	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			2/18/2015 1:44:26 PM								
5	From File			EPC_015Sub_EU06.xls								
6	Full Precision			OFF								
7	Confidence Coefficient			95%								
8	Number of Bootstrap Operations			2000								
9												
10												

	A	B	C	D	E	F	G	H	I	J	K	L
11	Antimony											
12												
13						General Statistics						
14					Total Number of Observations	12				Number of Distinct Observations		12
15										Number of Missing Observations		0
16					Minimum	63.18				Mean		90.85
17					Maximum	112.2				Median		93.34
18					SD	16.48				Std. Error of Mean		4.758
19					Coefficient of Variation	0.181				Skewness		-0.406
20												
21						Normal GOF Test						
22					Shapiro Wilk Test Statistic	0.94				Shapiro Wilk GOF Test		
23					5% Shapiro Wilk Critical Value	0.859				Data appear Normal at 5% Significance Level		
24					Lilliefors Test Statistic	0.121				Lilliefors GOF Test		
25					5% Lilliefors Critical Value	0.256				Data appear Normal at 5% Significance Level		
26						Data appear 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	99.39				95% Adjusted-CLT UCL (Chen-1995)		98.08
31										95% Modified-t UCL (Johnson-1978)		99.3
32												
33						Gamma GOF Test						
34					A-D Test Statistic	0.34				Anderson-Darling Gamma GOF Test		
35					5% A-D Critical Value	0.731				Detected data appear Gamma Distributed at 5% Significance Level		
36					K-S Test Statistic	0.143				Kolmogrov-Smirnoff Gamma GOF Test		
37					5% K-S Critical Value	0.245				Detected data appear Gamma Distributed at 5% Significance Level		
38						Detected data appear Gamma Distributed at 5% Significance Level						
39												
40						Gamma Statistics						
41					k hat (MLE)	30.93				k star (bias corrected MLE)		23.25
42					Theta hat (MLE)	2.937				Theta star (bias corrected MLE)		3.907
43					nu hat (MLE)	742.4				nu star (bias corrected)		558.1
44					MLE Mean (bias corrected)	90.85				MLE Sd (bias corrected)		18.84
45										Approximate Chi Square Value (0.05)		504.3
46					Adjusted Level of Significance	0.029				Adjusted Chi Square Value		496.5
47												
48						Assuming Gamma Distribution						
49					95% Approximate Gamma UCL (use when n>=50))	100.5				95% Adjusted Gamma UCL (use when n<50)		102.1
50												
51						Lognormal GOF Test						
52					Shapiro Wilk Test Statistic	0.918				Shapiro Wilk Lognormal GOF Test		
53					5% Shapiro Wilk Critical Value	0.859				Data appear Lognormal at 5% Significance Level		
54					Lilliefors Test Statistic	0.144				Lilliefors Lognormal GOF Test		
55					5% Lilliefors Critical Value	0.256				Data appear Lognormal at 5% Significance Level		
56						Data appear Lognormal at 5% Significance Level						
57												
58						Lognormal Statistics						
59					Minimum of Logged Data	4.146				Mean of logged Data		4.493
60					Maximum of Logged Data	4.721				SD of logged Data		0.192
61												

	A	B	C	D	E	F	G	H	I	J	K	L
62	**Assuming Lognormal Distribution**											
63					95% H-UCL	101.3				90% Chebyshev (MVUE) UCL		106.1
64					95% Chebyshev (MVUE) UCL	113				97.5% Chebyshev (MVUE) UCL		122.5
65					99% Chebyshev (MVUE) UCL	141.2						
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	98.67				95% Jackknife UCL		99.39
72					95% Standard Bootstrap UCL	98.15				95% Bootstrap-t UCL		99.18
73					95% Hall's Bootstrap UCL	98.15				95% Percentile Bootstrap UCL		98.35
74					95% BCA Bootstrap UCL	97.62						
75					90% Chebyshev(Mean, Sd) UCL	105.1				95% Chebyshev(Mean, Sd) UCL		111.6
76					97.5% Chebyshev(Mean, Sd) UCL	120.6				99% Chebyshev(Mean, Sd) UCL		138.2
77												
78	**Suggested UCL to Use**											
79					95% Student's-t UCL	99.39						
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	**Note: For highly negatively-skewed data, confidence limits (e.g., Chen, Johnson, Lognormal, and Gamma) may not be**											
87	**reliable. Chen's and Johnson's methods provide adjustments for positvely skewed data sets.**											
88												
89												

	A	B	C	D	E	F	G	H	I	J	K	L
90	Arsenic											
91												
92						General Statistics						
93					Total Number of Observations	12				Number of Distinct Observations		7
94										Number of Missing Observations		0
95					Minimum	6.91				Mean		10.54
96					Maximum	18.04				Median		11
97					SD	2.882				Std. Error of Mean		0.832
98					Coefficient of Variation	0.273				Skewness		1.402
99												
100						Normal GOF Test						
101					Shapiro Wilk Test Statistic	0.764				Shapiro Wilk GOF Test		
102					5% Shapiro Wilk Critical Value	0.859				Data Not Normal at 5% Significance Level		
103					Lilliefors Test Statistic	0.353				Lilliefors GOF Test		
104					5% Lilliefors Critical Value	0.256				Data Not Normal at 5% Significance Level		
105						Data Not Normal at 5% Significance Level						
106												
107						Assuming Normal Distribution						
108					95% Normal UCL					95% UCLs (Adjusted for Skewness)		
109					95% Student's-t UCL	12.03				95% Adjusted-CLT UCL (Chen-1995)		12.27
110										95% Modified-t UCL (Johnson-1978)		12.09
111												
112						Gamma GOF Test						
113					A-D Test Statistic	1.188				Anderson-Darling Gamma GOF Test		
114					5% A-D Critical Value	0.731				Data Not Gamma Distributed at 5% Significance Level		
115					K-S Test Statistic	0.316				Kolmogrov-Smirnoff Gamma GOF Test		
116					5% K-S Critical Value	0.245				Data Not Gamma Distributed at 5% Significance Level		
117						Data Not Gamma Distributed at 5% Significance Level						
118												
119						Gamma Statistics						
120					k hat (MLE)	16.14				k star (bias corrected MLE)		12.16
121					Theta hat (MLE)	0.653				Theta star (bias corrected MLE)		0.867
122					nu hat (MLE)	387.4				nu star (bias corrected)		291.9
123					MLE Mean (bias corrected)	10.54				MLE Sd (bias corrected)		3.022
124										Approximate Chi Square Value (0.05)		253.3
125					Adjusted Level of Significance	0.029				Adjusted Chi Square Value		247.8
126												
127						Assuming Gamma Distribution						
128					95% Approximate Gamma UCL (use when n>=50))	12.15				95% Adjusted Gamma UCL (use when n<50)		12.41
129												
130						Lognormal GOF Test						
131					Shapiro Wilk Test Statistic	0.818				Shapiro Wilk Lognormal GOF Test		
132					5% Shapiro Wilk Critical Value	0.859				Data Not Lognormal at 5% Significance Level		
133					Lilliefors Test Statistic	0.304				Lilliefors Lognormal GOF Test		
134					5% Lilliefors Critical Value	0.256				Data Not Lognormal at 5% Significance Level		
135						Data Not Lognormal at 5% Significance Level						
136												
137						Lognormal Statistics						
138					Minimum of Logged Data	1.933				Mean of logged Data		2.324
139					Maximum of Logged Data	2.893				SD of logged Data		0.258
140												

	A	B	C	D	E	F	G	H	I	J	K	L
141					Assuming Lognormal Distribution							
142					95% H-UCL	12.23				90% Chebyshev (MVUE) UCL		12.9
143				95% Chebyshev (MVUE) UCL		13.97				97.5% Chebyshev (MVUE) UCL		15.46
144				99% Chebyshev (MVUE) UCL		18.39						
145												
146					Nonparametric Distribution Free UCL Statistics							
147					Data do not follow a Discernible Distribution (0.05)							
148												
149					Nonparametric Distribution Free UCLs							
150					95% CLT UCL	11.91				95% Jackknife UCL		12.03
151				95% Standard Bootstrap UCL		11.84				95% Bootstrap-t UCL		12.34
152				95% Hall's Bootstrap UCL		18.08				95% Percentile Bootstrap UCL		11.87
153				95% BCA Bootstrap UCL		12.14						
154				90% Chebyshev(Mean, Sd) UCL		13.04				95% Chebyshev(Mean, Sd) UCL		14.17
155				97.5% Chebyshev(Mean, Sd) UCL		15.74				99% Chebyshev(Mean, Sd) UCL		18.82
156												
157					Suggested UCL to Use							
158					95% Student's-t UCL	12.03				or 95% Modified-t UCL		12.09
159												
160	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
161	These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)											
162	and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.											
163	For additional insight the user may want to consult a statistician.											
164												
165												

