	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			3/2/2015 7:16:20 PM								
5	From File			EPC_013Surf_EU05.xls								
6	Full Precision			OFF								
7	Confidence Coefficient			95%								
8	Number of Bootstrap Operations			2000								
9												
10												
11	Aluminum											
12												
13	General Statistics											
14	Total Number of Observations					10	Number of Distinct Observations					4
15							Number of Missing Observations					0
16	Minimum					5100	Mean					8520
17	Maximum					14000	Median					8520
18	SD					2260	Std. Error of Mean					714.7
19	Coefficient of Variation					0.265	Skewness					1.394
20												
21	Normal GOF Test											
22	Shapiro Wilk Test Statistic					0.728	Shapiro Wilk GOF Test					
23	5% Shapiro Wilk Critical Value					0.842	Data Not Normal at 5% Significance Level					
24	Lilliefors Test Statistic					0.4	Lilliefors GOF Test					
25	5% Lilliefors Critical Value					0.28	Data Not Normal at 5% Significance Level					
26	Data Not Normal at 5% Significance Level											
27												
28	Assuming Normal Distribution											
29	95% Normal UCL						95% UCLs (Adjusted for Skewness)					
30	95% Student's-t UCL					9830	95% Adjusted-CLT UCL (Chen-1995)					10032
31							95% Modified-t UCL (Johnson-1978)					9883
32												
33	Gamma GOF Test											
34	A-D Test Statistic					1.376	Anderson-Darling Gamma GOF Test					
35	5% A-D Critical Value					0.725	Data Not Gamma Distributed at 5% Significance Level					
36	K-S Test Statistic					0.368	Kolmogrov-Smirnoff Gamma GOF Test					
37	5% K-S Critical Value					0.266	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)					17.21	k star (bias corrected MLE)					12.11
42	Theta hat (MLE)					495	Theta star (bias corrected MLE)					703.3
43	nu hat (MLE)					344.2	nu star (bias corrected)					242.3
44	MLE Mean (bias corrected)					8520	MLE Sd (bias corrected)					2448
45							Approximate Chi Square Value (0.05)					207.3
46	Adjusted Level of Significance					0.0267	Adjusted Chi Square Value					201.6
47												
48	Assuming Gamma Distribution											
49	95% Approximate Gamma UCL (use when n>=50))					9960	95% Adjusted Gamma UCL (use when n<50)					10239
50												
51	Lognormal GOF Test											
52	Shapiro Wilk Test Statistic					0.778	Shapiro Wilk Lognormal GOF Test					

	A	B	C	D	E	F	G	H	I	J	K	L
53					5% Shapiro Wilk Critical Value	0.842		Data Not Lognormal at 5% Significance Level				
54					Lilliefors Test Statistic	0.354		**Lilliefors Lognormal GOF Test**				
55					5% Lilliefors Critical Value	0.28		Data Not Lognormal at 5% Significance Level				
56					**Data Not Lognormal at 5% Significance Level**							
57												
58					**Lognormal Statistics**							
59					Minimum of Logged Data	8.537				Mean of logged Data		9.021
60					Maximum of Logged Data	9.547				SD of logged Data		0.253
61												
62					**Assuming Lognormal Distribution**							
63					95% H-UCL	10057				90% Chebyshev (MVUE) UCL		10573
64					95% Chebyshev (MVUE) UCL	11505				97.5% Chebyshev (MVUE) UCL		12799
65					99% Chebyshev (MVUE) UCL	15340						
66												
67					**Nonparametric Distribution Free UCL Statistics**							
68					**Data do not follow a Discernible Distribution (0.05)**							
69												
70					**Nonparametric Distribution Free UCLs**							
71					95% CLT UCL	9696				95% Jackknife UCL		9830
72					95% Standard Bootstrap UCL	N/A				95% Bootstrap-t UCL		N/A
73					95% Hall's Bootstrap UCL	N/A				95% Percentile Bootstrap UCL		N/A
74					95% BCA Bootstrap UCL	N/A						
75					90% Chebyshev(Mean, Sd) UCL	10664				95% Chebyshev(Mean, Sd) UCL		11635
76					97.5% Chebyshev(Mean, Sd) UCL	12983				99% Chebyshev(Mean, Sd) UCL		15631
77												
78					**Suggested UCL to Use**							
79					95% Student's-t UCL	9830				or 95% Modified-t UCL		9883
80												
81					Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.							
