs (Adjusted for Skewness)			
1251					95% Student's-t UCL	3.016				95% Adjusted-CLT UCL (Chen-1995)		3.21
1252										95% Modified-t UCL (Johnson-1978)		3.057
1253												
1254					Gamma GOF Test							
1255					A-D Test Statistic	0.969			Anderson-Darling Gamma GOF Test			
1256					5% A-D Critical Value	0.729			Data Not Gamma Distributed at 5% Significance Level			
1257					K-S Test Statistic	0.303			Kolmogrov-Smirnoff Gamma GOF Test			
1258					5% K-S Critical Value	0.267			Data Not Gamma Distributed at 5% Significance Level			
1259					Data Not Gamma Distributed at 5% Significance Level							
1260												
1261					Gamma Statistics							
1262					k hat (MLE)	5.286				k star (bias corrected MLE)		3.767
1263					Theta hat (MLE)	0.438				Theta star (bias corrected MLE)		0.615
1264					nu hat (MLE)	105.7				nu star (bias corrected)		75.34
1265					MLE Mean (bias corrected)	2.316				MLE Sd (bias corrected)		1.193
1266										Approximate Chi Square Value (0.05)		56.35
1267					Adjusted Level of Significance	0.0267				Adjusted Chi Square Value		53.51
1268												
1269					Assuming Gamma Distribution							
1270					95% Approximate Gamma UCL (use when n>=50))	3.097				95% Adjusted Gamma UCL (use when n<50)		3.261
1271												
1272					Lognormal GOF Test							
1273					Shapiro Wilk Test Statistic	0.837			Shapiro Wilk Lognormal GOF Test			
1274					5% Shapiro Wilk Critical Value	0.842			Data Not Lognormal at 5% Significance Level			
1275					Lilliefors Test Statistic	0.286			Lilliefors Lognormal GOF Test			
1276					5% Lilliefors Critical Value	0.28			Data Not Lognormal at 5% Significance Level			
1277					Data Not Lognormal at 5% Significance Level							
1278												
1279					Lognormal Statistics							
1280					Minimum of Logged Data	0.131				Mean of logged Data		0.742
1281					Maximum of Logged Data	1.69				SD of logged Data		0.449
1282												
1283					Assuming Lognormal Distribution							
1284					95% H-UCL	3.208				90% Chebyshev (MVUE) UCL		3.294
1285					95% Chebyshev (MVUE) UCL	3.744				97.5% Chebyshev (MVUE) UCL		4.37
1286					99% Chebyshev (MVUE) UCL	5.598						
1287												
1288					Nonparametric Distribution Free UCL Statistics							
1289					Data do not follow a Discernible Distribution (0.05)							
1290												
1291					Nonparametric Distribution Free UCLs							
1292					95% CLT UCL	2.944				95% Jackknife UCL		3.016
1293					95% Standard Bootstrap UCL	2.901				95% Bootstrap-t UCL		3.409
1294					95% Hall's Bootstrap UCL	5.805				95% Percentile Bootstrap UCL		2.958
1295					95% BCA Bootstrap UCL	3.166						
1296					90% Chebyshev(Mean, Sd) UCL	3.461				95% Chebyshev(Mean, Sd) UCL		3.98
1297					97.5% Chebyshev(Mean, Sd) UCL	4.7				99% Chebyshev(Mean, Sd) UCL		6.114
1298												
1299					Suggested UCL to Use							
1300					95% Student's-t UCL	3.016				or 95% Modified-t UCL		3.057

	A	B	C	D	E	F	G	H	I	J	K	L
1301												
1302	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
1303	These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)											
1304	and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.											
