	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			3/1/2015 12:45:57 PM								
5	From File			EPC_015SubEU4.xls								
6	Full Precision			OFF								
7	Confidence Coefficient			95%								
8	Number of Bootstrap Operations			2000								
9												
10												
11	Antimony											
12												
13	General Statistics											
14	Total Number of Observations					15	Number of Distinct Observations					14
15							Number of Missing Observations					0
16	Minimum					0.8	Mean					75.81
17	Maximum					120.4	Median					85.6
18	SD					37.74	Std. Error of Mean					9.744
19	Coefficient of Variation					0.498	Skewness					-0.903
20												
21	Normal GOF Test											
22	Shapiro Wilk Test Statistic					0.89	Shapiro Wilk GOF Test					
23	5% Shapiro Wilk Critical Value					0.881	Data appear Normal at 5% Significance Level					
24	Lilliefors Test Statistic					0.233	Lilliefors GOF Test					
25	5% Lilliefors Critical Value					0.229	Data Not Normal at 5% Significance Level					
26	Data appear Approximate 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					92.97	95% Adjusted-CLT UCL (Chen-1995)					89.41
31							95% Modified-t UCL (Johnson-1978)					92.59
32												
33	Gamma GOF Test											
34	A-D Test Statistic					1.785	Anderson-Darling Gamma GOF Test					
35	5% A-D Critical Value					0.755	Data Not Gamma Distributed at 5% Significance Level					
36	K-S Test Statistic					0.344	Kolmogrov-Smirnoff Gamma GOF Test					
37	5% K-S Critical Value					0.226	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)					1.433	k star (bias corrected MLE)					1.191
42	Theta hat (MLE)					52.9	Theta star (bias corrected MLE)					63.66
43	nu hat (MLE)					42.99	nu star (bias corrected)					35.73
44	MLE Mean (bias corrected)					75.81	MLE Sd (bias corrected)					69.47
45							Approximate Chi Square Value (0.05)					23.05
46	Adjusted Level of Significance					0.0324	Adjusted Chi Square Value					21.8
47												
48	Assuming Gamma Distribution											
49	95% Approximate Gamma UCL (use when n>=50))					117.5	95% Adjusted Gamma UCL (use when n<50)					124.2
50												
51	Lognormal GOF Test											
52	Shapiro Wilk Test Statistic					0.627	Shapiro Wilk Lognormal GOF Test					

	A	B	C	D	E	F	G	H	I	J	K	L
53				5% Shapiro Wilk Critical Value		0.881	Data Not Lognormal at 5% Significance Level					
54				Lilliefors Test Statistic		0.346	**Lilliefors Lognormal GOF Test**					
55				5% Lilliefors Critical Value		0.229	Data Not Lognormal at 5% Significance Level					
56	**Data Not Lognormal at 5% Significance Level**											
57												
58	**Lognormal Statistics**											
59				Minimum of Logged Data		-0.223	Mean of logged Data					3.94
60				Maximum of Logged Data		4.791	SD of logged Data					1.352
61												
62	**Assuming Lognormal Distribution**											
63				95% H-UCL		429.2	90% Chebyshev (MVUE) UCL					253.1
64				95% Chebyshev (MVUE) UCL		315.2	97.5% Chebyshev (MVUE) UCL					401.5
65				99% Chebyshev (MVUE) UCL		570.9						
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		91.83	95% Jackknife UCL					92.97
72				95% Standard Bootstrap UCL		91.6	95% Bootstrap-t UCL					90.83
73				95% Hall's Bootstrap UCL		89.74	95% Percentile Bootstrap UCL					90.93
74				95% BCA Bootstrap UCL		89.46						
75				90% Chebyshev(Mean, Sd) UCL		105	95% Chebyshev(Mean, Sd) UCL					118.3
76				97.5% Chebyshev(Mean, Sd) UCL		136.7	99% Chebyshev(Mean, Sd) UCL					172.8
77												
78	**Suggested UCL to Use**											
79				95% Student's-t UCL		92.97						
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												
90	**Arsenic**											
91												
92	**General Statistics**											
93				Total Number of Observations		15	Number of Distinct Observations					13
94							Number of Missing Observations					0
95				Minimum		6	Mean					22.86
96				Maximum		51.31	Median					15.33
97				SD		15.95	Std. Error of Mean					4.119
98				Coefficient of Variation		0.698	Skewness					0.712
99												
100	**Normal GOF Test**											
101				Shapiro Wilk Test Statistic		0.853	**Shapiro Wilk GOF Test**					
102				5% Shapiro Wilk Critical Value		0.881	Data Not Normal at 5% Significance Level					
103				Lilliefors Test Statistic		0.238	**Lilliefors GOF Test**					
104				5% Lilliefors Critical Value		0.229	Data Not Normal at 5% Significance Level					

	A	B	C	D	E	F	G	H	I	J	K	L
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	30.12			95% Adjusted-CLT UCL (Chen-1995)			30.45
110									95% Modified-t UCL (Johnson-1978)			30.25
111												
112	**Gamma GOF Test**											
113					A-D Test Statistic	0.714	**Anderson-Darling Gamma GOF Test**					
114					5% A-D Critical Value	0.746	Detected data appear Gamma Distributed at 5% Significance Level					
115					K-S Test Statistic	0.238	**Kolmogrov-Smirnoff Gamma GOF Test**					
116					5% K-S Critical Value	0.224	Data Not Gamma Distributed at 5% Significance Level					
117	**Detected data follow Appr. Gamma Distribution at 5% Significance Level**											
118												
119	**Gamma Statistics**											
120					k hat (MLE)	2.25			k star (bias corrected MLE)			1.844
121					Theta hat (MLE)	10.16			Theta star (bias corrected MLE)			12.4
122					nu hat (MLE)	67.49			nu star (bias corrected)			55.32
123					MLE Mean (bias corrected)	22.86			MLE Sd (bias corrected)			16.84
124									Approximate Chi Square Value (0.05)			39.23
125					Adjusted Level of Significance	0.0324			Adjusted Chi Square Value			37.56
126												
127	**Assuming Gamma Distribution**											
128				95% Approximate Gamma UCL (use when n>=50)		32.24			95% Adjusted Gamma UCL (use when n<50)			33.67
129												
130	**Lognormal GOF Test**											
131					Shapiro Wilk Test Statistic	0.909	**Shapiro Wilk Lognormal GOF Test**					
132					5% Shapiro Wilk Critical Value	0.881	Data appear Lognormal at 5% Significance Level					
133					Lilliefors Test Statistic	0.219	**Lilliefors Lognormal GOF Test**					
134					5% Lilliefors Critical Value	0.229	Data appear Lognormal at 5% Significance Level					
135	**Data appear Lognormal at 5% Significance Level**											
136												
137	**Lognormal Statistics**											
138					Minimum of Logged Data	1.792			Mean of logged Data			2.891
139					Maximum of Logged Data	3.938			SD of logged Data			0.723
140												
141	**Assuming Lognormal Distribution**											
142					95% H-UCL	36.75			90% Chebyshev (MVUE) UCL			36.47
143					95% Chebyshev (MVUE) UCL	42.62			97.5% Chebyshev (MVUE) UCL			51.14
144					99% Chebyshev (MVUE) UCL	67.89						
145												
146	**Nonparametric Distribution Free UCL Statistics**											
147	**Data appear to follow a Discernible Distribution at 5% Significance Level**											
148												
149	**Nonparametric Distribution Free UCLs**											
150					95% CLT UCL	29.64			95% Jackknife UCL			30.12
151					95% Standard Bootstrap UCL	29.34			95% Bootstrap-t UCL			31.4
152					95% Hall's Bootstrap UCL	29.22			95% Percentile Bootstrap UCL			29.68
153					95% BCA Bootstrap UCL	30.05						
154					90% Chebyshev(Mean, Sd) UCL	35.22			95% Chebyshev(Mean, Sd) UCL			40.82
155					97.5% Chebyshev(Mean, Sd) UCL	48.59			99% Chebyshev(Mean, Sd) UCL			63.85
156												

	A	B	C	D	E	F	G	H	I	J	K	L
157						Suggested UCL to Use						
158					95% Adjusted Gamma UCL	33.67						
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												
166	Cadmium											
167												
168						General Statistics						
169					Total Number of Observations	15			Number of Distinct Observations			11
170									Number of Missing Observations			0
171					Minimum	0.42			Mean			10.06
172					Maximum	24.15			Median			12
173					SD	7.446			Std. Error of Mean			1.923
174					Coefficient of Variation	0.74			Skewness			0.159
175												
176						Normal GOF Test						
177					Shapiro Wilk Test Statistic	0.907			Shapiro Wilk GOF Test			
178					5% Shapiro Wilk Critical Value	0.881			Data appear Normal at 5% Significance Level			
179					Lilliefors Test Statistic	0.206			Lilliefors GOF Test			
180					5% Lilliefors Critical Value	0.229			Data appear Normal at 5% Significance Level			
181						Data appear 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)			13.3
186									95% Modified-t UCL (Johnson-1978)			13.46
187												
188						Gamma GOF Test						
189					A-D Test Statistic	1.135			Anderson-Darling Gamma GOF Test			
190					5% A-D Critical Value	0.761			Data Not Gamma Distributed at 5% Significance Level			
191					K-S Test Statistic	0.292			Kolmogrov-Smirnoff Gamma GOF Test			
192					5% K-S Critical Value	0.227			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)	1.109			k star (bias corrected MLE)			0.932
197					Theta hat (MLE)	9.069			Theta star (bias corrected MLE)			10.8
198					nu hat (MLE)	33.27			nu star (bias corrected)			27.95
199					MLE Mean (bias corrected)	10.06			MLE Sd (bias corrected)			10.42
200									Approximate Chi Square Value (0.05)			16.89
201					Adjusted Level of Significance	0.0324			Adjusted Chi Square Value			15.83
202												
203						Assuming Gamma Distribution						
204					95% Approximate Gamma UCL (use when n>=50))	16.64			95% Adjusted Gamma UCL (use when n<50)			17.75
205												
206						Lognormal GOF Test						
207					Shapiro Wilk Test Statistic	0.82			Shapiro Wilk Lognormal GOF Test			
208					5% Shapiro Wilk Critical Value	0.881			Data Not Lognormal at 5% Significance Level			