	A	B	C	D	E	F	G	H	I	J	K	L
166	Cadmium											
167												
168					General Statistics							
169					Total Number of Observations	12			Number of Distinct Observations			6
170									Number of Missing Observations			0
171					Minimum	0.037			Mean			10.89
172					Maximum	15.36			Median			12
173					SD	4.925			Std. Error of Mean			1.422
174					Coefficient of Variation	0.452			Skewness			-1.715
175												
176					Normal GOF Test							
177					Shapiro Wilk Test Statistic	0.688			Shapiro Wilk GOF Test			
178					5% Shapiro Wilk Critical Value	0.859			Data Not Normal at 5% Significance Level			
179					Lilliefors Test Statistic	0.422			Lilliefors GOF Test			
180					5% Lilliefors Critical Value	0.256			Data Not Normal at 5% Significance Level			
181					Data Not Normal at 5% Significance Level							
182												
183					Assuming Normal Distribution							
184					95% Normal UCL				95% UCLs (Adjusted for Skewness)			
185					95% Student's-t UCL	13.44			95% Adjusted-CLT UCL (Chen-1995)			12.48
186									95% Modified-t UCL (Johnson-1978)			13.33
187												
188					Gamma GOF Test							
189					A-D Test Statistic	2.708			Anderson-Darling Gamma GOF Test			
190					5% A-D Critical Value	0.754			Data Not Gamma Distributed at 5% Significance Level			
191					K-S Test Statistic	0.496			Kolmogrov-Smirnoff Gamma GOF Test			
192					5% K-S Critical Value	0.252			Data Not Gamma Distributed at 5% Significance Level			
193					Data Not Gamma Distributed at 5% Significance Level							
194												
195					Gamma Statistics							
196					k hat (MLE)	1.135			k star (bias corrected MLE)			0.907
197					Theta hat (MLE)	9.599			Theta star (bias corrected MLE)			12.01
198					nu hat (MLE)	27.23			nu star (bias corrected)			21.76
199					MLE Mean (bias corrected)	10.89			MLE Sd (bias corrected)			11.44
200									Approximate Chi Square Value (0.05)			12.16
201					Adjusted Level of Significance	0.029			Adjusted Chi Square Value			11.07
202												
203					Assuming Gamma Distribution							
204					95% Approximate Gamma UCL (use when n>=50))	19.49			95% Adjusted Gamma UCL (use when n<50)			21.4
205												
206					Lognormal GOF Test							
207					Shapiro Wilk Test Statistic	0.504			Shapiro Wilk Lognormal GOF Test			
208					5% Shapiro Wilk Critical Value	0.859			Data Not Lognormal at 5% Significance Level			
209					Lilliefors Test Statistic	0.467			Lilliefors Lognormal GOF Test			
210					5% Lilliefors Critical Value	0.256			Data Not Lognormal at 5% Significance Level			
211					Data Not Lognormal at 5% Significance Level							
212												
213					Lognormal Statistics							
214					Minimum of Logged Data	-3.297			Mean of logged Data			1.886
215					Maximum of Logged Data	2.732			SD of logged Data			1.748
216												

	A	B	C	D	E	F	G	H	I	J	K	L
217					Assuming Lognormal Distribution							
218					95% H-UCL	311.8				90% Chebyshev (MVUE) UCL		62.89
219				95% Chebyshev (MVUE) UCL		80.66				97.5% Chebyshev (MVUE) UCL		105.3
220				99% Chebyshev (MVUE) UCL		153.7						
221												
222					Nonparametric Distribution Free UCL Statistics							
223					Data do not follow a Discernible Distribution (0.05)							
224												
225					Nonparametric Distribution Free UCLs							
226					95% CLT UCL	13.23				95% Jackknife UCL		13.44
227				95% Standard Bootstrap UCL		13.13				95% Bootstrap-t UCL		12.86
228				95% Hall's Bootstrap UCL		12.63				95% Percentile Bootstrap UCL		13.01
229				95% BCA Bootstrap UCL		12.76						
230				90% Chebyshev(Mean, Sd) UCL		15.16				95% Chebyshev(Mean, Sd) UCL		17.09
231				97.5% Chebyshev(Mean, Sd) UCL		19.77				99% Chebyshev(Mean, Sd) UCL		25.04
232												
233					Suggested UCL to Use							
234				99% Chebyshev (Mean, Sd) UCL		25.04						
235												
236					Recommended UCL exceeds the maximum observation							
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					Note: For highly negatively-skewed data, confidence limits (e.g., Chen, Johnson, Lognormal, and Gamma) may not be							
244					reliable. Chen's and Johnson's methods provide adjustments for positvely skewed data sets.							
245												
246												

	A	B	C	D	E	F	G	H	I	J	K	L
247	Chromium											
248												
249					General Statistics							
250					Total Number of Observations	12			Number of Distinct Observations			6
251									Number of Missing Observations			0
252					Minimum	35.2			Mean			69.02
253					Maximum	85			Median			85
254					SD	20.55			Std. Error of Mean			5.932
255					Coefficient of Variation	0.298			Skewness			-0.641
256												
257					Normal GOF Test							
258					Shapiro Wilk Test Statistic	0.74			Shapiro Wilk GOF Test			
259					5% Shapiro Wilk Critical Value	0.859			Data Not Normal at 5% Significance Level			
260					Lilliefors Test Statistic	0.365			Lilliefors GOF Test			
261					5% Lilliefors Critical Value	0.256			Data Not Normal at 5% Significance Level			
262					Data Not Normal at 5% Significance Level							
263												
264					Assuming Normal Distribution							
265					95% Normal UCL				95% UCLs (Adjusted for Skewness)			
266					95% Student's-t UCL	79.68			95% Adjusted-CLT UCL (Chen-1995)			77.61
267									95% Modified-t UCL (Johnson-1978)			79.49
268												
269					Gamma GOF Test							
270					A-D Test Statistic	1.49			Anderson-Darling Gamma GOF Test			
271					5% A-D Critical Value	0.73			Data Not Gamma Distributed at 5% Significance Level			
272					K-S Test Statistic	0.371			Kolmogrov-Smirnoff Gamma GOF Test			
273					5% K-S Critical Value	0.245			Data Not Gamma Distributed at 5% Significance Level			
274					Data Not Gamma Distributed at 5% Significance Level							
275												
276					Gamma Statistics							
277					k hat (MLE)	10.44			k star (bias corrected MLE)			7.887
278					Theta hat (MLE)	6.61			Theta star (bias corrected MLE)			8.751
279					nu hat (MLE)	250.6			nu star (bias corrected)			189.3
280					MLE Mean (bias corrected)	69.02			MLE Sd (bias corrected)			24.58
281									Approximate Chi Square Value (0.05)			158.5
282					Adjusted Level of Significance	0.029			Adjusted Chi Square Value			154.2
283												
284					Assuming Gamma Distribution							
285					95% Approximate Gamma UCL (use when n>=50))	82.45			95% Adjusted Gamma UCL (use when n<50)			84.75
286												
287					Lognormal GOF Test							
288					Shapiro Wilk Test Statistic	0.753			Shapiro Wilk Lognormal GOF Test			
289					5% Shapiro Wilk Critical Value	0.859			Data Not Lognormal at 5% Significance Level			
290					Lilliefors Test Statistic	0.358			Lilliefors Lognormal GOF Test			
291					5% Lilliefors Critical Value	0.256			Data Not Lognormal at 5% Significance Level			
292					Data Not Lognormal at 5% Significance Level							
293												
294					Lognormal Statistics							
295					Minimum of Logged Data	3.561			Mean of logged Data			4.186
296					Maximum of Logged Data	4.443			SD of logged Data			0.34
297												

	A	B	C	D	E	F	G	H	I	J	K	L
298	**Assuming Lognormal Distribution**											
299					95% H-UCL	85.24				90% Chebyshev (MVUE) UCL		90
300				95% Chebyshev (MVUE) UCL		99.36				97.5% Chebyshev (MVUE) UCL		112.4
301				99% Chebyshev (MVUE) UCL		137.9						
302												
303	**Nonparametric Distribution Free UCL Statistics**											
304	**Data do not follow a Discernible Distribution (0.05)**											
305												
306	**Nonparametric Distribution Free UCLs**											
307					95% CLT UCL	78.78				95% Jackknife UCL		79.68
308				95% Standard Bootstrap UCL		78.43				95% Bootstrap-t UCL		78.36
309				95% Hall's Bootstrap UCL		77.17				95% Percentile Bootstrap UCL		77.95
310				95% BCA Bootstrap UCL		77.28						
311				90% Chebyshev(Mean, Sd) UCL		86.82				95% Chebyshev(Mean, Sd) UCL		94.88
312				97.5% Chebyshev(Mean, Sd) UCL		106.1				99% Chebyshev(Mean, Sd) UCL		128
313												
314	**Suggested UCL to Use**											
315					95% Student's-t UCL	79.68				or 95% Modified-t UCL		79.49
316												
317	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
318	These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)											
319	and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.											
320	For additional insight the user may want to consult a statistician.											
321												
322	**Note: For highly negatively-skewed data, confidence limits (e.g., Chen, Johnson, Lognormal, and Gamma) may not be**											
323	**reliable. Chen's and Johnson's methods provide adjustments for positvely skewed data sets.**											
324												
325												