1305	For additional insight the user may want to consult a statistician.											
1306												
1307												
1308	Uranium											
1309												
1310	General Statistics											
1311	Total Number of Observations					10	Number of Distinct Observations					6
1312							Number of Missing Observations					0
1313	Minimum					1.9	Mean					118.5
1314	Maximum					1050	Median					20
1315	SD					327.4	Std. Error of Mean					103.5
1316	Coefficient of Variation					2.764	Skewness					3.158
1317												
1318	Normal GOF Test											
1319	Shapiro Wilk Test Statistic					0.389	Shapiro Wilk GOF Test					
1320	5% Shapiro Wilk Critical Value					0.842	Data Not Normal at 5% Significance Level					
1321	Lilliefors Test Statistic					0.508	Lilliefors GOF Test					
1322	5% Lilliefors Critical Value					0.28	Data Not Normal at 5% Significance Level					
1323	Data Not Normal at 5% Significance Level											
1324												
1325	Assuming Normal Distribution											
1326	95% Normal UCL						95% UCLs (Adjusted for Skewness)					
1327	95% Student's-t UCL					308.3	95% Adjusted-CLT UCL (Chen-1995)					399.3
1328							95% Modified-t UCL (Johnson-1978)					325.5
1329												
1330	Gamma GOF Test											
1331	A-D Test Statistic					1.896	Anderson-Darling Gamma GOF Test					
1332	5% A-D Critical Value					0.803	Data Not Gamma Distributed at 5% Significance Level					
1333	K-S Test Statistic					0.442	Kolmogrov-Smirnoff Gamma GOF Test					
1334	5% K-S Critical Value					0.286	Data Not Gamma Distributed at 5% Significance Level					
1335	Data Not Gamma Distributed at 5% Significance Level											
1336												
1337	Gamma Statistics											
1338	k hat (MLE)					0.357	k star (bias corrected MLE)					0.316
1339	Theta hat (MLE)					332.1	Theta star (bias corrected MLE)					374.5
1340	nu hat (MLE)					7.134	nu star (bias corrected)					6.327
1341	MLE Mean (bias corrected)					118.5	MLE Sd (bias corrected)					210.6
1342							Approximate Chi Square Value (0.05)					1.809
1343	Adjusted Level of Significance					0.0267	Adjusted Chi Square Value					1.422
1344												
1345	Assuming Gamma Distribution											
1346	95% Approximate Gamma UCL (use when n>=50))					414.3	95% Adjusted Gamma UCL (use when n<50)					527.2
1347												
1348	Lognormal GOF Test											
1349	Shapiro Wilk Test Statistic					0.818	Shapiro Wilk Lognormal GOF Test					
1350	5% Shapiro Wilk Critical Value					0.842	Data Not Lognormal at 5% Significance Level					
1351	Lilliefors Test Statistic					0.291	Lilliefors Lognormal GOF Test					
1352	5% Lilliefors Critical Value					0.28	Data Not Lognormal at 5% Significance Level					

	A	B	C	D	E	F	G	H	I	J	K	L
1353	Data Not Lognormal at 5% Significance Level											
1354												
1355	Lognormal Statistics											
1356					Minimum of Logged Data	0.642				Mean of logged Data		2.895
1357					Maximum of Logged Data	6.957				SD of logged Data		1.658
1358												
1359	Assuming Lognormal Distribution											
1360					95% H-UCL	895				90% Chebyshev (MVUE) UCL		147.7
1361					95% Chebyshev (MVUE) UCL	189.3				97.5% Chebyshev (MVUE) UCL		247.2
1362					99% Chebyshev (MVUE) UCL	360.8						
1363												
1364	Nonparametric Distribution Free UCL Statistics											
1365	Data do not follow a Discernible Distribution (0.05)											
1366												
1367	Nonparametric Distribution Free UCLs											
1368					95% CLT UCL	288.8				95% Jackknife UCL		308.3
1369					95% Standard Bootstrap UCL	280.3				95% Bootstrap-t UCL		5269
1370					95% Hall's Bootstrap UCL	2745				95% Percentile Bootstrap UCL		323.9
1371					95% BCA Bootstrap UCL	429						
1372					90% Chebyshev(Mean, Sd) UCL	429.1				95% Chebyshev(Mean, Sd) UCL		569.8
1373					97.5% Chebyshev(Mean, Sd) UCL	765.1				99% Chebyshev(Mean, Sd) UCL		1149
1374												
1375	Suggested UCL to Use											
1376					99% Chebyshev (Mean, Sd) UCL	1149						
1377												
1378	Recommended UCL exceeds the maximum observation											
1379												
1380	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
1381	These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)											
1382	and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.											