	A	B	C	D	E	F	G	H	I	J	K	L
209					Lilliefors Test Statistic	0.323	**Lilliefors Lognormal GOF Test**					
210					5% Lilliefors Critical Value	0.229	Data Not Lognormal at 5% Significance Level					
211	**Data Not Lognormal at 5% Significance Level**											
212												
213	**Lognormal Statistics**											
214					Minimum of Logged Data	-0.868				Mean of logged Data		1.794
215					Maximum of Logged Data	3.184				SD of logged Data		1.282
216												
217	**Assuming Lognormal Distribution**											
218					95% H-UCL	41.25				90% Chebyshev (MVUE) UCL		26.52
219					95% Chebyshev (MVUE) UCL	32.86				97.5% Chebyshev (MVUE) UCL		41.66
220					99% Chebyshev (MVUE) UCL	58.94						
221												
222	**Nonparametric Distribution Free UCL Statistics**											
223	**Data appear to follow a Discernible Distribution at 5% Significance Level**											
224												
225	**Nonparametric Distribution Free UCLs**											
226					95% CLT UCL	13.22				95% Jackknife UCL		13.44
227					95% Standard Bootstrap UCL	13.12				95% Bootstrap-t UCL		13.6
228					95% Hall's Bootstrap UCL	13.3				95% Percentile Bootstrap UCL		12.98
229					95% BCA Bootstrap UCL	13.07						
230					90% Chebyshev(Mean, Sd) UCL	15.82				95% Chebyshev(Mean, Sd) UCL		18.44
231					97.5% Chebyshev(Mean, Sd) UCL	22.06				99% Chebyshev(Mean, Sd) UCL		29.19
232												
233	**Suggested UCL to Use**											
234					95% Student's-t UCL	13.44						
235												
236	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
237	These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)											
238	and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.											
239	For additional insight the user may want to consult a statistician.											
240												
241												
242	**Chromium**											
243												
244	**General Statistics**											
245					Total Number of Observations	15				Number of Distinct Observations		14
246										Number of Missing Observations		0
247					Minimum	12				Mean		66.89
248					Maximum	150.7				Median		61.63
249					SD	41				Std. Error of Mean		10.59
250					Coefficient of Variation	0.613				Skewness		0.612
251												
252	**Normal GOF Test**											
253					Shapiro Wilk Test Statistic	0.949	**Shapiro Wilk GOF Test**					
254					5% Shapiro Wilk Critical Value	0.881	Data appear Normal at 5% Significance Level					
255					Lilliefors Test Statistic	0.0958	**Lilliefors GOF Test**					
256					5% Lilliefors Critical Value	0.229	Data appear Normal at 5% Significance Level					
257	**Data appear Normal at 5% Significance Level**											
258												
259	**Assuming Normal Distribution**											
260	**95% Normal UCL**						**95% UCLs (Adjusted for Skewness)**					

	A	B	C	D	E	F	G	H	I	J	K	L
261					95% Student's-t UCL	85.54				95% Adjusted-CLT UCL (Chen-1995)		86.09
262										95% Modified-t UCL (Johnson-1978)		85.81
263												
264						**Gamma GOF Test**						
265					A-D Test Statistic	0.274			**Anderson-Darling Gamma GOF Test**			
266					5% A-D Critical Value	0.746			Detected data appear Gamma Distributed at 5% Significance Level			
267					K-S Test Statistic	0.11			**Kolmogrov-Smirnoff Gamma GOF Test**			
268					5% K-S Critical Value	0.224			Detected data appear Gamma Distributed at 5% Significance Level			
269						**Detected data appear Gamma Distributed at 5% Significance Level**						
270												
271						**Gamma Statistics**						
272					k hat (MLE)	2.342				k star (bias corrected MLE)		1.918
273					Theta hat (MLE)	28.56				Theta star (bias corrected MLE)		34.87
274					nu hat (MLE)	70.27				nu star (bias corrected)		57.55
275					MLE Mean (bias corrected)	66.89				MLE Sd (bias corrected)		48.29
276										Approximate Chi Square Value (0.05)		41.11
277					Adjusted Level of Significance	0.0324				Adjusted Chi Square Value		39.4
278												
279						**Assuming Gamma Distribution**						
280					95% Approximate Gamma UCL (use when n>=50))	93.64				95% Adjusted Gamma UCL (use when n<50)		97.69
281												
282						**Lognormal GOF Test**						
283					Shapiro Wilk Test Statistic	0.912			**Shapiro Wilk Lognormal GOF Test**			
284					5% Shapiro Wilk Critical Value	0.881			Data appear Lognormal at 5% Significance Level			
285					Lilliefors Test Statistic	0.159			**Lilliefors Lognormal GOF Test**			
286					5% Lilliefors Critical Value	0.229			Data appear Lognormal at 5% Significance Level			
287						**Data appear Lognormal at 5% Significance Level**						
288												
289						**Lognormal Statistics**						
290					Minimum of Logged Data	2.485				Mean of logged Data		3.975
291					Maximum of Logged Data	5.015				SD of logged Data		0.775
292												
293						**Assuming Lognormal Distribution**						
294					95% H-UCL	118.3				90% Chebyshev (MVUE) UCL		114.9
295					95% Chebyshev (MVUE) UCL	135.2				97.5% Chebyshev (MVUE) UCL		163.3
296					99% Chebyshev (MVUE) UCL	218.6						
297												
298						**Nonparametric Distribution Free UCL Statistics**						
299						**Data appear to follow a Discernible Distribution at 5% Significance Level**						
300												
301						**Nonparametric Distribution Free UCLs**						
302					95% CLT UCL	84.3				95% Jackknife UCL		85.54
303					95% Standard Bootstrap UCL	83.61				95% Bootstrap-t UCL		89.58
304					95% Hall's Bootstrap UCL	90.49				95% Percentile Bootstrap UCL		83.6
305					95% BCA Bootstrap UCL	86.22						
306					90% Chebyshev(Mean, Sd) UCL	98.65				95% Chebyshev(Mean, Sd) UCL		113
307					97.5% Chebyshev(Mean, Sd) UCL	133				99% Chebyshev(Mean, Sd) UCL		172.2
308												
309						**Suggested UCL to Use**						
310					95% Student's-t UCL	85.54						
311												
312	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
313	These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)											
314	and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.											
315	For additional insight the user may want to consult a statistician.											
316												
317												
318	**Copper**											
319												
320	**General Statistics**											
321					Total Number of Observations	15			Number of Distinct Observations		15	
322									Number of Missing Observations		0	
323					Minimum	38			Mean		432.4	
324					Maximum	1274			Median		372.9	
325					SD	367.7			Std. Error of Mean		94.95	
326					Coefficient of Variation	0.85			Skewness		1.273	
327												
328	**Normal GOF Test**											
329					Shapiro Wilk Test Statistic	0.866			**Shapiro Wilk GOF Test**			
330					5% Shapiro Wilk Critical Value	0.881			Data Not Normal at 5% Significance Level			
331					Lilliefors Test Statistic	0.166			**Lilliefors GOF Test**			
332					5% Lilliefors Critical Value	0.229			Data appear Normal at 5% Significance Level			
333	**Data appear Approximate Normal at 5% Significance Level**											
334												
335	**Assuming Normal Distribution**											
336				**95% Normal UCL**					**95% UCLs (Adjusted for Skewness)**			
337					95% Student's-t UCL	599.6			95% Adjusted-CLT UCL (Chen-1995)		621.9	
338									95% Modified-t UCL (Johnson-1978)		604.8	
339												
340	**Gamma GOF Test**											
341					A-D Test Statistic	0.185			**Anderson-Darling Gamma GOF Test**			
342					5% A-D Critical Value	0.756			Detected data appear Gamma Distributed at 5% Significance Level			
343					K-S Test Statistic	0.0991			**Kolmogrov-Smirnoff Gamma GOF Test**			
344					5% K-S Critical Value	0.226			Detected data appear Gamma Distributed at 5% Significance Level			
345	**Detected data appear Gamma Distributed at 5% Significance Level**											
346												
347	**Gamma Statistics**											
348					k hat (MLE)	1.407			k star (bias corrected MLE)		1.17	
349					Theta hat (MLE)	307.3			Theta star (bias corrected MLE)		369.5	
350					nu hat (MLE)	42.21			nu star (bias corrected)		35.1	
351					MLE Mean (bias corrected)	432.4			MLE Sd (bias corrected)		399.7	
352									Approximate Chi Square Value (0.05)		22.55	
353					Adjusted Level of Significance	0.0324			Adjusted Chi Square Value		21.31	
354												
355	**Assuming Gamma Distribution**											
356					95% Approximate Gamma UCL (use when n>=50))	673.1			95% Adjusted Gamma UCL (use when n<50)		712.1	
357												
358	**Lognormal GOF Test**											
359					Shapiro Wilk Test Statistic	0.948			**Shapiro Wilk Lognormal GOF Test**			
360					5% Shapiro Wilk Critical Value	0.881			Data appear Lognormal at 5% Significance Level			
361					Lilliefors Test Statistic	0.14			**Lilliefors Lognormal GOF Test**			
362					5% Lilliefors Critical Value	0.229			Data appear Lognormal at 5% Significance Level			
363	**Data appear Lognormal at 5% Significance Level**											
364												