	A	B	C	D	E	F	G	H	I	J	K	L
326	Cobalt											
327												
328					General Statistics							
329					Total Number of Observations	12				Number of Distinct Observations		3
330										Number of Missing Observations		0
331					Minimum	3.6				Mean		9.9
332					Maximum	16.2				Median		9.9
333					SD	2.686				Std. Error of Mean		0.775
334					Coefficient of Variation	0.271				Skewness		-3.68E-15
335												
336					Normal GOF Test							
337					Shapiro Wilk Test Statistic	0.6				Shapiro Wilk GOF Test		
338					5% Shapiro Wilk Critical Value	0.859				Data Not Normal at 5% Significance Level		
339					Lilliefors Test Statistic	0.417				Lilliefors GOF Test		
340					5% Lilliefors Critical Value	0.256				Data Not Normal at 5% Significance Level		
341					Data Not Normal at 5% Significance Level							
342												
343					Assuming Normal Distribution							
344					95% Normal UCL					95% UCLs (Adjusted for Skewness)		
345					95% Student's-t UCL	11.29				95% Adjusted-CLT UCL (Chen-1995)		11.18
346										95% Modified-t UCL (Johnson-1978)		11.29
347												
348					Gamma GOF Test							
349					A-D Test Statistic	2.795				Anderson-Darling Gamma GOF Test		
350					5% A-D Critical Value	0.731				Data Not Gamma Distributed at 5% Significance Level		
351					K-S Test Statistic	0.456				Kolmogrov-Smirnoff Gamma GOF Test		
352					5% K-S Critical Value	0.245				Data Not Gamma Distributed at 5% Significance Level		
353					Data Not Gamma Distributed at 5% Significance Level							
354												
355					Gamma Statistics							
356					k hat (MLE)	11.72				k star (bias corrected MLE)		8.847
357					Theta hat (MLE)	0.845				Theta star (bias corrected MLE)		1.119
358					nu hat (MLE)	281.3				nu star (bias corrected)		212.3
359					MLE Mean (bias corrected)	9.9				MLE Sd (bias corrected)		3.328
360										Approximate Chi Square Value (0.05)		179.6
361					Adjusted Level of Significance	0.029				Adjusted Chi Square Value		175
362												
363					Assuming Gamma Distribution							
364					95% Approximate Gamma UCL (use when n>=50))	11.7				95% Adjusted Gamma UCL (use when n<50)		12.01
365												
366					Lognormal GOF Test							
367					Shapiro Wilk Test Statistic	0.545				Shapiro Wilk Lognormal GOF Test		
368					5% Shapiro Wilk Critical Value	0.859				Data Not Lognormal at 5% Significance Level		
369					Lilliefors Test Statistic	0.468				Lilliefors Lognormal GOF Test		
370					5% Lilliefors Critical Value	0.256				Data Not Lognormal at 5% Significance Level		
371					Data Not Lognormal at 5% Significance Level							
372												
373					Lognormal Statistics							
374					Minimum of Logged Data	1.281				Mean of logged Data		2.249
375					Maximum of Logged Data	2.785				SD of logged Data		0.336
376												

	A	B	C	D	E	F	G	H	I	J	K	L
377					Assuming Lognormal Distribution							
378					95% H-UCL	12.24				90% Chebyshev (MVUE) UCL		12.92
379				95% Chebyshev (MVUE) UCL		14.25				97.5% Chebyshev (MVUE) UCL		16.1
380				99% Chebyshev (MVUE) UCL		19.73						
381												
382					Nonparametric Distribution Free UCL Statistics							
383					Data do not follow a Discernible Distribution (0.05)							
384												
385					Nonparametric Distribution Free UCLs							
386					95% CLT UCL	11.18				95% Jackknife UCL		11.29
387				95% Standard Bootstrap UCL		N/A				95% Bootstrap-t UCL		N/A
388				95% Hall's Bootstrap UCL		N/A				95% Percentile Bootstrap UCL		N/A
389				95% BCA Bootstrap UCL		N/A						
390				90% Chebyshev(Mean, Sd) UCL		12.23				95% Chebyshev(Mean, Sd) UCL		13.28
391				97.5% Chebyshev(Mean, Sd) UCL		14.74				99% Chebyshev(Mean, Sd) UCL		17.62
392												
393					Suggested UCL to Use							
394				95% Student's-t UCL		11.29				or 95% Modified-t UCL		11.29
395												
396					Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.							
397					These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)							
398					and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.							
399					For additional insight the user may want to consult a statistician.							
400												
401					Note: For highly negatively-skewed data, confidence limits (e.g., Chen, Johnson, Lognormal, and Gamma) may not be							
402					reliable. Chen's and Johnson's methods provide adjustments for positvely skewed data sets.							
403												
404												

	A	B	C	D	E	F	G	H	I	J	K	L
405	Copper											
406												
407					General Statistics							
408					Total Number of Observations	12			Number of Distinct Observations			11
409									Number of Missing Observations			0
410					Minimum	22.41			Mean			294.1
411					Maximum	793.2			Median			286.9
412					SD	258.2			Std. Error of Mean			74.53
413					Coefficient of Variation	0.878			Skewness			0.868
414												
415					Normal GOF Test							
416					Shapiro Wilk Test Statistic	0.875			Shapiro Wilk GOF Test			
417					5% Shapiro Wilk Critical Value	0.859			Data appear Normal at 5% Significance Level			
418					Lilliefors Test Statistic	0.168			Lilliefors GOF Test			
419					5% Lilliefors Critical Value	0.256			Data appear Normal at 5% Significance Level			
420					Data appear Normal at 5% Significance Level							
421												
422					Assuming Normal Distribution							
423					95% Normal UCL				95% UCLs (Adjusted for Skewness)			
424					95% Student's-t UCL	428			95% Adjusted-CLT UCL (Chen-1995)			436.7
425									95% Modified-t UCL (Johnson-1978)			431.1
426												
427					Gamma GOF Test							
428					A-D Test Statistic	0.582			Anderson-Darling Gamma GOF Test			
429					5% A-D Critical Value	0.756			Detected data appear Gamma Distributed at 5% Significance Level			
430					K-S Test Statistic	0.198			Kolmogrov-Smirnoff Gamma GOF Test			
431					5% K-S Critical Value	0.252			Detected data appear Gamma Distributed at 5% Significance Level			
432					Detected data appear Gamma Distributed at 5% Significance Level							
433												
434					Gamma Statistics							
435					k hat (MLE)	1.048			k star (bias corrected MLE)			0.841
436					Theta hat (MLE)	280.7			Theta star (bias corrected MLE)			349.5
437					nu hat (MLE)	25.15			nu star (bias corrected)			20.19
438					MLE Mean (bias corrected)	294.1			MLE Sd (bias corrected)			320.6
439									Approximate Chi Square Value (0.05)			10.99
440					Adjusted Level of Significance	0.029			Adjusted Chi Square Value			9.973
441												
442					Assuming Gamma Distribution							
443					95% Approximate Gamma UCL (use when n>=50))	540.2			95% Adjusted Gamma UCL (use when n<50)			595.6
444												
445					Lognormal GOF Test							
446					Shapiro Wilk Test Statistic	0.865			Shapiro Wilk Lognormal GOF Test			
447					5% Shapiro Wilk Critical Value	0.859			Data appear Lognormal at 5% Significance Level			
448					Lilliefors Test Statistic	0.238			Lilliefors Lognormal GOF Test			
449					5% Lilliefors Critical Value	0.256			Data appear Lognormal at 5% Significance Level			
450					Data appear Lognormal at 5% Significance Level							
451												
452					Lognormal Statistics							
453					Minimum of Logged Data	3.11			Mean of logged Data			5.136
454					Maximum of Logged Data	6.676			SD of logged Data			1.266
455												

	A	B	C	D	E	F	G	H	I	J	K	L
456	**Assuming Lognormal Distribution**											
457					95% H-UCL	1397				90% Chebyshev (MVUE) UCL		748.8
458					95% Chebyshev (MVUE) UCL	933.2				97.5% Chebyshev (MVUE) UCL		1189
459					99% Chebyshev (MVUE) UCL	1692						
460												
461	**Nonparametric Distribution Free UCL Statistics**											
462	**Data appear to follow a Discernible Distribution at 5% Significance Level**											
463												
464	**Nonparametric Distribution Free UCLs**											
465					95% CLT UCL	416.7				95% Jackknife UCL		428
466					95% Standard Bootstrap UCL	410				95% Bootstrap-t UCL		464
467					95% Hall's Bootstrap UCL	519.5				95% Percentile Bootstrap UCL		408.4
468					95% BCA Bootstrap UCL	426.4						
469					90% Chebyshev(Mean, Sd) UCL	517.7				95% Chebyshev(Mean, Sd) UCL		619
470					97.5% Chebyshev(Mean, Sd) UCL	759.5				99% Chebyshev(Mean, Sd) UCL		1036
471												
472	**Suggested UCL to Use**											
473					95% Student's-t UCL	428						
474												
475	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
476	These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)											
477	and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.											
478	For additional insight the user may want to consult a statistician.											
479												
480												

	A	B	C	D	E	F	G	H	I	J	K	L
481	Iron											
482												
483					General Statistics							
484					Total Number of Observations	12				Number of Distinct Observations		12
485										Number of Missing Observations		0
486					Minimum	12350				Mean		24124
487					Maximum	54500				Median		18474
488					SD	13019				Std. Error of Mean		3758
489					Coefficient of Variation	0.54				Skewness		1.5
490												
491					Normal GOF Test							
492					Shapiro Wilk Test Statistic	0.788				Shapiro Wilk GOF Test		
493					5% Shapiro Wilk Critical Value	0.859				Data Not Normal at 5% Significance Level		
494					Lilliefors Test Statistic	0.283				Lilliefors GOF Test		
495					5% Lilliefors Critical Value	0.256				Data Not Normal at 5% Significance Level		
496					Data Not Normal at 5% Significance Level							
497												
498					Assuming Normal Distribution							
499					95% Normal UCL					95% UCLs (Adjusted for Skewness)		
500					95% Student's-t UCL	30874				95% Adjusted-CLT UCL (Chen-1995)		32045
501										95% Modified-t UCL (Johnson-1978)		31145
502												
503					Gamma GOF Test							
504					A-D Test Statistic	0.852				Anderson-Darling Gamma GOF Test		
505					5% A-D Critical Value	0.733				Data Not Gamma Distributed at 5% Significance Level		
506					K-S Test Statistic	0.243				Kolmogrov-Smirnoff Gamma GOF Test		
507					5% K-S Critical Value	0.246				Detected data appear Gamma Distributed at 5% Significance Level		
508					Detected data follow Appr. Gamma Distribution at 5% Significance Level							
509												
510					Gamma Statistics							
511					k hat (MLE)	4.784				k star (bias corrected MLE)		3.643
512					Theta hat (MLE)	5043				Theta star (bias corrected MLE)		6622
513					nu hat (MLE)	114.8				nu star (bias corrected)		87.44
514					MLE Mean (bias corrected)	24124				MLE Sd (bias corrected)		12639
515										Approximate Chi Square Value (0.05)		66.88
516					Adjusted Level of Significance	0.029				Adjusted Chi Square Value		64.14
517												
518					Assuming Gamma Distribution							
519					95% Approximate Gamma UCL (use when n>=50)	31539				95% Adjusted Gamma UCL (use when n<50)		32886
520												
521					Lognormal GOF Test							
522					Shapiro Wilk Test Statistic	0.887				Shapiro Wilk Lognormal GOF Test		
523					5% Shapiro Wilk Critical Value	0.859				Data appear Lognormal at 5% Significance Level		
524					Lilliefors Test Statistic	0.214				Lilliefors Lognormal GOF Test		
525					5% Lilliefors Critical Value	0.256				Data appear Lognormal at 5% Significance Level		
526					Data appear Lognormal at 5% Significance Level							
527												
528					Lognormal Statistics							
529					Minimum of Logged Data	9.421				Mean of logged Data		9.983
530					Maximum of Logged Data	10.91				SD of logged Data		0.462
531												