1383	For additional insight the user may want to consult a statistician.											
1384												
1385												
1386	Uranium-234											
1387												
1388	General Statistics											
1389					Total Number of Observations	10				Number of Distinct Observations		7
1390										Number of Missing Observations		0
1391					Minimum	0.51				Mean		5.261
1392					Maximum	27.5				Median		3.145
1393					SD	8.122				Std. Error of Mean		2.568
1394					Coefficient of Variation	1.544				Skewness		2.737
1395												
1396	Normal GOF Test											
1397					Shapiro Wilk Test Statistic	0.584				Shapiro Wilk GOF Test		
1398					5% Shapiro Wilk Critical Value	0.842				Data Not Normal at 5% Significance Level		
1399					Lilliefors Test Statistic	0.4				Lilliefors GOF Test		
1400					5% Lilliefors Critical Value	0.28				Data Not Normal at 5% Significance Level		
1401	Data Not Normal at 5% Significance Level											
1402												
1403	Assuming Normal Distribution											
1404	95% Normal UCL						95% UCLs (Adjusted for Skewness)					

	A	B	C	D	E	F	G	H	I	J	K	L
1405					95% Student's-t UCL	9.969				95% Adjusted-CLT UCL (Chen-1995)		11.86
1406										95% Modified-t UCL (Johnson-1978)		10.34
1407												
1408						Gamma GOF Test						
1409					A-D Test Statistic	0.85				Anderson-Darling Gamma GOF Test		
1410					5% A-D Critical Value	0.757				Data Not Gamma Distributed at 5% Significance Level		
1411					K-S Test Statistic	0.261				Kolmogrov-Smirnoff Gamma GOF Test		
1412					5% K-S Critical Value	0.276				Detected data appear Gamma Distributed at 5% Significance Level		
1413					Detected data follow Appr. Gamma Distribution at 5% Significance Level							
1414												
1415						Gamma Statistics						
1416					k hat (MLE)	0.763				k star (bias corrected MLE)		0.6
1417					Theta hat (MLE)	6.898				Theta star (bias corrected MLE)		8.761
1418					nu hat (MLE)	15.25				nu star (bias corrected)		12.01
1419					MLE Mean (bias corrected)	5.261				MLE Sd (bias corrected)		6.789
1420										Approximate Chi Square Value (0.05)		5.233
1421					Adjusted Level of Significance	0.0267				Adjusted Chi Square Value		4.481
1422												
1423						Assuming Gamma Distribution						
1424					95% Approximate Gamma UCL (use when n>=50)	12.07				95% Adjusted Gamma UCL (use when n<50)		14.1
1425												
1426						Lognormal GOF Test						
1427					Shapiro Wilk Test Statistic	0.873				Shapiro Wilk Lognormal GOF Test		
1428					5% Shapiro Wilk Critical Value	0.842				Data appear Lognormal at 5% Significance Level		
1429					Lilliefors Test Statistic	0.245				Lilliefors Lognormal GOF Test		
1430					5% Lilliefors Critical Value	0.28				Data appear Lognormal at 5% Significance Level		
1431						Data appear Lognormal at 5% Significance Level						
1432												
1433						Lognormal Statistics						
1434					Minimum of Logged Data	-0.673				Mean of logged Data		0.877
1435					Maximum of Logged Data	3.314				SD of logged Data		1.287
1436												
1437						Assuming Lognormal Distribution						
1438					95% H-UCL	27.19				90% Chebyshev (MVUE) UCL		11.11
1439					95% Chebyshev (MVUE) UCL	13.95				97.5% Chebyshev (MVUE) UCL		17.88