	A	B	C	D	E	F	G	H	I	J	K	L
365	**Lognormal Statistics**											
366					Minimum of Logged Data	3.638					Mean of logged Data	5.674
367					Maximum of Logged Data	7.15					SD of logged Data	1.019
368												
369	**Assuming Lognormal Distribution**											
370					95% H-UCL	1042					90% Chebyshev (MVUE) UCL	869.4
371					95% Chebyshev (MVUE) UCL	1052					97.5% Chebyshev (MVUE) UCL	1305
372					99% Chebyshev (MVUE) UCL	1803						
373												
374	**Nonparametric Distribution Free UCL Statistics**											
375	**Data appear to follow a Discernible Distribution at 5% Significance Level**											
376												
377	**Nonparametric Distribution Free UCLs**											
378					95% CLT UCL	588.6					95% Jackknife UCL	599.6
379					95% Standard Bootstrap UCL	582.8					95% Bootstrap-t UCL	672.1
380					95% Hall's Bootstrap UCL	760.8					95% Percentile Bootstrap UCL	589.8
381					95% BCA Bootstrap UCL	605.4						
382					90% Chebyshev(Mean, Sd) UCL	717.2					95% Chebyshev(Mean, Sd) UCL	846.2
383					97.5% Chebyshev(Mean, Sd) UCL	1025					99% Chebyshev(Mean, Sd) UCL	1377
384												
385	**Suggested UCL to Use**											
386					95% Student's-t UCL	599.6						
387												
388	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
389	These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)											
390	and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.											
391	For additional insight the user may want to consult a statistician.											
392												
393												
394	**Iron**											
395												
396	**General Statistics**											
397					Total Number of Observations	15					Number of Distinct Observations	15
398											Number of Missing Observations	0
399					Minimum	16098					Mean	53989
400					Maximum	142401					Median	41867
401					SD	34488					Std. Error of Mean	8905
402					Coefficient of Variation	0.639					Skewness	1.339
403												
404	**Normal GOF Test**											
405					Shapiro Wilk Test Statistic	0.88			**Shapiro Wilk GOF Test**			
406					5% Shapiro Wilk Critical Value	0.881			Data Not Normal at 5% Significance Level			
407					Lilliefors Test Statistic	0.171			**Lilliefors GOF Test**			
408					5% Lilliefors Critical Value	0.229			Data appear Normal at 5% Significance Level			
409	**Data appear Approximate Normal at 5% Significance Level**											
410												
411	**Assuming Normal Distribution**											
412	**95% Normal UCL**						**95% UCLs (Adjusted for Skewness)**					
413					95% Student's-t UCL	69673					95% Adjusted-CLT UCL (Chen-1995)	71925
414											95% Modified-t UCL (Johnson-1978)	70186
415												
416	**Gamma GOF Test**											

417					A-D Test Statistic	0.229	Anderson-Darling Gamma GOF Test					
418					5% A-D Critical Value	0.744	Detected data appear Gamma Distributed at 5% Significance Level					
419					K-S Test Statistic	0.123	Kolmogrov-Smirnoff Gamma GOF Test					
420					5% K-S Critical Value	0.223	Detected data appear Gamma Distributed at 5% Significance Level					
421	Detected data appear Gamma Distributed at 5% Significance Level											
422												
423	Gamma Statistics											
424					k hat (MLE)	3.016	k star (bias corrected MLE)					2.457
425					Theta hat (MLE)	17902	Theta star (bias corrected MLE)					21973
426					nu hat (MLE)	90.48	nu star (bias corrected)					73.71
427					MLE Mean (bias corrected)	53989	MLE Sd (bias corrected)					34442
428							Approximate Chi Square Value (0.05)					54.94
429					Adjusted Level of Significance	0.0324	Adjusted Chi Square Value					52.95
430												
431	Assuming Gamma Distribution											
432					95% Approximate Gamma UCL (use when n>=50))	72435	95% Adjusted Gamma UCL (use when n<50)					75161
433												
434	Lognormal GOF Test											
435					Shapiro Wilk Test Statistic	0.986	Shapiro Wilk Lognormal GOF Test					
436					5% Shapiro Wilk Critical Value	0.881	Data appear Lognormal at 5% Significance Level					
437					Lilliefors Test Statistic	0.0851	Lilliefors Lognormal GOF Test					
438					5% Lilliefors Critical Value	0.229	Data appear Lognormal at 5% Significance Level					
439	Data appear Lognormal at 5% Significance Level											
440												
441	Lognormal Statistics											
442					Minimum of Logged Data	9.686	Mean of logged Data					10.72
443					Maximum of Logged Data	11.87	SD of logged Data					0.61
444												
445	Assuming Lognormal Distribution											
446					95% H-UCL	78102	90% Chebyshev (MVUE) UCL					80376
447					95% Chebyshev (MVUE) UCL	92398	97.5% Chebyshev (MVUE) UCL					109084
448					99% Chebyshev (MVUE) UCL	141861						
449												
450	Nonparametric Distribution Free UCL Statistics											
451	Data appear to follow a Discernible Distribution at 5% Significance Level											
452												
453	Nonparametric Distribution Free UCLs											
454					95% CLT UCL	68636	95% Jackknife UCL					69673
455					95% Standard Bootstrap UCL	68216	95% Bootstrap-t UCL					76705
456					95% Hall's Bootstrap UCL	76421	95% Percentile Bootstrap UCL					68929
457					95% BCA Bootstrap UCL	71360						
458					90% Chebyshev(Mean, Sd) UCL	80704	95% Chebyshev(Mean, Sd) UCL					92804
459					97.5% Chebyshev(Mean, Sd) UCL	109600	99% Chebyshev(Mean, Sd) UCL					142591
460												
461	Suggested UCL to Use											
462					95% Student's-t UCL	69673						
463												
464	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
465	These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)											
466	and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.											
467	For additional insight the user may want to consult a statistician.											
468												

	A	B	C	D	E	F	G	H	I	J	K	L
469												
470	**Manganese**											
471												
472						**General Statistics**						
473					Total Number of Observations	15				Number of Distinct Observations		15
474										Number of Missing Observations		0
475					Minimum	151				Mean		981.3
476					Maximum	2488				Median		891.8
477					SD	672.4				Std. Error of Mean		173.6
478					Coefficient of Variation	0.685				Skewness		1.115
479												
480						**Normal GOF Test**						
481					Shapiro Wilk Test Statistic	0.892				**Shapiro Wilk GOF Test**		
482					5% Shapiro Wilk Critical Value	0.881				Data appear Normal at 5% Significance Level		
483					Lilliefors Test Statistic	0.176				**Lilliefors GOF Test**		
484					5% Lilliefors Critical Value	0.229				Data appear Normal at 5% Significance Level		
485						**Data appear Normal at 5% Significance Level**						
486												
487						**Assuming Normal Distribution**						
488					**95% Normal UCL**					**95% UCLs (Adjusted for Skewness)**		
489					95% Student's-t UCL	1287				95% Adjusted-CLT UCL (Chen-1995)		1320
490										95% Modified-t UCL (Johnson-1978)		1295
491												
492						**Gamma GOF Test**						
493					A-D Test Statistic	0.296				**Anderson-Darling Gamma GOF Test**		
494					5% A-D Critical Value	0.747				Detected data appear Gamma Distributed at 5% Significance Level		
495					K-S Test Statistic	0.119				**Kolmogrov-Smirnoff Gamma GOF Test**		
496					5% K-S Critical Value	0.224				Detected data appear Gamma Distributed at 5% Significance Level		
497						**Detected data appear Gamma Distributed at 5% Significance Level**						
498												
499						**Gamma Statistics**						
500					k hat (MLE)	2.125				k star (bias corrected MLE)		1.744
501					Theta hat (MLE)	461.8				Theta star (bias corrected MLE)		562.5
502					nu hat (MLE)	63.75				nu star (bias corrected)		52.33
503					MLE Mean (bias corrected)	981.3				MLE Sd (bias corrected)		743
504										Approximate Chi Square Value (0.05)		36.72
505					Adjusted Level of Significance	0.0324				Adjusted Chi Square Value		35.11
506												
507						**Assuming Gamma Distribution**						
508					95% Approximate Gamma UCL (use when n>=50))	1399				95% Adjusted Gamma UCL (use when n<50)		1463
509												
510						**Lognormal GOF Test**						
511					Shapiro Wilk Test Statistic	0.919				**Shapiro Wilk Lognormal GOF Test**		
512					5% Shapiro Wilk Critical Value	0.881				Data appear Lognormal at 5% Significance Level		
513					Lilliefors Test Statistic	0.166				**Lilliefors Lognormal GOF Test**		
514					5% Lilliefors Critical Value	0.229				Data appear Lognormal at 5% Significance Level		
515						**Data appear Lognormal at 5% Significance Level**						
516												
517						**Lognormal Statistics**						
518					Minimum of Logged Data	5.017				Mean of logged Data		6.635
519					Maximum of Logged Data	7.819				SD of logged Data		0.807
520												