	A	B	C	D	E	F	G	H	I	J	K	L
532	Assuming Lognormal Distribution											
533					95% H-UCL	32247				90% Chebyshev (MVUE) UCL		33595
534					95% Chebyshev (MVUE) UCL	38005				97.5% Chebyshev (MVUE) UCL		44127
535					99% Chebyshev (MVUE) UCL	56152						
536												
537	Nonparametric Distribution Free UCL Statistics											
538	Data appear to follow a Discernible Distribution at 5% Significance Level											
539												
540	Nonparametric Distribution Free UCLs											
541					95% CLT UCL	30306				95% Jackknife UCL		30874
542					95% Standard Bootstrap UCL	30161				95% Bootstrap-t UCL		34487
543					95% Hall's Bootstrap UCL	30511				95% Percentile Bootstrap UCL		30244
544					95% BCA Bootstrap UCL	31989						
545					90% Chebyshev(Mean, Sd) UCL	35399				95% Chebyshev(Mean, Sd) UCL		40506
546					97.5% Chebyshev(Mean, Sd) UCL	47594				99% Chebyshev(Mean, Sd) UCL		61518
547												
548	Suggested UCL to Use											
549					95% Adjusted Gamma UCL	32886						
550												
551	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
552	These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)											
553	and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.											
554	For additional insight the user may want to consult a statistician.											
555												
556												

	A	B	C	D	E	F	G	H	I	J	K	L
557	Manganese											
558												
559					General Statistics							
560					Total Number of Observations	12			Number of Distinct Observations			12
561									Number of Missing Observations			0
562					Minimum	244.2			Mean			558
563					Maximum	1072			Median			455.8
564					SD	266.9			Std. Error of Mean			77.04
565					Coefficient of Variation	0.478			Skewness			0.792
566												
567					Normal GOF Test							
568					Shapiro Wilk Test Statistic	0.88			Shapiro Wilk GOF Test			
569					5% Shapiro Wilk Critical Value	0.859			Data appear Normal at 5% Significance Level			
570					Lilliefors Test Statistic	0.231			Lilliefors GOF Test			
571					5% Lilliefors Critical Value	0.256			Data appear Normal at 5% Significance Level			
572					Data appear Normal at 5% Significance Level							
573												
574					Assuming Normal Distribution							
575					95% Normal UCL				95% UCLs (Adjusted for Skewness)			
576					95% Student's-t UCL	696.3			95% Adjusted-CLT UCL (Chen-1995)			703.5
577									95% Modified-t UCL (Johnson-1978)			699.3
578												
579					Gamma GOF Test							
580					A-D Test Statistic	0.527			Anderson-Darling Gamma GOF Test			
581					5% A-D Critical Value	0.732			Detected data appear Gamma Distributed at 5% Significance Level			
582					K-S Test Statistic	0.183			Kolmogrov-Smirnoff Gamma GOF Test			
583					5% K-S Critical Value	0.246			Detected data appear Gamma Distributed at 5% Significance Level			
584					Detected data appear Gamma Distributed at 5% Significance Level							
585												
586					Gamma Statistics							
587					k hat (MLE)	5.133			k star (bias corrected MLE)			3.905
588					Theta hat (MLE)	108.7			Theta star (bias corrected MLE)			142.9
589					nu hat (MLE)	123.2			nu star (bias corrected)			93.72
590					MLE Mean (bias corrected)	558			MLE Sd (bias corrected)			282.4
591									Approximate Chi Square Value (0.05)			72.4
592					Adjusted Level of Significance	0.029			Adjusted Chi Square Value			69.54
593												
594					Assuming Gamma Distribution							
595					95% Approximate Gamma UCL (use when n>=50))	722.3			95% Adjusted Gamma UCL (use when n<50)			752
596												
597					Lognormal GOF Test							
598					Shapiro Wilk Test Statistic	0.935			Shapiro Wilk Lognormal GOF Test			
599					5% Shapiro Wilk Critical Value	0.859			Data appear Lognormal at 5% Significance Level			
600					Lilliefors Test Statistic	0.177			Lilliefors Lognormal GOF Test			
601					5% Lilliefors Critical Value	0.256			Data appear Lognormal at 5% Significance Level			
602					Data appear Lognormal at 5% Significance Level							
603												
604					Lognormal Statistics							
605					Minimum of Logged Data	5.498			Mean of logged Data			6.224
606					Maximum of Logged Data	6.978			SD of logged Data			0.465
607												

	A	B	C	D	E	F	G	H	I	J	K	L
608	Assuming Lognormal Distribution											
609					95% H-UCL	754.4				90% Chebyshev (MVUE) UCL		785.5
610				95% Chebyshev (MVUE) UCL		889.1				97.5% Chebyshev (MVUE) UCL		1033
611				99% Chebyshev (MVUE) UCL		1315						
612												
613	Nonparametric Distribution Free UCL Statistics											
614	Data appear to follow a Discernible Distribution at 5% Significance Level											
615												
616	Nonparametric Distribution Free UCLs											
617					95% CLT UCL	684.7				95% Jackknife UCL		696.3
618				95% Standard Bootstrap UCL		675				95% Bootstrap-t UCL		731.2
619				95% Hall's Bootstrap UCL		684.6				95% Percentile Bootstrap UCL		686.5
620				95% BCA Bootstrap UCL		698						
621				90% Chebyshev(Mean, Sd) UCL		789.1				95% Chebyshev(Mean, Sd) UCL		893.8
622				97.5% Chebyshev(Mean, Sd) UCL		1039				99% Chebyshev(Mean, Sd) UCL		1324
623												
624	Suggested UCL to Use											
625					95% Student's-t UCL	696.3						
626												
627	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
628	These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)											
629	and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.											
630	For additional insight the user may want to consult a statistician.											
631												
632												

	A	B	C	D	E	F	G	H	I	J	K	L
633	Mercury											
634												
635					General Statistics							
636					Total Number of Observations	12			Number of Distinct Observations			5
637									Number of Missing Observations			0
638					Minimum	0.0201			Mean			7.91
639					Maximum	10			Median			10
640					SD	3.754			Std. Error of Mean			1.084
641					Coefficient of Variation	0.475			Skewness			-1.736
642												
643					Normal GOF Test							
644					Shapiro Wilk Test Statistic	0.617			Shapiro Wilk GOF Test			
645					5% Shapiro Wilk Critical Value	0.859			Data Not Normal at 5% Significance Level			
646					Lilliefors Test Statistic	0.378			Lilliefors GOF Test			
647					5% Lilliefors Critical Value	0.256			Data Not Normal at 5% Significance Level			
648					Data Not Normal at 5% Significance Level							
649												
650					Assuming Normal Distribution							
651					95% Normal UCL				95% UCLs (Adjusted for Skewness)			
652					95% Student's-t UCL	9.856			95% Adjusted-CLT UCL (Chen-1995)			9.112
653									95% Modified-t UCL (Johnson-1978)			9.766
654												
655					Gamma GOF Test							
656					A-D Test Statistic	2.856			Anderson-Darling Gamma GOF Test			
657					5% A-D Critical Value	0.758			Data Not Gamma Distributed at 5% Significance Level			
658					K-S Test Statistic	0.406			Kolmogrov-Smirnoff Gamma GOF Test			
659					5% K-S Critical Value	0.253			Data Not Gamma Distributed at 5% Significance Level			
660					Data Not Gamma Distributed at 5% Significance Level							
661												
662					Gamma Statistics							
663					k hat (MLE)	0.961			k star (bias corrected MLE)			0.776
664					Theta hat (MLE)	8.231			Theta star (bias corrected MLE)			10.19
665					nu hat (MLE)	23.07			nu star (bias corrected)			18.63
666					MLE Mean (bias corrected)	7.91			MLE Sd (bias corrected)			8.977
667									Approximate Chi Square Value (0.05)			9.849
668					Adjusted Level of Significance	0.029			Adjusted Chi Square Value			8.89
669												
670					Assuming Gamma Distribution							
671					95% Approximate Gamma UCL (use when n>=50))	14.96			95% Adjusted Gamma UCL (use when n<50)			16.58
672												
673					Lognormal GOF Test							
674					Shapiro Wilk Test Statistic	0.521			Shapiro Wilk Lognormal GOF Test			
675					5% Shapiro Wilk Critical Value	0.859			Data Not Lognormal at 5% Significance Level			
676					Lilliefors Test Statistic	0.422			Lilliefors Lognormal GOF Test			
677					5% Lilliefors Critical Value	0.256			Data Not Lognormal at 5% Significance Level			
678					Data Not Lognormal at 5% Significance Level							
679												
680					Lognormal Statistics							
681					Minimum of Logged Data	-3.907			Mean of logged Data			1.465
682					Maximum of Logged Data	2.303			SD of logged Data			1.92
683												