1440					99% Chebyshev (MVUE) UCL	25.61						
1441												
1442						Nonparametric Distribution Free UCL Statistics						
1443						Data appear to follow a Discernible Distribution at 5% Significance Level						
1444												
1445						Nonparametric Distribution Free UCLs						
1446					95% CLT UCL	9.485				95% Jackknife UCL		9.969
1447					95% Standard Bootstrap UCL	9.21				95% Bootstrap-t UCL		17.01
1448					95% Hall's Bootstrap UCL	24.86				95% Percentile Bootstrap UCL		9.717
1449					95% BCA Bootstrap UCL	11.5						
1450					90% Chebyshev(Mean, Sd) UCL	12.97				95% Chebyshev(Mean, Sd) UCL		16.46
1451					97.5% Chebyshev(Mean, Sd) UCL	21.3				99% Chebyshev(Mean, Sd) UCL		30.82
1452												
1453						Suggested UCL to Use						
1454					95% Adjusted Gamma UCL	14.1						
1455												
1456	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
1457	These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)											
1458	and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.											
1459	For additional insight the user may want to consult a statistician.											
1460												
1461												
1462	Uranium-235											
1463												
1464	General Statistics											
1465					Total Number of Observations	10			Number of Distinct Observations		7	
1466									Number of Missing Observations		0	
1467					Minimum	0.02			Mean		0.605	
1468					Maximum	3.3			Median		0.353	
1469					SD	0.984			Std. Error of Mean		0.311	
1470					Coefficient of Variation	1.626			Skewness		2.736	
1471												
1472	Normal GOF Test											
1473					Shapiro Wilk Test Statistic	0.587			Shapiro Wilk GOF Test			
1474					5% Shapiro Wilk Critical Value	0.842			Data Not Normal at 5% Significance Level			
1475					Lilliefors Test Statistic	0.4			Lilliefors GOF Test			
1476					5% Lilliefors Critical Value	0.28			Data Not Normal at 5% Significance Level			
1477	Data Not Normal at 5% Significance Level											
1478												
1479	Assuming Normal Distribution											
1480				95% Normal UCL					95% UCLs (Adjusted for Skewness)			
1481					95% Student's-t UCL	1.176			95% Adjusted-CLT UCL (Chen-1995)		1.405	
1482									95% Modified-t UCL (Johnson-1978)		1.221	
1483												
1484	Gamma GOF Test											
1485					A-D Test Statistic	0.68			Anderson-Darling Gamma GOF Test			
1486					5% A-D Critical Value	0.768			Detected data appear Gamma Distributed at 5% Significance Level			
1487					K-S Test Statistic	0.237			Kolmogrov-Smirnoff Gamma GOF Test			
1488					5% K-S Critical Value	0.279			Detected data appear Gamma Distributed at 5% Significance Level			
1489	Detected data appear Gamma Distributed at 5% Significance Level											
1490												
1491	Gamma Statistics											
1492					k hat (MLE)	0.615			k star (bias corrected MLE)		0.497	
1493					Theta hat (MLE)	0.984			Theta star (bias corrected MLE)		1.217	
1494					nu hat (MLE)	12.3			nu star (bias corrected)		9.946	
1495					MLE Mean (bias corrected)	0.605			MLE Sd (bias corrected)		0.858	
1496									Approximate Chi Square Value (0.05)		3.908	
1497					Adjusted Level of Significance	0.0267			Adjusted Chi Square Value		3.277	