	A	B	C	D	E	F	G	H	I	J	K	L
521	**Assuming Lognormal Distribution**											
522					95% H-UCL	1789				90% Chebyshev (MVUE) UCL		1711
523					95% Chebyshev (MVUE) UCL	2021				97.5% Chebyshev (MVUE) UCL		2451
524					99% Chebyshev (MVUE) UCL	3297						
525												
526	**Nonparametric Distribution Free UCL Statistics**											
527	**Data appear to follow a Discernible Distribution at 5% Significance Level**											
528												
529	**Nonparametric Distribution Free UCLs**											
530					95% CLT UCL	1267				95% Jackknife UCL		1287
531					95% Standard Bootstrap UCL	1263				95% Bootstrap-t UCL		1387
532					95% Hall's Bootstrap UCL	1520				95% Percentile Bootstrap UCL		1246
533					95% BCA Bootstrap UCL	1292						
534					90% Chebyshev(Mean, Sd) UCL	1502				95% Chebyshev(Mean, Sd) UCL		1738
535					97.5% Chebyshev(Mean, Sd) UCL	2065				99% Chebyshev(Mean, Sd) UCL		2709
536												
537	**Suggested UCL to Use**											
538					95% Student's-t UCL	1287						
539												
540	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
541	These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)											
542	and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.											
543	For additional insight the user may want to consult a statistician.											
544												
545												
546	**Mercury**											
547												
548	**General Statistics**											
549					Total Number of Observations	15				Number of Distinct Observations		7
550										Number of Missing Observations		0
551					Minimum	0.0262				Mean		14.03
552					Maximum	40				Median		10
553					SD	14.31				Std. Error of Mean		3.694
554					Coefficient of Variation	1.02				Skewness		1.184
555												
556	**Normal GOF Test**											
557					Shapiro Wilk Test Statistic	0.764				**Shapiro Wilk GOF Test**		
558					5% Shapiro Wilk Critical Value	0.881				Data Not Normal at 5% Significance Level		
559					Lilliefors Test Statistic	0.277				**Lilliefors GOF Test**		
560					5% Lilliefors Critical Value	0.229				Data Not Normal at 5% Significance Level		
561	**Data Not Normal at 5% Significance Level**											
562												
563	**Assuming Normal Distribution**											
564	**95% Normal UCL**						**95% UCLs (Adjusted for Skewness)**					
565					95% Student's-t UCL	20.53				95% Adjusted-CLT UCL (Chen-1995)		21.31
566										95% Modified-t UCL (Johnson-1978)		20.72
567												
568	**Gamma GOF Test**											
569					A-D Test Statistic	0.979				**Anderson-Darling Gamma GOF Test**		
570					5% A-D Critical Value	0.787				Data Not Gamma Distributed at 5% Significance Level		
571					K-S Test Statistic	0.315				**Kolmogrov-Smirnoff Gamma GOF Test**		
572					5% K-S Critical Value	0.233				Data Not Gamma Distributed at 5% Significance Level		

	A	B	C	D	E	F	G	H	I	J	K	L
573	Data Not Gamma Distributed at 5% Significance Level											
574												
575	Gamma Statistics											
576					k hat (MLE)	0.58				k star (bias corrected MLE)		0.509
577					Theta hat (MLE)	24.17				Theta star (bias corrected MLE)		27.57
578					nu hat (MLE)	17.41				nu star (bias corrected)		15.26
579					MLE Mean (bias corrected)	14.03				MLE Sd (bias corrected)		19.67
580										Approximate Chi Square Value (0.05)		7.442
581					Adjusted Level of Significance	0.0324				Adjusted Chi Square Value		6.779
582												
583	Assuming Gamma Distribution											
584				95% Approximate Gamma UCL (use when n>=50))		28.76				95% Adjusted Gamma UCL (use when n<50)		31.57
585												
586	Lognormal GOF Test											
587					Shapiro Wilk Test Statistic	0.793				Shapiro Wilk Lognormal GOF Test		
588					5% Shapiro Wilk Critical Value	0.881				Data Not Lognormal at 5% Significance Level		
589					Lilliefors Test Statistic	0.363				Lilliefors Lognormal GOF Test		
590					5% Lilliefors Critical Value	0.229				Data Not Lognormal at 5% Significance Level		
591	Data Not Lognormal at 5% Significance Level											
592												
593	Lognormal Statistics											
594					Minimum of Logged Data	-3.642				Mean of logged Data		1.571
595					Maximum of Logged Data	3.689				SD of logged Data		2.209
596												
597	Assuming Lognormal Distribution											
598					95% H-UCL	1040				90% Chebyshev (MVUE) UCL		108.1
599					95% Chebyshev (MVUE) UCL	140.5				97.5% Chebyshev (MVUE) UCL		185.5
600					99% Chebyshev (MVUE) UCL	273.8						
601												
602	Nonparametric Distribution Free UCL Statistics											
603	Data do not follow a Discernible Distribution (0.05)											
604												
605	Nonparametric Distribution Free UCLs											
606					95% CLT UCL	20.1				95% Jackknife UCL		20.53
607					95% Standard Bootstrap UCL	19.83				95% Bootstrap-t UCL		22.08
608					95% Hall's Bootstrap UCL	20.06				95% Percentile Bootstrap UCL		20.1
609					95% BCA Bootstrap UCL	21.16						
610					90% Chebyshev(Mean, Sd) UCL	25.11				95% Chebyshev(Mean, Sd) UCL		30.13
611					97.5% Chebyshev(Mean, Sd) UCL	37.09				99% Chebyshev(Mean, Sd) UCL		50.78
612												
613	Suggested UCL to Use											
614					99% Chebyshev (Mean, Sd) UCL	50.78						
615												
616	Recommended UCL exceeds the maximum observation											
617												
618	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
619	These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)											
620	and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.											
621	For additional insight the user may want to consult a statistician.											
622												
623												
624	Neptunium-237											

	A	B	C	D	E	F	G	H	I	J	K	L
625												
626						General Statistics						
627					Total Number of Observations	15				Number of Distinct Observations		8
628										Number of Missing Observations		0
629					Minimum	0.01				Mean		0.207
630					Maximum	0.8				Median		0.207
631					SD	0.201				Std. Error of Mean		0.0519
632					Coefficient of Variation	0.971				Skewness		2.003
633												
634						Normal GOF Test						
635					Shapiro Wilk Test Statistic	0.739				Shapiro Wilk GOF Test		
636					5% Shapiro Wilk Critical Value	0.881				Data Not Normal at 5% Significance Level		
637					Lilliefors Test Statistic	0.367				Lilliefors GOF Test		
638					5% Lilliefors Critical Value	0.229				Data Not Normal at 5% Significance Level		
639						Data Not Normal at 5% Significance Level						
640												
641						Assuming Normal Distribution						
642					95% Normal UCL					95% UCLs (Adjusted for Skewness)		
643					95% Student's-t UCL	0.299				95% Adjusted-CLT UCL (Chen-1995)		0.321
644										95% Modified-t UCL (Johnson-1978)		0.303
645												
646						Gamma GOF Test						
647					A-D Test Statistic	1.074				Anderson-Darling Gamma GOF Test		
648					5% A-D Critical Value	0.762				Data Not Gamma Distributed at 5% Significance Level		
649					K-S Test Statistic	0.296				Kolmogrov-Smirnoff Gamma GOF Test		
650					5% K-S Critical Value	0.228				Data Not Gamma Distributed at 5% Significance Level		
651						Data Not Gamma Distributed at 5% Significance Level						
652												
653						Gamma Statistics						
654					k hat (MLE)	1.042				k star (bias corrected MLE)		0.878
655					Theta hat (MLE)	0.199				Theta star (bias corrected MLE)		0.236
656					nu hat (MLE)	31.27				nu star (bias corrected)		26.35
657					MLE Mean (bias corrected)	0.207				MLE Sd (bias corrected)		0.221
658										Approximate Chi Square Value (0.05)		15.65
659					Adjusted Level of Significance	0.0324				Adjusted Chi Square Value		14.64
660												
661						Assuming Gamma Distribution						
662					95% Approximate Gamma UCL (use when n>=50))	0.349				95% Adjusted Gamma UCL (use when n<50)		0.373
663												
664						Lognormal GOF Test						
665					Shapiro Wilk Test Statistic	0.839				Shapiro Wilk Lognormal GOF Test		
666					5% Shapiro Wilk Critical Value	0.881				Data Not Lognormal at 5% Significance Level		
667					Lilliefors Test Statistic	0.333				Lilliefors Lognormal GOF Test		
668					5% Lilliefors Critical Value	0.229				Data Not Lognormal at 5% Significance Level		
669						Data Not Lognormal at 5% Significance Level						
670												
671						Lognormal Statistics						
672					Minimum of Logged Data	-4.605				Mean of logged Data		-2.126
673					Maximum of Logged Data	-0.223				SD of logged Data		1.285
674												
675						Assuming Lognormal Distribution						
676					95% H-UCL	0.824				90% Chebyshev (MVUE) UCL		0.529

677				95% Chebyshev (MVUE) UCL		0.655				97.5% Chebyshev (MVUE) UCL		0.83
678				99% Chebyshev (MVUE) UCL		1.175						
679												
680						Nonparametric Distribution Free UCL Statistics						
681						Data do not follow a Discernible Distribution (0.05)						
682												
683						Nonparametric Distribution Free UCLs						
684				95% CLT UCL		0.293				95% Jackknife UCL		0.299
685				95% Standard Bootstrap UCL		0.289				95% Bootstrap-t UCL		0.365
686				95% Hall's Bootstrap UCL		0.793				95% Percentile Bootstrap UCL		0.298
687				95% BCA Bootstrap UCL		0.324						
688				90% Chebyshev(Mean, Sd) UCL		0.363				95% Chebyshev(Mean, Sd) UCL		0.433
689				97.5% Chebyshev(Mean, Sd) UCL		0.531				99% Chebyshev(Mean, Sd) UCL		0.724
690												
691						Suggested UCL to Use						
692				95% Chebyshev (Mean, Sd) UCL		0.433						
693												
694						Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.						
695						These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)						
696						and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.						
697						For additional insight the user may want to consult a statistician.						
698												
699												
700	Nickel											
701												
702						General Statistics						
703				Total Number of Observations		15				Number of Distinct Observations		14
704										Number of Missing Observations		0
705				Minimum		21				Mean		594.9
706				Maximum		3787				Median		275.6
707				SD		965.1				Std. Error of Mean		249.2
708				Coefficient of Variation		1.622				Skewness		2.97
709												
710						Normal GOF Test						
711				Shapiro Wilk Test Statistic		0.593				Shapiro Wilk GOF Test		
712				5% Shapiro Wilk Critical Value		0.881				Data Not Normal at 5% Significance Level		
713				Lilliefors Test Statistic		0.31				Lilliefors GOF Test		
714				5% Lilliefors Critical Value		0.229				Data Not Normal at 5% Significance Level		
715						Data Not Normal at 5% Significance Level						
716												
717						Assuming Normal Distribution						
718				95% Normal UCL						95% UCLs (Adjusted for Skewness)		
719				95% Student's-t UCL		1034				95% Adjusted-CLT UCL (Chen-1995)		1209
720										95% Modified-t UCL (Johnson-1978)		1066
721												
722						Gamma GOF Test						
723				A-D Test Statistic		0.466				Anderson-Darling Gamma GOF Test		
724				5% A-D Critical Value		0.779				Detected data appear Gamma Distributed at 5% Significance Level		
725				K-S Test Statistic		0.155				Kolmogrov-Smirnoff Gamma GOF Test		
726				5% K-S Critical Value		0.231				Detected data appear Gamma Distributed at 5% Significance Level		
727						Detected data appear Gamma Distributed at 5% Significance Level						
728												