	A	B	C	D	E	F	G	H	I	J	K	L
684					Assuming Lognormal Distribution							
685					95% H-UCL	437.4				90% Chebyshev (MVUE) UCL		55.47
686				95% Chebyshev (MVUE) UCL		71.65				97.5% Chebyshev (MVUE) UCL		94.11
687				99% Chebyshev (MVUE) UCL		138.2						
688												
689					Nonparametric Distribution Free UCL Statistics							
690					Data do not follow a Discernible Distribution (0.05)							
691												
692					Nonparametric Distribution Free UCLs							
693					95% CLT UCL	9.692				95% Jackknife UCL		9.856
694				95% Standard Bootstrap UCL		9.564				95% Bootstrap-t UCL		9.427
695				95% Hall's Bootstrap UCL		9.153				95% Percentile Bootstrap UCL		9.458
696				95% BCA Bootstrap UCL		9.02						
697				90% Chebyshev(Mean, Sd) UCL		11.16				95% Chebyshev(Mean, Sd) UCL		12.63
698				97.5% Chebyshev(Mean, Sd) UCL		14.68				99% Chebyshev(Mean, Sd) UCL		18.69
699												
700					Suggested UCL to Use							
701				99% Chebyshev (Mean, Sd) UCL		18.69						
702												
703					Recommended UCL exceeds the maximum observation							
704												
705	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
706	These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)											
707	and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.											
708	For additional insight the user may want to consult a statistician.											
709												
710	Note: For highly negatively-skewed data, confidence limits (e.g., Chen, Johnson, Lognormal, and Gamma) may not be											
711	reliable. Chen's and Johnson's methods provide adjustments for positvely skewed data sets.											
712												
713												

	A	B	C	D	E	F	G	H	I	J	K	L
714	Neptunium-237											
715												
716						General Statistics						
717					Total Number of Observations	12				Number of Distinct Observations		3
718										Number of Missing Observations		0
719					Minimum	0.006				Mean		0.323
720					Maximum	0.64				Median		0.323
721					SD	0.135				Std. Error of Mean		0.039
722					Coefficient of Variation	0.418				Skewness		0
723												
724						Normal GOF Test						
725					Shapiro Wilk Test Statistic	0.6				Shapiro Wilk GOF Test		
726					5% Shapiro Wilk Critical Value	0.859				Data Not Normal at 5% Significance Level		
727					Lilliefors Test Statistic	0.417				Lilliefors GOF Test		
728					5% Lilliefors Critical Value	0.256				Data Not Normal at 5% Significance Level		
729						Data Not Normal at 5% Significance Level						
730												
731						Assuming Normal Distribution						
732					95% Normal UCL					95% UCLs (Adjusted for Skewness)		
733					95% Student's-t UCL	0.393				95% Adjusted-CLT UCL (Chen-1995)		0.387
734										95% Modified-t UCL (Johnson-1978)		0.393
735												
736						Gamma GOF Test						
737					A-D Test Statistic	3.218				Anderson-Darling Gamma GOF Test		
738					5% A-D Critical Value	0.742				Data Not Gamma Distributed at 5% Significance Level		
739					K-S Test Statistic	0.511				Kolmogrov-Smirnoff Gamma GOF Test		
740					5% K-S Critical Value	0.249				Data Not Gamma Distributed at 5% Significance Level		
741						Data Not Gamma Distributed at 5% Significance Level						
742												
743						Gamma Statistics						
744					k hat (MLE)	1.967				k star (bias corrected MLE)		1.531
745					Theta hat (MLE)	0.164				Theta star (bias corrected MLE)		0.211
746					nu hat (MLE)	47.22				nu star (bias corrected)		36.75
747					MLE Mean (bias corrected)	0.323				MLE Sd (bias corrected)		0.261
748										Approximate Chi Square Value (0.05)		23.87
749					Adjusted Level of Significance	0.029				Adjusted Chi Square Value		22.3
750												
751						Assuming Gamma Distribution						
752					95% Approximate Gamma UCL (use when n>=50))	0.497				95% Adjusted Gamma UCL (use when n<50)		0.532
753												
754						Lognormal GOF Test						
755					Shapiro Wilk Test Statistic	0.423				Shapiro Wilk Lognormal GOF Test		
756					5% Shapiro Wilk Critical Value	0.859				Data Not Lognormal at 5% Significance Level		
757					Lilliefors Test Statistic	0.508				Lilliefors Lognormal GOF Test		
758					5% Lilliefors Critical Value	0.256				Data Not Lognormal at 5% Significance Level		
759						Data Not Lognormal at 5% Significance Level						
760												
761						Lognormal Statistics						
762					Minimum of Logged Data	-5.116				Mean of logged Data		-1.405
763					Maximum of Logged Data	-0.446				SD of logged Data		1.185
764												

	A	B	C	D	E	F	G	H	I	J	K	L
765	Assuming Lognormal Distribution											
766					95% H-UCL	1.587				90% Chebyshev (MVUE) UCL		0.958
767				95% Chebyshev (MVUE) UCL		1.186				97.5% Chebyshev (MVUE) UCL		1.503
768				99% Chebyshev (MVUE) UCL		2.126						
769												
770	Nonparametric Distribution Free UCL Statistics											
771	Data do not follow a Discernible Distribution (0.05)											
772												
773	Nonparametric Distribution Free UCLs											
774					95% CLT UCL	0.387				95% Jackknife UCL		0.393
775				95% Standard Bootstrap UCL		N/A				95% Bootstrap-t UCL		N/A
776				95% Hall's Bootstrap UCL		N/A				95% Percentile Bootstrap UCL		N/A
777				95% BCA Bootstrap UCL		N/A						
778				90% Chebyshev(Mean, Sd) UCL		0.44				95% Chebyshev(Mean, Sd) UCL		0.493
779				97.5% Chebyshev(Mean, Sd) UCL		0.567				99% Chebyshev(Mean, Sd) UCL		0.711
780												
781	Suggested UCL to Use											
782				95% Chebyshev (Mean, Sd) UCL		0.493						
783												
784	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
785	These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)											
786	and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.											
787	For additional insight the user may want to consult a statistician.											
788												
789												

	A	B	C	D	E	F	G	H	I	J	K	L
790	Nickel											
791												
792					General Statistics							
793					Total Number of Observations	12				Number of Distinct Observations		11
794										Number of Missing Observations		0
795					Minimum	65				Mean		215.5
796					Maximum	616.5				Median		168.4
797					SD	163.4				Std. Error of Mean		47.18
798					Coefficient of Variation	0.758				Skewness		1.464
799												
800					Normal GOF Test							
801					Shapiro Wilk Test Statistic	0.855				Shapiro Wilk GOF Test		
802					5% Shapiro Wilk Critical Value	0.859				Data Not Normal at 5% Significance Level		
803					Lilliefors Test Statistic	0.18				Lilliefors GOF Test		
804					5% Lilliefors Critical Value	0.256				Data appear Normal at 5% Significance Level		
805					Data appear Approximate Normal at 5% Significance Level							
806												
807					Assuming Normal Distribution							
808					95% Normal UCL					95% UCLs (Adjusted for Skewness)		
809					95% Student's-t UCL	300.3				95% Adjusted-CLT UCL (Chen-1995)		314.5
810										95% Modified-t UCL (Johnson-1978)		303.6
811												
812					Gamma GOF Test							
813					A-D Test Statistic	0.281				Anderson-Darling Gamma GOF Test		
814					5% A-D Critical Value	0.741				Detected data appear Gamma Distributed at 5% Significance Level		
815					K-S Test Statistic	0.141				Kolmogrov-Smirnoff Gamma GOF Test		
816					5% K-S Critical Value	0.248				Detected data appear Gamma Distributed at 5% Significance Level		
817					Detected data appear Gamma Distributed at 5% Significance Level							
818												
819					Gamma Statistics							
820					k hat (MLE)	2.184				k star (bias corrected MLE)		1.693
821					Theta hat (MLE)	98.7				Theta star (bias corrected MLE)		127.3
822					nu hat (MLE)	52.41				nu star (bias corrected)		40.64
823					MLE Mean (bias corrected)	215.5				MLE Sd (bias corrected)		165.6
824										Approximate Chi Square Value (0.05)		27.03
825					Adjusted Level of Significance	0.029				Adjusted Chi Square Value		25.35
826												
827					Assuming Gamma Distribution							
828					95% Approximate Gamma UCL (use when n>=50))	324				95% Adjusted Gamma UCL (use when n<50)		345.6
829												
830					Lognormal GOF Test							
831					Shapiro Wilk Test Statistic	0.949				Shapiro Wilk Lognormal GOF Test		
832					5% Shapiro Wilk Critical Value	0.859				Data appear Lognormal at 5% Significance Level		
833					Lilliefors Test Statistic	0.13				Lilliefors Lognormal GOF Test		
834					5% Lilliefors Critical Value	0.256				Data appear Lognormal at 5% Significance Level		
835					Data appear Lognormal at 5% Significance Level							
836												
837					Lognormal Statistics							
838					Minimum of Logged Data	4.174				Mean of logged Data		5.127
839					Maximum of Logged Data	6.424				SD of logged Data		0.736
840												