1498												
1499	Assuming Gamma Distribution											
1500					95% Approximate Gamma UCL (use when n>=50)	1.541			95% Adjusted Gamma UCL (use when n<50)		1.837	
1501												
1502	Lognormal GOF Test											
1503					Shapiro Wilk Test Statistic	0.918			Shapiro Wilk Lognormal GOF Test			
1504					5% Shapiro Wilk Critical Value	0.842			Data appear Lognormal at 5% Significance Level			
1505					Lilliefors Test Statistic	0.24			Lilliefors Lognormal GOF Test			
1506					5% Lilliefors Critical Value	0.28			Data appear Lognormal at 5% Significance Level			
1507	Data appear Lognormal at 5% Significance Level											
1508												

	A	B	C	D	E	F	G	H	I	J	K	L
1509						Lognormal Statistics						
1510					Minimum of Logged Data	-3.912					Mean of logged Data	-1.503
1511					Maximum of Logged Data	1.194					SD of logged Data	1.559
1512												
1513						Assuming Lognormal Distribution						
1514					95% H-UCL	7.175					90% Chebyshev (MVUE) UCL	1.555
1515					95% Chebyshev (MVUE) UCL	1.984					97.5% Chebyshev (MVUE) UCL	2.58
1516					99% Chebyshev (MVUE) UCL	3.75						
1517												
1518						Nonparametric Distribution Free UCL Statistics						
1519						Data appear to follow a Discernible Distribution at 5% Significance Level						
1520												
1521						Nonparametric Distribution Free UCLs						
1522					95% CLT UCL	1.117					95% Jackknife UCL	1.176
1523					95% Standard Bootstrap UCL	1.102					95% Bootstrap-t UCL	2.028
1524					95% Hall's Bootstrap UCL	2.982					95% Percentile Bootstrap UCL	1.196
1525					95% BCA Bootstrap UCL	1.418						
1526					90% Chebyshev(Mean, Sd) UCL	1.539					95% Chebyshev(Mean, Sd) UCL	1.962
1527					97.5% Chebyshev(Mean, Sd) UCL	2.549					99% Chebyshev(Mean, Sd) UCL	3.702
1528												
1529						Suggested UCL to Use						
1530					95% Adjusted Gamma UCL	1.837						
1531												
1532						Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.						
1533						These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)						
1534						and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.						
1535						For additional insight the user may want to consult a statistician.						
1536												
1537												
1538	Uranium-238											
1539												
1540						General Statistics						
1541					Total Number of Observations	10					Number of Distinct Observations	7
1542											Number of Missing Observations	0
1543					Minimum	0.82					Mean	12.67
1544					Maximum	70					Median	7.421
1545					SD	20.94					Std. Error of Mean	6.621
1546					Coefficient of Variation	1.652					Skewness	2.737
1547												
1548						Normal GOF Test						
1549					Shapiro Wilk Test Statistic	0.582					Shapiro Wilk GOF Test	
1550					5% Shapiro Wilk Critical Value	0.842					Data Not Normal at 5% Significance Level	
1551					Lilliefors Test Statistic	0.4					Lilliefors GOF Test	
1552					5% Lilliefors Critical Value	0.28					Data Not Normal at 5% Significance Level	
1553						Data Not Normal at 5% Significance Level						
1554												
1555						Assuming Normal Distribution						
1556					95% Normal UCL						95% UCLs (Adjusted for Skewness)	
1557					95% Student's-t UCL	24.81					95% Adjusted-CLT UCL (Chen-1995)	29.68