	A	B	C	D	E	F	G	H	I	J	K	L
729						Gamma Statistics						
730					k hat (MLE)	0.693					k star (bias corrected MLE)	0.599
731					Theta hat (MLE)	857.9					Theta star (bias corrected MLE)	992.9
732					nu hat (MLE)	20.8					nu star (bias corrected)	17.98
733					MLE Mean (bias corrected)	594.9					MLE Sd (bias corrected)	768.6
734											Approximate Chi Square Value (0.05)	9.374
735					Adjusted Level of Significance	0.0324					Adjusted Chi Square Value	8.617
736												
737						Assuming Gamma Distribution						
738					95% Approximate Gamma UCL (use when n>=50)	1141					95% Adjusted Gamma UCL (use when n<50)	1241
739												
740						Lognormal GOF Test						
741					Shapiro Wilk Test Statistic	0.97					Shapiro Wilk Lognormal GOF Test	
742					5% Shapiro Wilk Critical Value	0.881					Data appear Lognormal at 5% Significance Level	
743					Lilliefors Test Statistic	0.113					Lilliefors Lognormal GOF Test	
744					5% Lilliefors Critical Value	0.229					Data appear Lognormal at 5% Significance Level	
745						Data appear Lognormal at 5% Significance Level						
746												
747						Lognormal Statistics						
748					Minimum of Logged Data	3.045					Mean of logged Data	5.516
749					Maximum of Logged Data	8.239					SD of logged Data	1.418
750												
751						Assuming Lognormal Distribution						
752					95% H-UCL	2520					90% Chebyshev (MVUE) UCL	1359
753					95% Chebyshev (MVUE) UCL	1701					97.5% Chebyshev (MVUE) UCL	2175
754					99% Chebyshev (MVUE) UCL	3107						
755												
756						Nonparametric Distribution Free UCL Statistics						
757						Data appear to follow a Discernible Distribution at 5% Significance Level						
758												
759						Nonparametric Distribution Free UCLs						
760					95% CLT UCL	1005					95% Jackknife UCL	1034
761					95% Standard Bootstrap UCL	998.5					95% Bootstrap-t UCL	1995
762					95% Hall's Bootstrap UCL	2614					95% Percentile Bootstrap UCL	1032
763					95% BCA Bootstrap UCL	1245						
764					90% Chebyshev(Mean, Sd) UCL	1342					95% Chebyshev(Mean, Sd) UCL	1681
765					97.5% Chebyshev(Mean, Sd) UCL	2151					99% Chebyshev(Mean, Sd) UCL	3074
766												
767						Suggested UCL to Use						
768					95% Adjusted Gamma UCL	1241						
769												
770						Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.						
771						These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)						
772						and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.						
773						For additional insight the user may want to consult a statistician.						
774												
775												
776	PAH, Total											
777												
778						General Statistics						
779					Total Number of Observations	15					Number of Distinct Observations	6
780											Number of Missing Observations	0

	A	B	C	D	E	F	G	H	I	J	K	L
781					Minimum	0.0077					Mean	0.635
782					Maximum	2.445					Median	0.635
783					SD	0.543					Std. Error of Mean	0.14
784					Coefficient of Variation	0.855					Skewness	2.804
785												
786					Normal GOF Test							
787					Shapiro Wilk Test Statistic	0.584	Shapiro Wilk GOF Test					
788					5% Shapiro Wilk Critical Value	0.881	Data Not Normal at 5% Significance Level					
789					Lilliefors Test Statistic	0.433	Lilliefors GOF Test					
790					5% Lilliefors Critical Value	0.229	Data Not Normal at 5% Significance Level					
791					Data Not Normal at 5% Significance Level							
792												
793					Assuming Normal Distribution							
794				95% Normal UCL			95% UCLs (Adjusted for Skewness)					
795					95% Student's-t UCL	0.882					95% Adjusted-CLT UCL (Chen-1995)	0.974
796											95% Modified-t UCL (Johnson-1978)	0.899
797												
798					Gamma GOF Test							
799					A-D Test Statistic	2.413	Anderson-Darling Gamma GOF Test					
800					5% A-D Critical Value	0.76	Data Not Gamma Distributed at 5% Significance Level					
801					K-S Test Statistic	0.388	Kolmogrov-Smirnoff Gamma GOF Test					
802					5% K-S Critical Value	0.227	Data Not Gamma Distributed at 5% Significance Level					
803					Data Not Gamma Distributed at 5% Significance Level							
804												
805					Gamma Statistics							
806					k hat (MLE)	1.153					k star (bias corrected MLE)	0.967
807					Theta hat (MLE)	0.551					Theta star (bias corrected MLE)	0.657
808					nu hat (MLE)	34.6					nu star (bias corrected)	29.01
809					MLE Mean (bias corrected)	0.635					MLE Sd (bias corrected)	0.646
810											Approximate Chi Square Value (0.05)	17.72
811					Adjusted Level of Significance	0.0324					Adjusted Chi Square Value	16.64
812												
813					Assuming Gamma Distribution							
814					95% Approximate Gamma UCL (use when n>=50))	1.04					95% Adjusted Gamma UCL (use when n<50)	1.108
815												
816					Lognormal GOF Test							
817					Shapiro Wilk Test Statistic	0.62	Shapiro Wilk Lognormal GOF Test					
818					5% Shapiro Wilk Critical Value	0.881	Data Not Lognormal at 5% Significance Level					
819					Lilliefors Test Statistic	0.431	Lilliefors Lognormal GOF Test					
820					5% Lilliefors Critical Value	0.229	Data Not Lognormal at 5% Significance Level					
821					Data Not Lognormal at 5% Significance Level							
822												
823					Lognormal Statistics							
824					Minimum of Logged Data	-4.867					Mean of logged Data	-0.946
825					Maximum of Logged Data	0.894					SD of logged Data	1.435
826												
827					Assuming Lognormal Distribution							
828					95% H-UCL	4.149					90% Chebyshev (MVUE) UCL	2.184
829					95% Chebyshev (MVUE) UCL	2.736					97.5% Chebyshev (MVUE) UCL	3.502
830					99% Chebyshev (MVUE) UCL	5.007						
831												
832					Nonparametric Distribution Free UCL Statistics							

	A	B	C	D	E	F	G	H	I	J	K	L
833	Data do not follow a Discernible Distribution (0.05)											
834												
835	Nonparametric Distribution Free UCLs											
836					95% CLT UCL	0.866				95% Jackknife UCL		0.882
837					95% Standard Bootstrap UCL	0.862				95% Bootstrap-t UCL		1.052
838					95% Hall's Bootstrap UCL	1.953				95% Percentile Bootstrap UCL		0.887
839					95% BCA Bootstrap UCL	0.968						
840					90% Chebyshev(Mean, Sd) UCL	1.056				95% Chebyshev(Mean, Sd) UCL		1.246
841					97.5% Chebyshev(Mean, Sd) UCL	1.51				99% Chebyshev(Mean, Sd) UCL		2.03
842												
843	Suggested UCL to Use											
844					95% Chebyshev (Mean, Sd) UCL	1.246						
845												
846	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
847	These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)											
848	and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.											
849	For additional insight the user may want to consult a statistician.											
850												
851												
852	PCB, Total											
853												
854	General Statistics											
855					Total Number of Observations	15				Number of Distinct Observations		5
856										Number of Missing Observations		0
857					Minimum	5				Mean		13.09
858					Maximum	55				Median		6.4
859					SD	16.19				Std. Error of Mean		4.18
860					Coefficient of Variation	1.236				Skewness		2.325
861												
862	Normal GOF Test											
863					Shapiro Wilk Test Statistic	0.531				Shapiro Wilk GOF Test		
864					5% Shapiro Wilk Critical Value	0.881				Data Not Normal at 5% Significance Level		
865					Lilliefors Test Statistic	0.442				Lilliefors GOF Test		
866					5% Lilliefors Critical Value	0.229				Data Not Normal at 5% Significance Level		
867	Data Not Normal at 5% Significance Level											
868												
869	Assuming Normal Distribution											
870			95% Normal UCL							95% UCLs (Adjusted for Skewness)		
871					95% Student's-t UCL	20.46				95% Adjusted-CLT UCL (Chen-1995)		22.65
872										95% Modified-t UCL (Johnson-1978)		20.87
873												
874	Gamma GOF Test											
875					A-D Test Statistic	2.364				Anderson-Darling Gamma GOF Test		
876					5% A-D Critical Value	0.756				Data Not Gamma Distributed at 5% Significance Level		
877					K-S Test Statistic	0.372				Kolmogrov-Smirnoff Gamma GOF Test		
878					5% K-S Critical Value	0.226				Data Not Gamma Distributed at 5% Significance Level		
879	Data Not Gamma Distributed at 5% Significance Level											
880												
881	Gamma Statistics											
882					k hat (MLE)	1.387				k star (bias corrected MLE)		1.154
883					Theta hat (MLE)	9.437				Theta star (bias corrected MLE)		11.34
884					nu hat (MLE)	41.62				nu star (bias corrected)		34.63