	A	B	C	D	E	F	G	H	I	J	K	L
841	Assuming Lognormal Distribution											
842					95% H-UCL	381.8				90% Chebyshev (MVUE) UCL		358.1
843					95% Chebyshev (MVUE) UCL	422.9				97.5% Chebyshev (MVUE) UCL		512.9
844					99% Chebyshev (MVUE) UCL	689.7						
845												
846	Nonparametric Distribution Free UCL Statistics											
847	Data appear to follow a Discernible Distribution at 5% Significance Level											
848												
849	Nonparametric Distribution Free UCLs											
850					95% CLT UCL	293.1				95% Jackknife UCL		300.3
851					95% Standard Bootstrap UCL	288.1				95% Bootstrap-t UCL		333.2
852					95% Hall's Bootstrap UCL	354.7				95% Percentile Bootstrap UCL		294.5
853					95% BCA Bootstrap UCL	313.5						
854					90% Chebyshev(Mean, Sd) UCL	357.1				95% Chebyshev(Mean, Sd) UCL		421.2
855					97.5% Chebyshev(Mean, Sd) UCL	510.2				99% Chebyshev(Mean, Sd) UCL		685
856												
857	Suggested UCL to Use											
858					95% Student's-t UCL	300.3						
859												
860	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
861	These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)											
862	and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.											
863	For additional insight the user may want to consult a statistician.											
864												
865												

	A	B	C	D	E	F	G	H	I	J	K	L
866	PAH, Total											
867												
868					General Statistics							
869					Total Number of Observations	12			Number of Distinct Observations			3
870									Number of Missing Observations			0
871					Minimum	0.008			Mean			0.816
872					Maximum	1.624			Median			0.816
873					SD	0.344			Std. Error of Mean			0.0994
874					Coefficient of Variation	0.422			Skewness			1.186E-15
875												
876					Normal GOF Test							
877					Shapiro Wilk Test Statistic	0.6			Shapiro Wilk GOF Test			
878					5% Shapiro Wilk Critical Value	0.859			Data Not Normal at 5% Significance Level			
879					Lilliefors Test Statistic	0.417			Lilliefors GOF Test			
880					5% Lilliefors Critical Value	0.256			Data Not Normal at 5% Significance Level			
881					Data Not Normal at 5% Significance Level							
882												
883					Assuming Normal Distribution							
884					95% Normal UCL				95% UCLs (Adjusted for Skewness)			
885					95% Student's-t UCL	0.994			95% Adjusted-CLT UCL (Chen-1995)			0.979
886									95% Modified-t UCL (Johnson-1978)			0.994
887												
888					Gamma GOF Test							
889					A-D Test Statistic	3.305			Anderson-Darling Gamma GOF Test			
890					5% A-D Critical Value	0.744			Data Not Gamma Distributed at 5% Significance Level			
891					K-S Test Statistic	0.519			Kolmogrov-Smirnoff Gamma GOF Test			
892					5% K-S Critical Value	0.249			Data Not Gamma Distributed at 5% Significance Level			
893					Data Not Gamma Distributed at 5% Significance Level							
894												
895					Gamma Statistics							
896					k hat (MLE)	1.671			k star (bias corrected MLE)			1.309
897					Theta hat (MLE)	0.488			Theta star (bias corrected MLE)			0.623
898					nu hat (MLE)	40.12			nu star (bias corrected)			31.42
899					MLE Mean (bias corrected)	0.816			MLE Sd (bias corrected)			0.713
900									Approximate Chi Square Value (0.05)			19.61
901					Adjusted Level of Significance	0.029			Adjusted Chi Square Value			18.2
902												
903					Assuming Gamma Distribution							
904					95% Approximate Gamma UCL (use when n>=50))	1.307			95% Adjusted Gamma UCL (use when n<50)			1.408
905												
906					Lognormal GOF Test							
907					Shapiro Wilk Test Statistic	0.411			Shapiro Wilk Lognormal GOF Test			
908					5% Shapiro Wilk Critical Value	0.859			Data Not Lognormal at 5% Significance Level			
909					Lilliefors Test Statistic	0.511			Lilliefors Lognormal GOF Test			
910					5% Lilliefors Critical Value	0.256			Data Not Lognormal at 5% Significance Level			
911					Data Not Lognormal at 5% Significance Level							
912												
913					Lognormal Statistics							
914					Minimum of Logged Data	-4.828			Mean of logged Data			-0.532
915					Maximum of Logged Data	0.485			SD of logged Data			1.367
916												

	A	B	C	D	E	F	G	H	I	J	K	L
917	Assuming Lognormal Distribution											
918					95% H-UCL	6.667				90% Chebyshev (MVUE) UCL		3.022
919					95% Chebyshev (MVUE) UCL	3.794				97.5% Chebyshev (MVUE) UCL		4.866
920					99% Chebyshev (MVUE) UCL	6.971						
921												
922	Nonparametric Distribution Free UCL Statistics											
923	Data do not follow a Discernible Distribution (0.05)											
924												
925	Nonparametric Distribution Free UCLs											
926					95% CLT UCL	0.979				95% Jackknife UCL		0.994
927					95% Standard Bootstrap UCL	N/A				95% Bootstrap-t UCL		N/A
928					95% Hall's Bootstrap UCL	N/A				95% Percentile Bootstrap UCL		N/A
929					95% BCA Bootstrap UCL	N/A						
930					90% Chebyshev(Mean, Sd) UCL	1.114				95% Chebyshev(Mean, Sd) UCL		1.249
931					97.5% Chebyshev(Mean, Sd) UCL	1.437				99% Chebyshev(Mean, Sd) UCL		1.805
932												
933	Suggested UCL to Use											
934					95% Chebyshev (Mean, Sd) UCL	1.249						
935												
936	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
937	These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)											
938	and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.											
939	For additional insight the user may want to consult a statistician.											
940												
941												

	A	B	C	D	E	F	G	H	I	J	K	L
942	PCB, Total											
943												
944					General Statistics							
945					Total Number of Observations	12			Number of Distinct Observations			2
946									Number of Missing Observations			0
947					Minimum	5			Mean			5.417
948					Maximum	10			Median			5
949					SD	1.443			Std. Error of Mean			0.417
950					Coefficient of Variation	0.266			Skewness			3.464
951												
952					Normal GOF Test							
953					Shapiro Wilk Test Statistic	0.327			Shapiro Wilk GOF Test			
954					5% Shapiro Wilk Critical Value	0.859			Data Not Normal at 5% Significance Level			
955					Lilliefors Test Statistic	0.53			Lilliefors GOF Test			
956					5% Lilliefors Critical Value	0.256			Data Not Normal at 5% Significance Level			
957					Data Not Normal at 5% Significance Level							
958												
959					Assuming Normal Distribution							
960					95% Normal UCL				95% UCLs (Adjusted for Skewness)			
961					95% Student's-t UCL	6.165			95% Adjusted-CLT UCL (Chen-1995)			6.547
962									95% Modified-t UCL (Johnson-1978)			6.234
963												
964					Gamma GOF Test							
965					A-D Test Statistic	4.092			Anderson-Darling Gamma GOF Test			
966					5% A-D Critical Value	0.732			Data Not Gamma Distributed at 5% Significance Level			
967					K-S Test Statistic	0.536			Kolmogrov-Smirnoff Gamma GOF Test			
968					5% K-S Critical Value	0.245			Data Not Gamma Distributed at 5% Significance Level			
969					Data Not Gamma Distributed at 5% Significance Level							
970												
971					Gamma Statistics							
972					k hat (MLE)	22.61			k star (bias corrected MLE)			17.01
973					Theta hat (MLE)	0.24			Theta star (bias corrected MLE)			0.318
974					nu hat (MLE)	542.6			nu star (bias corrected)			408.3
975					MLE Mean (bias corrected)	5.417			MLE Sd (bias corrected)			1.313
976									Approximate Chi Square Value (0.05)			362.4
977					Adjusted Level of Significance	0.029			Adjusted Chi Square Value			355.8
978												
979					Assuming Gamma Distribution							
980					95% Approximate Gamma UCL (use when n>=50))	6.102			95% Adjusted Gamma UCL (use when n<50)			6.215
981												
982					Lognormal GOF Test							
983					Shapiro Wilk Test Statistic	0.327			Shapiro Wilk Lognormal GOF Test			
984					5% Shapiro Wilk Critical Value	0.859			Data Not Lognormal at 5% Significance Level			
985					Lilliefors Test Statistic	0.53			Lilliefors Lognormal GOF Test			
986					5% Lilliefors Critical Value	0.256			Data Not Lognormal at 5% Significance Level			
987					Data Not Lognormal at 5% Significance Level							
988												
989					Lognormal Statistics							
990					Minimum of Logged Data	1.609			Mean of logged Data			1.667
991					Maximum of Logged Data	2.303			SD of logged Data			0.2
992												

	A	B	C	D	E	F	G	H	I	J	K	L
993					Assuming Lognormal Distribution							
994					95% H-UCL	6.04				90% Chebyshev (MVUE) UCL		6.334
995				95% Chebyshev (MVUE) UCL		6.759				97.5% Chebyshev (MVUE) UCL		7.35
996				99% Chebyshev (MVUE) UCL		8.509						
997												
998					Nonparametric Distribution Free UCL Statistics							
999					Data do not follow a Discernible Distribution (0.05)							
1000												
1001					Nonparametric Distribution Free UCLs							
1002					95% CLT UCL	6.102				95% Jackknife UCL		N/A
1003				95% Standard Bootstrap UCL		N/A				95% Bootstrap-t UCL		N/A
1004				95% Hall's Bootstrap UCL		N/A				95% Percentile Bootstrap UCL		N/A
1005				95% BCA Bootstrap UCL		N/A						
1006				90% Chebyshev(Mean, Sd) UCL		6.667				95% Chebyshev(Mean, Sd) UCL		7.233
1007				97.5% Chebyshev(Mean, Sd) UCL		8.019				99% Chebyshev(Mean, Sd) UCL		9.562
1008												
1009					Suggested UCL to Use							
1010					95% Student's-t UCL	6.165				or 95% Modified-t UCL		6.234
1011												
1012	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
1013	These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)											
1014	and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.											
1015	For additional insight the user may want to consult a statistician.											
1016												
1017												