1558											95% Modified-t UCL (Johnson-1978)	25.76
1559												
1560						Gamma GOF Test						

	A	B	C	D	E	F	G	H	I	J	K	L
1561					A-D Test Statistic	0.828	**Anderson-Darling Gamma GOF Test**					
1562					5% A-D Critical Value	0.769	Data Not Gamma Distributed at 5% Significance Level					
1563					K-S Test Statistic	0.231	**Kolmogrov-Smirnoff Gamma GOF Test**					
1564					5% K-S Critical Value	0.279	Detected data appear Gamma Distributed at 5% Significance Level					
1565	**Detected data follow Appr. Gamma Distribution at 5% Significance Level**											
1566												
1567	**Gamma Statistics**											
1568					k hat (MLE)	0.596	k star (bias corrected MLE)					0.484
1569					Theta hat (MLE)	21.26	Theta star (bias corrected MLE)					26.19
1570					nu hat (MLE)	11.92	nu star (bias corrected)					9.676
1571					MLE Mean (bias corrected)	12.67	MLE Sd (bias corrected)					18.22
1572							Approximate Chi Square Value (0.05)					3.741
1573					Adjusted Level of Significance	0.0267	Adjusted Chi Square Value					3.126
1574												
1575	**Assuming Gamma Distribution**											
1576					95% Approximate Gamma UCL (use when n>=50)	32.78	95% Adjusted Gamma UCL (use when n<50)					39.22
1577												
1578	**Lognormal GOF Test**											
1579					Shapiro Wilk Test Statistic	0.852	**Shapiro Wilk Lognormal GOF Test**					
1580					5% Shapiro Wilk Critical Value	0.842	Data appear Lognormal at 5% Significance Level					
1581					Lilliefors Test Statistic	0.247	**Lilliefors Lognormal GOF Test**					
1582					5% Lilliefors Critical Value	0.28	Data appear Lognormal at 5% Significance Level					
1583	**Data appear Lognormal at 5% Significance Level**											
1584												
1585	**Lognormal Statistics**											
1586					Minimum of Logged Data	-0.198	Mean of logged Data					1.502
1587					Maximum of Logged Data	4.248	SD of logged Data					1.562
1588												
1589	**Assuming Lognormal Distribution**											
1590					95% H-UCL	146.4	90% Chebyshev (MVUE) UCL					31.5
1591					95% Chebyshev (MVUE) UCL	40.2	97.5% Chebyshev (MVUE) UCL					52.27
1592					99% Chebyshev (MVUE) UCL	75.99						
1593												
1594	**Nonparametric Distribution Free UCL Statistics**											
1595	**Data appear to follow a Discernible Distribution at 5% Significance Level**											
1596												
1597	**Nonparametric Distribution Free UCLs**											
1598					95% CLT UCL	23.56	95% Jackknife UCL					24.81
1599					95% Standard Bootstrap UCL	22.92	95% Bootstrap-t UCL					42.95
1600					95% Hall's Bootstrap UCL	63.2	95% Percentile Bootstrap UCL					24.24
1601					95% BCA Bootstrap UCL	31.03						
1602					90% Chebyshev(Mean, Sd) UCL	32.53	95% Chebyshev(Mean, Sd) UCL					41.53
1603					97.5% Chebyshev(Mean, Sd) UCL	54.02	99% Chebyshev(Mean, Sd) UCL					78.55
1604												
1605	**Suggested UCL to Use**											
1606					95% Adjusted Gamma UCL	39.22						
1607												
1608	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
1609	These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)											
1610	and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.											