	A	B	C	D	E	F	G	H	I	J	K	L
885					MLE Mean (bias corrected)	13.09					MLE Sd (bias corrected)	12.19
886											Approximate Chi Square Value (0.05)	22.17
887					Adjusted Level of Significance	0.0324					Adjusted Chi Square Value	20.95
888												
889					**Assuming Gamma Distribution**							
890					95% Approximate Gamma UCL (use when n>=50))	20.45					95% Adjusted Gamma UCL (use when n<50)	21.65
891												
892					**Lognormal GOF Test**							
893					Shapiro Wilk Test Statistic	0.701			**Shapiro Wilk Lognormal GOF Test**			
894					5% Shapiro Wilk Critical Value	0.881			Data Not Lognormal at 5% Significance Level			
895					Lilliefors Test Statistic	0.3			**Lilliefors Lognormal GOF Test**			
896					5% Lilliefors Critical Value	0.229			Data Not Lognormal at 5% Significance Level			
897					**Data Not Lognormal at 5% Significance Level**							
898												
899					**Lognormal Statistics**							
900					Minimum of Logged Data	1.609			Mean of logged Data			2.17
901					Maximum of Logged Data	4.007			SD of logged Data			0.793
902												
903					**Assuming Lognormal Distribution**							
904					95% H-UCL	20.08			90% Chebyshev (MVUE) UCL			19.33
905					95% Chebyshev (MVUE) UCL	22.8			97.5% Chebyshev (MVUE) UCL			27.61
906					99% Chebyshev (MVUE) UCL	37.05						
907												
908					**Nonparametric Distribution Free UCL Statistics**							
909					**Data do not follow a Discernible Distribution (0.05)**							
910												
911					**Nonparametric Distribution Free UCLs**							
912					95% CLT UCL	19.97			95% Jackknife UCL			20.46
913					95% Standard Bootstrap UCL	19.8			95% Bootstrap-t UCL			55.85
914					95% Hall's Bootstrap UCL	64.32			95% Percentile Bootstrap UCL			20.09
915					95% BCA Bootstrap UCL	22.67						
916					90% Chebyshev(Mean, Sd) UCL	25.63			95% Chebyshev(Mean, Sd) UCL			31.31
917					97.5% Chebyshev(Mean, Sd) UCL	39.2			99% Chebyshev(Mean, Sd) UCL			54.69
918												
919					**Suggested UCL to Use**							
920					95% Chebyshev (Mean, Sd) UCL	31.31						
921												
922					Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.							
923					These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)							
924					and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.							
925					For additional insight the user may want to consult a statistician.							
926												
927												
928	**Thallium**											
929												
930					**General Statistics**							
931					Total Number of Observations	15			Number of Distinct Observations			8
932									Number of Missing Observations			0
933					Minimum	0.15			Mean			8.133
934					Maximum	15.2			Median			8.133
935					SD	4.867			Std. Error of Mean			1.257
936					Coefficient of Variation	0.598			Skewness			-0.4

	A	B	C	D	E	F	G	H	I	J	K	L
937												
938						Normal GOF Test						
939					Shapiro Wilk Test Statistic	0.843	Shapiro Wilk GOF Test					
940					5% Shapiro Wilk Critical Value	0.881	Data Not Normal at 5% Significance Level					
941					Lilliefors Test Statistic	0.3	Lilliefors GOF Test					
942					5% Lilliefors Critical Value	0.229	Data Not Normal at 5% Significance Level					
943						Data Not Normal at 5% Significance Level						
944												
945						Assuming Normal Distribution						
946				95% Normal UCL			95% UCLs (Adjusted for Skewness)					
947					95% Student's-t UCL	10.35			95% Adjusted-CLT UCL (Chen-1995)			10.06
948									95% Modified-t UCL (Johnson-1978)			10.32
949												
950						Gamma GOF Test						
951					A-D Test Statistic	2.285	Anderson-Darling Gamma GOF Test					
952					5% A-D Critical Value	0.763	Data Not Gamma Distributed at 5% Significance Level					
953					K-S Test Statistic	0.432	Kolmogrov-Smirnoff Gamma GOF Test					
954					5% K-S Critical Value	0.228	Data Not Gamma Distributed at 5% Significance Level					
955						Data Not Gamma Distributed at 5% Significance Level						
956												
957						Gamma Statistics						
958					k hat (MLE)	1.01			k star (bias corrected MLE)			0.852
959					Theta hat (MLE)	8.055			Theta star (bias corrected MLE)			9.543
960					nu hat (MLE)	30.29			nu star (bias corrected)			25.57
961					MLE Mean (bias corrected)	8.133			MLE Sd (bias corrected)			8.81
962									Approximate Chi Square Value (0.05)			15.05
963					Adjusted Level of Significance	0.0324			Adjusted Chi Square Value			14.06
964												
965						Assuming Gamma Distribution						
966					95% Approximate Gamma UCL (use when n>=50))	13.82			95% Adjusted Gamma UCL (use when n<50)			14.79
967												
968						Lognormal GOF Test						
969					Shapiro Wilk Test Statistic	0.646	Shapiro Wilk Lognormal GOF Test					
970					5% Shapiro Wilk Critical Value	0.881	Data Not Lognormal at 5% Significance Level					
971					Lilliefors Test Statistic	0.441	Lilliefors Lognormal GOF Test					
972					5% Lilliefors Critical Value	0.229	Data Not Lognormal at 5% Significance Level					
973						Data Not Lognormal at 5% Significance Level						
974												
975						Lognormal Statistics						
976					Minimum of Logged Data	-1.897			Mean of logged Data			1.525
977					Maximum of Logged Data	2.721			SD of logged Data			1.585
978												
979						Assuming Lognormal Distribution						
980					95% H-UCL	79.71			90% Chebyshev (MVUE) UCL			33.19
981					95% Chebyshev (MVUE) UCL	41.97			97.5% Chebyshev (MVUE) UCL			54.17
982					99% Chebyshev (MVUE) UCL	78.12						
983												
984						Nonparametric Distribution Free UCL Statistics						
985						Data do not follow a Discernible Distribution (0.05)						
986												
987						Nonparametric Distribution Free UCLs						
988					95% CLT UCL	10.2			95% Jackknife UCL			10.35

	A	B	C	D	E	F	G	H	I	J	K	L
989					95% Standard Bootstrap UCL	10.05				95% Bootstrap-t UCL		10.3
990					95% Hall's Bootstrap UCL	10.18				95% Percentile Bootstrap UCL		9.981
991					95% BCA Bootstrap UCL	9.94						
992					90% Chebyshev(Mean, Sd) UCL	11.9				95% Chebyshev(Mean, Sd) UCL		13.61
993					97.5% Chebyshev(Mean, Sd) UCL	15.98				99% Chebyshev(Mean, Sd) UCL		20.64
994												
995					**Suggested UCL to Use**							
996					99% Chebyshev (Mean, Sd) UCL	20.64						
997												
998					**Recommended UCL exceeds the maximum observation**							
999												
1000					Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.							
1001					These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)							
1002					and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.							
1003					For additional insight the user may want to consult a statistician.							
1004												
1005					**Note: For highly negatively-skewed data, confidence limits (e.g., Chen, Johnson, Lognormal, and Gamma) may not be**							
1006					**reliable. Chen's and Johnson's methods provide adjustments for positvely skewed data sets.**							
1007												
1008												
1009	**Uranium**											
1010												
1011					**General Statistics**							
1012					Total Number of Observations	15				Number of Distinct Observations		14
1013										Number of Missing Observations		0
1014					Minimum	10				Mean		95.13
1015					Maximum	259.3				Median		62.87
1016					SD	74.58				Std. Error of Mean		19.26
1017					Coefficient of Variation	0.784				Skewness		1.143
1018												
1019					**Normal GOF Test**							
1020					Shapiro Wilk Test Statistic	0.878				**Shapiro Wilk GOF Test**		
1021					5% Shapiro Wilk Critical Value	0.881				Data Not Normal at 5% Significance Level		
1022					Lilliefors Test Statistic	0.201				**Lilliefors GOF Test**		
1023					5% Lilliefors Critical Value	0.229				Data appear Normal at 5% Significance Level		
1024					**Data appear Approximate Normal at 5% Significance Level**							
1025												
1026					**Assuming Normal Distribution**							
1027					**95% Normal UCL**					**95% UCLs (Adjusted for Skewness)**		
1028					95% Student's-t UCL	129				95% Adjusted-CLT UCL (Chen-1995)		132.9
1029										95% Modified-t UCL (Johnson-1978)		130
1030												
1031					**Gamma GOF Test**							
1032					A-D Test Statistic	0.307				**Anderson-Darling Gamma GOF Test**		
1033					5% A-D Critical Value	0.753				Detected data appear Gamma Distributed at 5% Significance Level		
1034					K-S Test Statistic	0.125				**Kolmogrov-Smirnoff Gamma GOF Test**		
1035					5% K-S Critical Value	0.225				Detected data appear Gamma Distributed at 5% Significance Level		
1036					**Detected data appear Gamma Distributed at 5% Significance Level**							
1037												
1038					**Gamma Statistics**							
1039					k hat (MLE)	1.572				k star (bias corrected MLE)		1.302
1040					Theta hat (MLE)	60.53				Theta star (bias corrected MLE)		73.08