	A	B	C	D	E	F	G	H	I	J	K	L
1018	Uranium											
1019												
1020						General Statistics						
1021					Total Number of Observations	12				Number of Distinct Observations		10
1022										Number of Missing Observations		0
1023					Minimum	9.11				Mean		45.89
1024					Maximum	112				Median		32.72
1025					SD	32.17				Std. Error of Mean		9.287
1026					Coefficient of Variation	0.701				Skewness		0.9
1027												
1028						Normal GOF Test						
1029					Shapiro Wilk Test Statistic	0.88				Shapiro Wilk GOF Test		
1030					5% Shapiro Wilk Critical Value	0.859				Data appear Normal at 5% Significance Level		
1031					Lilliefors Test Statistic	0.239				Lilliefors GOF Test		
1032					5% Lilliefors Critical Value	0.256				Data appear Normal at 5% Significance Level		
1033						Data appear Normal at 5% Significance Level						
1034												
1035						Assuming Normal Distribution						
1036					95% Normal UCL					95% UCLs (Adjusted for Skewness)		
1037					95% Student's-t UCL	62.57				95% Adjusted-CLT UCL (Chen-1995)		63.75
1038										95% Modified-t UCL (Johnson-1978)		62.97
1039												
1040						Gamma GOF Test						
1041					A-D Test Statistic	0.401				Anderson-Darling Gamma GOF Test		
1042					5% A-D Critical Value	0.741				Detected data appear Gamma Distributed at 5% Significance Level		
1043					K-S Test Statistic	0.179				Kolmogrov-Smirnoff Gamma GOF Test		
1044					5% K-S Critical Value	0.248				Detected data appear Gamma Distributed at 5% Significance Level		
1045						Detected data appear Gamma Distributed at 5% Significance Level						
1046												
1047						Gamma Statistics						
1048					k hat (MLE)	2.255				k star (bias corrected MLE)		1.747
1049					Theta hat (MLE)	20.35				Theta star (bias corrected MLE)		26.27
1050					nu hat (MLE)	54.12				nu star (bias corrected)		41.92
1051					MLE Mean (bias corrected)	45.89				MLE Sd (bias corrected)		34.72
1052										Approximate Chi Square Value (0.05)		28.08
1053					Adjusted Level of Significance	0.029				Adjusted Chi Square Value		26.36
1054												
1055						Assuming Gamma Distribution						
1056					95% Approximate Gamma UCL (use when n>=50))	68.52				95% Adjusted Gamma UCL (use when n<50)		72.98
1057												
1058						Lognormal GOF Test						
1059					Shapiro Wilk Test Statistic	0.951				Shapiro Wilk Lognormal GOF Test		
1060					5% Shapiro Wilk Critical Value	0.859				Data appear Lognormal at 5% Significance Level		
1061					Lilliefors Test Statistic	0.165				Lilliefors Lognormal GOF Test		
1062					5% Lilliefors Critical Value	0.256				Data appear Lognormal at 5% Significance Level		
1063						Data appear Lognormal at 5% Significance Level						
1064												
1065						Lognormal Statistics						
1066					Minimum of Logged Data	2.209				Mean of logged Data		3.588
1067					Maximum of Logged Data	4.718				SD of logged Data		0.743
1068												

	A	B	C	D	E	F	G	H	I	J	K	L
1069	**Assuming Lognormal Distribution**											
1070					95% H-UCL	83.09				90% Chebyshev (MVUE) UCL		77.59
1071				95% Chebyshev (MVUE) UCL		91.73				97.5% Chebyshev (MVUE) UCL		111.4
1072				99% Chebyshev (MVUE) UCL		149.9						
1073												
1074	**Nonparametric Distribution Free UCL Statistics**											
1075	**Data appear to follow a Discernible Distribution at 5% Significance Level**											
1076												
1077	**Nonparametric Distribution Free UCLs**											
1078					95% CLT UCL	61.17				95% Jackknife UCL		62.57
1079				95% Standard Bootstrap UCL		60.85				95% Bootstrap-t UCL		67.2
1080				95% Hall's Bootstrap UCL		61.94				95% Percentile Bootstrap UCL		60.9
1081				95% BCA Bootstrap UCL		63.02						
1082				90% Chebyshev(Mean, Sd) UCL		73.75				95% Chebyshev(Mean, Sd) UCL		86.37
1083				97.5% Chebyshev(Mean, Sd) UCL		103.9				99% Chebyshev(Mean, Sd) UCL		138.3
1084												
1085	**Suggested UCL to Use**											
1086				95% Student's-t UCL		62.57						
1087												
1088	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
1089	These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)											
1090	and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.											
1091	For additional insight the user may want to consult a statistician.											
1092												
1093												

	A	B	C	D	E	F	G	H	I	J	K	L
1094	Uranium-234											
1095												
1096						General Statistics						
1097					Total Number of Observations	12				Number of Distinct Observations		3
1098										Number of Missing Observations		0
1099					Minimum	0.86				Mean		4.8
1100					Maximum	8.74				Median		4.8
1101					SD	1.68				Std. Error of Mean		0.485
1102					Coefficient of Variation	0.35				Skewness		4.250E-15
1103												
1104						Normal GOF Test						
1105					Shapiro Wilk Test Statistic	0.6				Shapiro Wilk GOF Test		
1106					5% Shapiro Wilk Critical Value	0.859				Data Not Normal at 5% Significance Level		
1107					Lilliefors Test Statistic	0.417				Lilliefors GOF Test		
1108					5% Lilliefors Critical Value	0.256				Data Not Normal at 5% Significance Level		
1109						Data Not Normal at 5% Significance Level						
1110												
1111						Assuming Normal Distribution						
1112					95% Normal UCL					95% UCLs (Adjusted for Skewness)		
1113					95% Student's-t UCL	5.671				95% Adjusted-CLT UCL (Chen-1995)		5.598
1114										95% Modified-t UCL (Johnson-1978)		5.671
1115												
1116						Gamma GOF Test						
1117					A-D Test Statistic	2.89				Anderson-Darling Gamma GOF Test		
1118					5% A-D Critical Value	0.732				Data Not Gamma Distributed at 5% Significance Level		
1119					K-S Test Statistic	0.473				Kolmogrov-Smirnoff Gamma GOF Test		
1120					5% K-S Critical Value	0.246				Data Not Gamma Distributed at 5% Significance Level		
1121						Data Not Gamma Distributed at 5% Significance Level						
1122												
1123						Gamma Statistics						
1124					k hat (MLE)	5.518				k star (bias corrected MLE)		4.194
1125					Theta hat (MLE)	0.87				Theta star (bias corrected MLE)		1.145
1126					nu hat (MLE)	132.4				nu star (bias corrected)		100.7
1127					MLE Mean (bias corrected)	4.8				MLE Sd (bias corrected)		2.344
1128										Approximate Chi Square Value (0.05)		78.51
1129					Adjusted Level of Significance	0.029				Adjusted Chi Square Value		75.53
1130												
1131						Assuming Gamma Distribution						
1132					95% Approximate Gamma UCL (use when n>=50))	6.154				95% Adjusted Gamma UCL (use when n<50)		6.397
1133												
1134						Lognormal GOF Test						
1135					Shapiro Wilk Test Statistic	0.502				Shapiro Wilk Lognormal GOF Test		
1136					5% Shapiro Wilk Critical Value	0.859				Data Not Lognormal at 5% Significance Level		
1137					Lilliefors Test Statistic	0.485				Lilliefors Lognormal GOF Test		
1138					5% Lilliefors Critical Value	0.256				Data Not Lognormal at 5% Significance Level		
1139						Data Not Lognormal at 5% Significance Level						
1140												
1141						Lognormal Statistics						
1142					Minimum of Logged Data	-0.151				Mean of logged Data		1.475
1143					Maximum of Logged Data	2.168				SD of logged Data		0.54
1144												

	A	B	C	D	E	F	G	H	I	J	K	L
1145					Assuming Lognormal Distribution							
1146					95% H-UCL	7.23				90% Chebyshev (MVUE) UCL		7.39
1147				95% Chebyshev (MVUE) UCL		8.477				97.5% Chebyshev (MVUE) UCL		9.985
1148				99% Chebyshev (MVUE) UCL		12.95						
1149												
1150					Nonparametric Distribution Free UCL Statistics							
1151					Data do not follow a Discernible Distribution (0.05)							
1152												
1153					Nonparametric Distribution Free UCLs							
1154					95% CLT UCL	5.598				95% Jackknife UCL		5.671
1155				95% Standard Bootstrap UCL		N/A				95% Bootstrap-t UCL		N/A
1156				95% Hall's Bootstrap UCL		N/A				95% Percentile Bootstrap UCL		N/A
1157				95% BCA Bootstrap UCL		N/A						
1158				90% Chebyshev(Mean, Sd) UCL		6.255				95% Chebyshev(Mean, Sd) UCL		6.914
1159				97.5% Chebyshev(Mean, Sd) UCL		7.829				99% Chebyshev(Mean, Sd) UCL		9.625
1160												
1161					Suggested UCL to Use							
1162				95% Chebyshev (Mean, Sd) UCL		6.914						
1163												
1164	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
1165	These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)											
1166	and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.											
1167	For additional insight the user may want to consult a statistician.											
1168												
1169												