1611	For additional insight the user may want to consult a statistician.											
1612												

	A	B	C	D	E	F	G	H	I	J	K	L
1613												
1614	Vanadium											
1615												
1616						General Statistics						
1617					Total Number of Observations	10				Number of Distinct Observations		7
1618										Number of Missing Observations		0
1619					Minimum	20				Mean		77.27
1620					Maximum	143				Median		70
1621					SD	44.29				Std. Error of Mean		14.01
1622					Coefficient of Variation	0.573				Skewness		0.417
1623												
1624						Normal GOF Test						
1625					Shapiro Wilk Test Statistic	0.89				Shapiro Wilk GOF Test		
1626					5% Shapiro Wilk Critical Value	0.842				Data appear Normal at 5% Significance Level		
1627					Lilliefors Test Statistic	0.265				Lilliefors GOF Test		
1628					5% Lilliefors Critical Value	0.28				Data appear Normal at 5% Significance Level		
1629						Data appear Normal at 5% Significance Level						
1630												
1631						Assuming Normal Distribution						
1632					95% Normal UCL					95% UCLs (Adjusted for Skewness)		
1633					95% Student's-t UCL	102.9				95% Adjusted-CLT UCL (Chen-1995)		102.3
1634										95% Modified-t UCL (Johnson-1978)		103.3
1635												
1636						Gamma GOF Test						
1637					A-D Test Statistic	0.445				Anderson-Darling Gamma GOF Test		
1638					5% A-D Critical Value	0.732				Detected data appear Gamma Distributed at 5% Significance Level		
1639					K-S Test Statistic	0.211				Kolmogrov-Smirnoff Gamma GOF Test		
1640					5% K-S Critical Value	0.268				Detected data appear Gamma Distributed at 5% Significance Level		
1641						Detected data appear Gamma Distributed at 5% Significance Level						
1642												
1643						Gamma Statistics						
1644					k hat (MLE)	2.973				k star (bias corrected MLE)		2.148
1645					Theta hat (MLE)	25.99				Theta star (bias corrected MLE)		35.98
1646					nu hat (MLE)	59.46				nu star (bias corrected)		42.95
1647					MLE Mean (bias corrected)	77.27				MLE Sd (bias corrected)		52.73
1648										Approximate Chi Square Value (0.05)		28.93
1649					Adjusted Level of Significance	0.0267				Adjusted Chi Square Value		26.94
1650												
1651						Assuming Gamma Distribution						
1652					95% Approximate Gamma UCL (use when n>=50))	114.7				95% Adjusted Gamma UCL (use when n<50)		123.2
1653												
1654						Lognormal GOF Test						
1655					Shapiro Wilk Test Statistic	0.906				Shapiro Wilk Lognormal GOF Test		
1656					5% Shapiro Wilk Critical Value	0.842				Data appear Lognormal at 5% Significance Level		
1657					Lilliefors Test Statistic	0.247				Lilliefors Lognormal GOF Test		
1658					5% Lilliefors Critical Value	0.28				Data appear Lognormal at 5% Significance Level		
1659						Data appear Lognormal at 5% Significance Level						
1660												
1661						Lognormal Statistics						
1662					Minimum of Logged Data	2.996				Mean of logged Data		4.17
1663					Maximum of Logged Data	4.963				SD of logged Data		0.668
1664												

	A	B	C	D	E	F	G	H	I	J	K	L
1665	**Assuming Lognormal Distribution**											
1666					95% H-UCL	140.4				90% Chebyshev (MVUE) UCL		130.2
1667					95% Chebyshev (MVUE) UCL	153.4				97.5% Chebyshev (MVUE) UCL		185.7
1668					99% Chebyshev (MVUE) UCL	249.2						
1669												
1670	**Nonparametric Distribution Free UCL Statistics**											
1671	**Data appear to follow a Discernible Distribution at 5% Significance Level**											
1672												
1673	**Nonparametric Distribution Free UCLs**											
1674					95% CLT UCL	100.3				95% Jackknife UCL		102.9
1675					95% Standard Bootstrap UCL	99.25				95% Bootstrap-t UCL		105.9
1676					95% Hall's Bootstrap UCL	100.5				95% Percentile Bootstrap UCL		98.76
1677					95% BCA Bootstrap UCL	101						
1678					90% Chebyshev(Mean, Sd) UCL	119.3				95% Chebyshev(Mean, Sd) UCL		138.3
1679					97.5% Chebyshev(Mean, Sd) UCL	164.7				99% Chebyshev(Mean, Sd) UCL		216.6
1680												
1681	**Suggested UCL to Use**											
1682					95% Student's-t UCL	102.9						
1683												
1684	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
1685	These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)											
1686	and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.											
1687	For additional insight the user may want to consult a statistician.											
1688												