	A	B	C	D	E	F	G	H	I	J	K	L
1041					nu hat (MLE)	47.15				nu star (bias corrected)		39.05
1042					MLE Mean (bias corrected)	95.13				MLE Sd (bias corrected)		83.38
1043										Approximate Chi Square Value (0.05)		25.74
1044					Adjusted Level of Significance	0.0324				Adjusted Chi Square Value		24.41
1045												
1046					**Assuming Gamma Distribution**							
1047				95% Approximate Gamma UCL (use when n>=50))		144.3				95% Adjusted Gamma UCL (use when n<50)		152.2
1048												
1049					**Lognormal GOF Test**							
1050					Shapiro Wilk Test Statistic	0.914			**Shapiro Wilk Lognormal GOF Test**			
1051					5% Shapiro Wilk Critical Value	0.881			Data appear Lognormal at 5% Significance Level			
1052					Lilliefors Test Statistic	0.179			**Lilliefors Lognormal GOF Test**			
1053					5% Lilliefors Critical Value	0.229			Data appear Lognormal at 5% Significance Level			
1054					**Data appear Lognormal at 5% Significance Level**							
1055												
1056					**Lognormal Statistics**							
1057					Minimum of Logged Data	2.303				Mean of logged Data		4.205
1058					Maximum of Logged Data	5.558				SD of logged Data		0.971
1059												
1060					**Assuming Lognormal Distribution**							
1061					95% H-UCL	216.3				90% Chebyshev (MVUE) UCL		187.1
1062					95% Chebyshev (MVUE) UCL	225.3				97.5% Chebyshev (MVUE) UCL		278.3
1063					99% Chebyshev (MVUE) UCL	382.4						
1064												
1065					**Nonparametric Distribution Free UCL Statistics**							
1066					**Data appear to follow a Discernible Distribution at 5% Significance Level**							
1067												
1068					**Nonparametric Distribution Free UCLs**							
1069					95% CLT UCL	126.8				95% Jackknife UCL		129
1070					95% Standard Bootstrap UCL	125.3				95% Bootstrap-t UCL		140.1
1071					95% Hall's Bootstrap UCL	158				95% Percentile Bootstrap UCL		128.5
1072					95% BCA Bootstrap UCL	132.1						
1073					90% Chebyshev(Mean, Sd) UCL	152.9				95% Chebyshev(Mean, Sd) UCL		179.1
1074					97.5% Chebyshev(Mean, Sd) UCL	215.4				99% Chebyshev(Mean, Sd) UCL		286.7
1075												
1076					**Suggested UCL to Use**							
1077					95% Student's-t UCL	129						
1078												
1079	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
1080	These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)											
1081	and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.											
1082	For additional insight the user may want to consult a statistician.											
1083												
1084												
1085	**Uranium-234**											
1086												
1087					**General Statistics**							
1088					Total Number of Observations	15				Number of Distinct Observations		8
1089										Number of Missing Observations		0
1090					Minimum	0.666				Mean		3.077
1091					Maximum	10.7				Median		3.077
1092					SD	2.366				Std. Error of Mean		0.611

	A	B	C	D	E	F	G	H	I	J	K	L
1093					Coefficient of Variation	0.769					Skewness	2.491
1094												
1095					Normal GOF Test							
1096					Shapiro Wilk Test Statistic	0.658	Shapiro Wilk GOF Test					
1097					5% Shapiro Wilk Critical Value	0.881	Data Not Normal at 5% Significance Level					
1098					Lilliefors Test Statistic	0.332	Lilliefors GOF Test					
1099					5% Lilliefors Critical Value	0.229	Data Not Normal at 5% Significance Level					
1100					Data Not Normal at 5% Significance Level							
1101												
1102					Assuming Normal Distribution							
1103			95% Normal UCL				95% UCLs (Adjusted for Skewness)					
1104					95% Student's-t UCL	4.153					95% Adjusted-CLT UCL (Chen-1995)	4.502
1105											95% Modified-t UCL (Johnson-1978)	4.219
1106												
1107					Gamma GOF Test							
1108					A-D Test Statistic	1.48	Anderson-Darling Gamma GOF Test					
1109					5% A-D Critical Value	0.746	Data Not Gamma Distributed at 5% Significance Level					
1110					K-S Test Statistic	0.321	Kolmogrov-Smirnoff Gamma GOF Test					
1111					5% K-S Critical Value	0.224	Data Not Gamma Distributed at 5% Significance Level					
1112					Data Not Gamma Distributed at 5% Significance Level							
1113												
1114					Gamma Statistics							
1115					k hat (MLE)	2.28					k star (bias corrected MLE)	1.868
1116					Theta hat (MLE)	1.35					Theta star (bias corrected MLE)	1.647
1117					nu hat (MLE)	68.4					nu star (bias corrected)	56.05
1118					MLE Mean (bias corrected)	3.077					MLE Sd (bias corrected)	2.251
1119											Approximate Chi Square Value (0.05)	39.85
1120					Adjusted Level of Significance	0.0324					Adjusted Chi Square Value	38.17
1121												
1122					Assuming Gamma Distribution							
1123					95% Approximate Gamma UCL (use when n>=50))	4.329					95% Adjusted Gamma UCL (use when n<50)	4.519
1124												
1125					Lognormal GOF Test							
1126					Shapiro Wilk Test Statistic	0.817	Shapiro Wilk Lognormal GOF Test					
1127					5% Shapiro Wilk Critical Value	0.881	Data Not Lognormal at 5% Significance Level					
1128					Lilliefors Test Statistic	0.359	Lilliefors Lognormal GOF Test					
1129					5% Lilliefors Critical Value	0.229	Data Not Lognormal at 5% Significance Level					
1130					Data Not Lognormal at 5% Significance Level							
1131												
1132					Lognormal Statistics							
1133					Minimum of Logged Data	-0.406					Mean of logged Data	0.889
1134					Maximum of Logged Data	2.37					SD of logged Data	0.734
1135												
1136					Assuming Lognormal Distribution							
1137					95% H-UCL	5.054					90% Chebyshev (MVUE) UCL	4.993
1138					95% Chebyshev (MVUE) UCL	5.843					97.5% Chebyshev (MVUE) UCL	7.022
1139					99% Chebyshev (MVUE) UCL	9.339						
1140												
1141					Nonparametric Distribution Free UCL Statistics							
1142					Data do not follow a Discernible Distribution (0.05)							
1143												
1144					Nonparametric Distribution Free UCLs							

	A	B	C	D	E	F	G	H	I	J	K	L
1145					95% CLT UCL	4.082					95% Jackknife UCL	4.153
1146					95% Standard Bootstrap UCL	4.062					95% Bootstrap-t UCL	4.777
1147					95% Hall's Bootstrap UCL	8.824					95% Percentile Bootstrap UCL	4.137
1148					95% BCA Bootstrap UCL	4.474						
1149					90% Chebyshev(Mean, Sd) UCL	4.91					95% Chebyshev(Mean, Sd) UCL	5.74
1150					97.5% Chebyshev(Mean, Sd) UCL	6.892					99% Chebyshev(Mean, Sd) UCL	9.156
1151												
1152					**Suggested UCL to Use**							
1153					95% Chebyshev (Mean, Sd) UCL	5.74						
1154												
1155	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
1156	These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)											
1157	and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.											
1158	For additional insight the user may want to consult a statistician.											
1159												
1160												
1161	**Uranium-235**											
1162												
1163					**General Statistics**							
1164					Total Number of Observations	15					Number of Distinct Observations	8
1165											Number of Missing Observations	0
1166					Minimum	0.0454					Mean	0.162
1167					Maximum	0.43					Median	0.162
1168					SD	0.0951					Std. Error of Mean	0.0245
1169					Coefficient of Variation	0.588					Skewness	1.562
1170												
1171					**Normal GOF Test**							
1172					Shapiro Wilk Test Statistic	0.794			**Shapiro Wilk GOF Test**			
1173					5% Shapiro Wilk Critical Value	0.881			Data Not Normal at 5% Significance Level			
1174					Lilliefors Test Statistic	0.3			**Lilliefors GOF Test**			
1175					5% Lilliefors Critical Value	0.229			Data Not Normal at 5% Significance Level			
1176					**Data Not Normal at 5% Significance Level**							
1177												
1178					**Assuming Normal Distribution**							
1179			**95% Normal UCL**						**95% UCLs (Adjusted for Skewness)**			
1180					95% Student's-t UCL	0.205			95% Adjusted-CLT UCL (Chen-1995)			0.213
1181									95% Modified-t UCL (Johnson-1978)			0.207
1182												
1183					**Gamma GOF Test**							
1184					A-D Test Statistic	1.132			**Anderson-Darling Gamma GOF Test**			
1185					5% A-D Critical Value	0.743			Data Not Gamma Distributed at 5% Significance Level			
1186					K-S Test Statistic	0.306			**Kolmogrov-Smirnoff Gamma GOF Test**			
1187					5% K-S Critical Value	0.223			Data Not Gamma Distributed at 5% Significance Level			
1188					**Data Not Gamma Distributed at 5% Significance Level**							
1189												
1190					**Gamma Statistics**							
1191					k hat (MLE)	3.328			k star (bias corrected MLE)			2.707
1192					Theta hat (MLE)	0.0486			Theta star (bias corrected MLE)			0.0598
1193					nu hat (MLE)	99.84			nu star (bias corrected)			81.21
1194					MLE Mean (bias corrected)	0.162			MLE Sd (bias corrected)			0.0983
1195									Approximate Chi Square Value (0.05)			61.44
1196					Adjusted Level of Significance	0.0324			Adjusted Chi Square Value			59.33

	A	B	C	D	E	F	G	H	I	J	K	L
1197												
1198						Assuming Gamma Distribution						
1199					95% Approximate Gamma UCL (use when n>=50))	0.214				95% Adjusted Gamma UCL (use when n<50)		0.221
1200												
1201						Lognormal GOF Test						
1202					Shapiro Wilk Test Statistic	0.867				Shapiro Wilk Lognormal GOF Test		
1203					5% Shapiro Wilk Critical Value	0.881				Data Not Lognormal at 5% Significance Level		
1204					Lilliefors Test Statistic	0.337				Lilliefors Lognormal GOF Test		
1205					5% Lilliefors Critical Value	0.229				Data Not Lognormal at 5% Significance Level		
1206						Data Not Lognormal at 5% Significance Level						
1207												
1208						Lognormal Statistics						
1209					Minimum of Logged Data	-3.092				Mean of logged Data		-1.979
1210					Maximum of Logged Data	-0.844				SD of logged Data		0.601
1211												
1212						Assuming Lognormal Distribution						
1213					95% H-UCL	0.235				90% Chebyshev (MVUE) UCL		0.242
1214					95% Chebyshev (MVUE) UCL	0.278				97.5% Chebyshev (MVUE) UCL		0.328
1215					99% Chebyshev (MVUE) UCL	0.426						
1216												
1217						Nonparametric Distribution Free UCL Statistics						
1218						Data do not follow a Discernible Distribution (0.05)						
1219												
1220						Nonparametric Distribution Free UCLs						
1221					95% CLT UCL	0.202				95% Jackknife UCL		0.205
1222					95% Standard Bootstrap UCL	0.201				95% Bootstrap-t UCL		0.22
1223					95% Hall's Bootstrap UCL	0.445				95% Percentile Bootstrap UCL		0.203
1224					95% BCA Bootstrap UCL	0.209						
1225					90% Chebyshev(Mean, Sd) UCL	0.235				95% Chebyshev(Mean, Sd) UCL		0.269
1226					97.5% Chebyshev(Mean, Sd) UCL	0.315				99% Chebyshev(Mean, Sd) UCL		0.406
1227												
1228						Suggested UCL to Use						
1229					95% Chebyshev (Mean, Sd) UCL	0.269						
1230												
1231						Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.						
1232						These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)						
1233						and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.						
1234						For additional insight the user may want to consult a statistician.						
1235												
1236												
1237	Uranium-238											
1238												
1239						General Statistics						
1240					Total Number of Observations	15				Number of Distinct Observations		8
1241										Number of Missing Observations		0
1242					Minimum	0.765				Mean		4.891
1243					Maximum	18.7				Median		4.891
1244					SD	4.21				Std. Error of Mean		1.087
1245					Coefficient of Variation	0.861				Skewness		2.681
1246												
1247						Normal GOF Test						
1248					Shapiro Wilk Test Statistic	0.628				Shapiro Wilk GOF Test		