	A	B	C	D	E	F	G	H	I	J	K	L
1170	Uranium-235											
1171												
1172						General Statistics						
1173					Total Number of Observations	12				Number of Distinct Observations		3
1174										Number of Missing Observations		0
1175					Minimum	0.045				Mean		0.308
1176					Maximum	0.57				Median		0.308
1177					SD	0.112				Std. Error of Mean		0.0323
1178					Coefficient of Variation	0.364				Skewness		-2.70E-15
1179												
1180						Normal GOF Test						
1181					Shapiro Wilk Test Statistic	0.6				Shapiro Wilk GOF Test		
1182					5% Shapiro Wilk Critical Value	0.859				Data Not Normal at 5% Significance Level		
1183					Lilliefors Test Statistic	0.417				Lilliefors GOF Test		
1184					5% Lilliefors Critical Value	0.256				Data Not Normal at 5% Significance Level		
1185						Data Not Normal at 5% Significance Level						
1186												
1187						Assuming Normal Distribution						
1188					95% Normal UCL					95% UCLs (Adjusted for Skewness)		
1189					95% Student's-t UCL	0.366				95% Adjusted-CLT UCL (Chen-1995)		0.361
1190										95% Modified-t UCL (Johnson-1978)		0.366
1191												
1192						Gamma GOF Test						
1193					A-D Test Statistic	2.919				Anderson-Darling Gamma GOF Test		
1194					5% A-D Critical Value	0.733				Data Not Gamma Distributed at 5% Significance Level		
1195					K-S Test Statistic	0.478				Kolmogrov-Smirnoff Gamma GOF Test		
1196					5% K-S Critical Value	0.246				Data Not Gamma Distributed at 5% Significance Level		
1197						Data Not Gamma Distributed at 5% Significance Level						
1198												
1199						Gamma Statistics						
1200					k hat (MLE)	4.759				k star (bias corrected MLE)		3.625
1201					Theta hat (MLE)	0.0646				Theta star (bias corrected MLE)		0.0848
1202					nu hat (MLE)	114.2				nu star (bias corrected)		87
1203					MLE Mean (bias corrected)	0.308				MLE Sd (bias corrected)		0.162
1204										Approximate Chi Square Value (0.05)		66.5
1205					Adjusted Level of Significance	0.029				Adjusted Chi Square Value		63.77
1206												
1207						Assuming Gamma Distribution						
1208					95% Approximate Gamma UCL (use when n>=50))	0.402				95% Adjusted Gamma UCL (use when n<50)		0.42
1209												
1210						Lognormal GOF Test						
1211					Shapiro Wilk Test Statistic	0.491				Shapiro Wilk Lognormal GOF Test		
1212					5% Shapiro Wilk Critical Value	0.859				Data Not Lognormal at 5% Significance Level		
1213					Lilliefors Test Statistic	0.489				Lilliefors Lognormal GOF Test		
1214					5% Lilliefors Critical Value	0.256				Data Not Lognormal at 5% Significance Level		
1215						Data Not Lognormal at 5% Significance Level						
1216												
1217						Lognormal Statistics						
1218					Minimum of Logged Data	-3.101				Mean of logged Data		-1.288
1219					Maximum of Logged Data	-0.562				SD of logged Data		0.598
1220												

	A	B	C	D	E	F	G	H	I	J	K	L
1221	**Assuming Lognormal Distribution**											
1222					95% H-UCL	0.496				90% Chebyshev (MVUE) UCL		0.498
1223					95% Chebyshev (MVUE) UCL	0.576				97.5% Chebyshev (MVUE) UCL		0.685
1224					99% Chebyshev (MVUE) UCL	0.899						
1225												
1226	**Nonparametric Distribution Free UCL Statistics**											
1227	**Data do not follow a Discernible Distribution (0.05)**											
1228												
1229	**Nonparametric Distribution Free UCLs**											
1230					95% CLT UCL	0.361				95% Jackknife UCL		0.366
1231					95% Standard Bootstrap UCL	N/A				95% Bootstrap-t UCL		N/A
1232					95% Hall's Bootstrap UCL	N/A				95% Percentile Bootstrap UCL		N/A
1233					95% BCA Bootstrap UCL	N/A						
1234					90% Chebyshev(Mean, Sd) UCL	0.404				95% Chebyshev(Mean, Sd) UCL		0.448
1235					97.5% Chebyshev(Mean, Sd) UCL	0.509				99% Chebyshev(Mean, Sd) UCL		0.629
1236												
1237	**Suggested UCL to Use**											
1238					95% Chebyshev (Mean, Sd) UCL	0.448						
1239												
1240	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
1241	These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)											
1242	and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.											
1243	For additional insight the user may want to consult a statistician.											
1244												
1245	**Note: For highly negatively-skewed data, confidence limits (e.g., Chen, Johnson, Lognormal, and Gamma) may not be**											
1246	**reliable. Chen's and Johnson's methods provide adjustments for positvely skewed data sets.**											
1247												
1248												

	A	B	C	D	E	F	G	H	I	J	K	L
1249	Uranium-238											
1250												
1251						General Statistics						
1252					Total Number of Observations	12				Number of Distinct Observations		3
1253										Number of Missing Observations		0
1254					Minimum	0.95				Mean		8.175
1255					Maximum	15.4				Median		8.175
1256					SD	3.081				Std. Error of Mean		0.889
1257					Coefficient of Variation	0.377				Skewness		1.485E-15
1258												
1259						Normal GOF Test						
1260					Shapiro Wilk Test Statistic	0.6				Shapiro Wilk GOF Test		
1261					5% Shapiro Wilk Critical Value	0.859				Data Not Normal at 5% Significance Level		
1262					Lilliefors Test Statistic	0.417				Lilliefors GOF Test		
1263					5% Lilliefors Critical Value	0.256				Data Not Normal at 5% Significance Level		
1264						Data Not Normal at 5% Significance Level						
1265												
1266						Assuming Normal Distribution						
1267					95% Normal UCL					95% UCLs (Adjusted for Skewness)		
1268					95% Student's-t UCL	9.772				95% Adjusted-CLT UCL (Chen-1995)		9.638
1269										95% Modified-t UCL (Johnson-1978)		9.772
1270												
1271						Gamma GOF Test						
1272					A-D Test Statistic	2.953				Anderson-Darling Gamma GOF Test		
1273					5% A-D Critical Value	0.735				Data Not Gamma Distributed at 5% Significance Level		
1274					K-S Test Statistic	0.482				Kolmogrov-Smirnoff Gamma GOF Test		
1275					5% K-S Critical Value	0.246				Data Not Gamma Distributed at 5% Significance Level		
1276						Data Not Gamma Distributed at 5% Significance Level						
1277												
1278						Gamma Statistics						
1279					k hat (MLE)	4.109				k star (bias corrected MLE)		3.137
1280					Theta hat (MLE)	1.99				Theta star (bias corrected MLE)		2.606
1281					nu hat (MLE)	98.62				nu star (bias corrected)		75.3
1282					MLE Mean (bias corrected)	8.175				MLE Sd (bias corrected)		4.615
1283										Approximate Chi Square Value (0.05)		56.31
1284					Adjusted Level of Significance	0.029				Adjusted Chi Square Value		53.81
1285												
1286						Assuming Gamma Distribution						
1287					95% Approximate Gamma UCL (use when n>=50))	10.93				95% Adjusted Gamma UCL (use when n<50)		11.44
1288												
1289						Lognormal GOF Test						
1290					Shapiro Wilk Test Statistic	0.48				Shapiro Wilk Lognormal GOF Test		
1291					5% Shapiro Wilk Critical Value	0.859				Data Not Lognormal at 5% Significance Level		
1292					Lilliefors Test Statistic	0.492				Lilliefors Lognormal GOF Test		
1293					5% Lilliefors Critical Value	0.256				Data Not Lognormal at 5% Significance Level		
1294						Data Not Lognormal at 5% Significance Level						
1295												
1296						Lognormal Statistics						
1297					Minimum of Logged Data	-0.0513				Mean of logged Data		1.974
1298					Maximum of Logged Data	2.734				SD of logged Data		0.663
1299												

	A	B	C	D	E	F	G	H	I	J	K	L
1300	Assuming Lognormal Distribution											
1301					95% H-UCL	14.39				90% Chebyshev (MVUE) UCL		14.03
1302				95% Chebyshev (MVUE) UCL		16.4				97.5% Chebyshev (MVUE) UCL		19.7
1303				99% Chebyshev (MVUE) UCL		26.17						
1304												
1305	Nonparametric Distribution Free UCL Statistics											
1306	Data do not follow a Discernible Distribution (0.05)											
1307												
1308	Nonparametric Distribution Free UCLs											
1309					95% CLT UCL	9.638				95% Jackknife UCL		9.772
1310				95% Standard Bootstrap UCL		N/A				95% Bootstrap-t UCL		N/A
1311				95% Hall's Bootstrap UCL		N/A				95% Percentile Bootstrap UCL		N/A
1312				95% BCA Bootstrap UCL		N/A						
1313				90% Chebyshev(Mean, Sd) UCL		10.84				95% Chebyshev(Mean, Sd) UCL		12.05
1314				97.5% Chebyshev(Mean, Sd) UCL		13.73				99% Chebyshev(Mean, Sd) UCL		17.02
1315												
1316	Suggested UCL to Use											
1317				95% Chebyshev (Mean, Sd) UCL		12.05						
1318												
1319	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
1320	These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)											
1321	and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.											
1322	For additional insight the user may want to consult a statistician.											
1323												