	A	B	C	D	E	F	G	H	I	J	K	L
1249					5% Shapiro Wilk Critical Value	0.881	Data Not Normal at 5% Significance Level					
1250					Lilliefors Test Statistic	0.367	**Lilliefors GOF Test**					
1251					5% Lilliefors Critical Value	0.229	Data Not Normal at 5% Significance Level					
1252	**Data Not Normal at 5% Significance Level**											
1253												
1254	**Assuming Normal Distribution**											
1255	**95% Normal UCL**						**95% UCLs (Adjusted for Skewness)**					
1256					95% Student's-t UCL	6.805	95% Adjusted-CLT UCL (Chen-1995)					7.482
1257							95% Modified-t UCL (Johnson-1978)					6.93
1258												
1259	**Gamma GOF Test**											
1260					A-D Test Statistic	1.535	**Anderson-Darling Gamma GOF Test**					
1261					5% A-D Critical Value	0.748	Data Not Gamma Distributed at 5% Significance Level					
1262					K-S Test Statistic	0.305	**Kolmogrov-Smirnoff Gamma GOF Test**					
1263					5% K-S Critical Value	0.225	Data Not Gamma Distributed at 5% Significance Level					
1264	**Data Not Gamma Distributed at 5% Significance Level**											
1265												
1266	**Gamma Statistics**											
1267					k hat (MLE)	1.889	k star (bias corrected MLE)					1.556
1268					Theta hat (MLE)	2.589	Theta star (bias corrected MLE)					3.144
1269					nu hat (MLE)	56.67	nu star (bias corrected)					46.67
1270					MLE Mean (bias corrected)	4.891	MLE Sd (bias corrected)					3.921
1271							Approximate Chi Square Value (0.05)					31.99
1272					Adjusted Level of Significance	0.0324	Adjusted Chi Square Value					30.5
1273												
1274	**Assuming Gamma Distribution**											
1275			95% Approximate Gamma UCL (use when n>=50))			7.134	95% Adjusted Gamma UCL (use when n<50)					7.483
1276												
1277	**Lognormal GOF Test**											
1278					Shapiro Wilk Test Statistic	0.818	**Shapiro Wilk Lognormal GOF Test**					
1279					5% Shapiro Wilk Critical Value	0.881	Data Not Lognormal at 5% Significance Level					
1280					Lilliefors Test Statistic	0.348	**Lilliefors Lognormal GOF Test**					
1281					5% Lilliefors Critical Value	0.229	Data Not Lognormal at 5% Significance Level					
1282	**Data Not Lognormal at 5% Significance Level**											
1283												
1284	**Lognormal Statistics**											
1285					Minimum of Logged Data	-0.268	Mean of logged Data					1.3
1286					Maximum of Logged Data	2.929	SD of logged Data					0.82
1287												
1288	**Assuming Lognormal Distribution**											
1289					95% H-UCL	8.82	90% Chebyshev (MVUE) UCL					8.378
1290					95% Chebyshev (MVUE) UCL	9.913	97.5% Chebyshev (MVUE) UCL					12.04
1291					99% Chebyshev (MVUE) UCL	16.23						
1292												
1293	**Nonparametric Distribution Free UCL Statistics**											
1294	**Data do not follow a Discernible Distribution (0.05)**											
1295												
1296	**Nonparametric Distribution Free UCLs**											
1297					95% CLT UCL	6.678	95% Jackknife UCL					6.805
1298					95% Standard Bootstrap UCL	6.613	95% Bootstrap-t UCL					7.944
1299					95% Hall's Bootstrap UCL	14.78	95% Percentile Bootstrap UCL					6.731
1300					95% BCA Bootstrap UCL	7.471						

	A	B	C	D	E	F	G	H	I	J	K	L
1301				90% Chebyshev(Mean, Sd) UCL		8.151				95% Chebyshev(Mean, Sd) UCL		9.628
1302				97.5% Chebyshev(Mean, Sd) UCL		11.68				99% Chebyshev(Mean, Sd) UCL		15.71
1303												
1304						**Suggested UCL to Use**						
1305				95% Chebyshev (Mean, Sd) UCL		9.628						
1306												
1307					Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.							
1308					These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)							
1309					and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.							
1310					For additional insight the user may want to consult a statistician.							
1311												
1312												
1313	**Vanadium**											
1314												
1315						**General Statistics**						
1316					Total Number of Observations	15				Number of Distinct Observations		10
1317										Number of Missing Observations		0
1318					Minimum	11.4				Mean		58.64
1319					Maximum	122				Median		70
1320					SD	37.78				Std. Error of Mean		9.756
1321					Coefficient of Variation	0.644				Skewness		0.271
1322												
1323						**Normal GOF Test**						
1324					Shapiro Wilk Test Statistic	0.874				**Shapiro Wilk GOF Test**		
1325					5% Shapiro Wilk Critical Value	0.881				Data Not Normal at 5% Significance Level		
1326					Lilliefors Test Statistic	0.218				**Lilliefors GOF Test**		
1327					5% Lilliefors Critical Value	0.229				Data appear Normal at 5% Significance Level		
1328						**Data appear Approximate Normal at 5% Significance Level**						
1329												
1330						**Assuming Normal Distribution**						
1331					**95% Normal UCL**					**95% UCLs (Adjusted for Skewness)**		
1332					95% Student's-t UCL	75.82				95% Adjusted-CLT UCL (Chen-1995)		75.42
1333										95% Modified-t UCL (Johnson-1978)		75.94
1334												
1335						**Gamma GOF Test**						
1336					A-D Test Statistic	0.924				**Anderson-Darling Gamma GOF Test**		
1337					5% A-D Critical Value	0.747				Data Not Gamma Distributed at 5% Significance Level		
1338					K-S Test Statistic	0.289				**Kolmogrov-Smirnoff Gamma GOF Test**		
1339					5% K-S Critical Value	0.224				Data Not Gamma Distributed at 5% Significance Level		
1340						**Data Not Gamma Distributed at 5% Significance Level**						
1341												
1342						**Gamma Statistics**						
1343					k hat (MLE)	2.076				k star (bias corrected MLE)		1.705
1344					Theta hat (MLE)	28.25				Theta star (bias corrected MLE)		34.39
1345					nu hat (MLE)	62.28				nu star (bias corrected)		51.16
1346					MLE Mean (bias corrected)	58.64				MLE Sd (bias corrected)		44.91
1347										Approximate Chi Square Value (0.05)		35.73
1348					Adjusted Level of Significance	0.0324				Adjusted Chi Square Value		34.15
1349												
1350						**Assuming Gamma Distribution**						
1351					95% Approximate Gamma UCL (use when n>=50))	83.96				95% Adjusted Gamma UCL (use when n<50)		87.85
1352												

	A	B	C	D	E	F	G	H	I	J	K	L
1353					Lognormal GOF Test							
1354					Shapiro Wilk Test Statistic	0.867	Shapiro Wilk Lognormal GOF Test					
1355					5% Shapiro Wilk Critical Value	0.881	Data Not Lognormal at 5% Significance Level					
1356					Lilliefors Test Statistic	0.306	Lilliefors Lognormal GOF Test					
1357					5% Lilliefors Critical Value	0.229	Data Not Lognormal at 5% Significance Level					
1358					Data Not Lognormal at 5% Significance Level							
1359												
1360					Lognormal Statistics							
1361					Minimum of Logged Data	2.434			Mean of logged Data			3.812
1362					Maximum of Logged Data	4.804			SD of logged Data			0.808
1363												
1364					Assuming Lognormal Distribution							
1365					95% H-UCL	106.6			90% Chebyshev (MVUE) UCL			101.8
1366					95% Chebyshev (MVUE) UCL	120.3			97.5% Chebyshev (MVUE) UCL			146
1367					99% Chebyshev (MVUE) UCL	196.3						
1368												
1369					Nonparametric Distribution Free UCL Statistics							
1370					Data appear to follow a Discernible Distribution at 5% Significance Level							
1371												
1372					Nonparametric Distribution Free UCLs							
1373					95% CLT UCL	74.69			95% Jackknife UCL			75.82
1374					95% Standard Bootstrap UCL	73.97			95% Bootstrap-t UCL			75.39
1375					95% Hall's Bootstrap UCL	75.15			95% Percentile Bootstrap UCL			73.73
1376					95% BCA Bootstrap UCL	73.82						
1377					90% Chebyshev(Mean, Sd) UCL	87.91			95% Chebyshev(Mean, Sd) UCL			101.2
1378					97.5% Chebyshev(Mean, Sd) UCL	119.6			99% Chebyshev(Mean, Sd) UCL			155.7
1379												
1380					Suggested UCL to Use							
1381					95% Student's-t UCL	75.82						
1382												
1383					Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.							
1384					These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)							
1385					and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.							
1386					For additional insight the user may want to consult a statistician.							
1387												