82					These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)							
83					and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.							
84					For additional insight the user may want to consult a statistician.							
85												
86												
87	**Chromium**											
88												
89					**General Statistics**							
90					Total Number of Observations	10				Number of Distinct Observations		4
91										Number of Missing Observations		0
92					Minimum	8.26				Mean		12.23
93					Maximum	19				Median		12
94					SD	2.656				Std. Error of Mean		0.84
95					Coefficient of Variation	0.217				Skewness		1.828
96												
97					**Normal GOF Test**							
98					Shapiro Wilk Test Statistic	0.664		**Shapiro Wilk GOF Test**				
99					5% Shapiro Wilk Critical Value	0.842		Data Not Normal at 5% Significance Level				
100					Lilliefors Test Statistic	0.434		**Lilliefors GOF Test**				
101					5% Lilliefors Critical Value	0.28		Data Not Normal at 5% Significance Level				
102					**Data Not Normal at 5% Significance Level**							
103												
104					**Assuming Normal Distribution**							

	A	B	C	D	E	F	G	H	I	J	K	L
105	95% Normal UCL						95% UCLs (Adjusted for Skewness)					
106					95% Student's-t UCL	13.77				95% Adjusted-CLT UCL (Chen-1995)		14.13
107										95% Modified-t UCL (Johnson-1978)		13.85
108												
109	Gamma GOF Test											
110					A-D Test Statistic	1.67	Anderson-Darling Gamma GOF Test					
111					5% A-D Critical Value	0.725	Data Not Gamma Distributed at 5% Significance Level					
112					K-S Test Statistic	0.413	Kolmogrov-Smirnoff Gamma GOF Test					
113					5% K-S Critical Value	0.266	Data Not Gamma Distributed at 5% Significance Level					
114	Data Not Gamma Distributed at 5% Significance Level											
115												
116	Gamma Statistics											
117					k hat (MLE)	26.83				k star (bias corrected MLE)		18.84
118					Theta hat (MLE)	0.456				Theta star (bias corrected MLE)		0.649
119					nu hat (MLE)	536.5				nu star (bias corrected)		376.9
120					MLE Mean (bias corrected)	12.23				MLE Sd (bias corrected)		2.816
121										Approximate Chi Square Value (0.05)		332.9
122					Adjusted Level of Significance	0.0267				Adjusted Chi Square Value		325.7
123												
124	Assuming Gamma Distribution											
125					95% Approximate Gamma UCL (use when n>=50))	13.84				95% Adjusted Gamma UCL (use when n<50)		14.15
126												
127	Lognormal GOF Test											
128					Shapiro Wilk Test Statistic	0.717	Shapiro Wilk Lognormal GOF Test					
129					5% Shapiro Wilk Critical Value	0.842	Data Not Lognormal at 5% Significance Level					
130					Lilliefors Test Statistic	0.4	Lilliefors Lognormal GOF Test					
131					5% Lilliefors Critical Value	0.28	Data Not Lognormal at 5% Significance Level					
132	Data Not Lognormal at 5% Significance Level											
133												
134	Lognormal Statistics											
135					Minimum of Logged Data	2.111				Mean of logged Data		2.485
136					Maximum of Logged Data	2.944				SD of logged Data		0.2
137												
138	Assuming Lognormal Distribution											
139					95% H-UCL	13.87				90% Chebyshev (MVUE) UCL		14.53
140					95% Chebyshev (MVUE) UCL	15.59				97.5% Chebyshev (MVUE) UCL		17.04
141					99% Chebyshev (MVUE) UCL	19.91						
142												
143	Nonparametric Distribution Free UCL Statistics											
144	Data do not follow a Discernible Distribution (0.05)											
145												
146	Nonparametric Distribution Free UCLs											
147					95% CLT UCL	13.61				95% Jackknife UCL		13.77
148					95% Standard Bootstrap UCL	N/A				95% Bootstrap-t UCL		N/A
149					95% Hall's Bootstrap UCL	N/A				95% Percentile Bootstrap UCL		N/A
150					95% BCA Bootstrap UCL	N/A						
151					90% Chebyshev(Mean, Sd) UCL	14.75				95% Chebyshev(Mean, Sd) UCL		15.89
152					97.5% Chebyshev(Mean, Sd) UCL	17.47				99% Chebyshev(Mean, Sd) UCL		20.58
153												
154	Suggested UCL to Use											
155					95% Student's-t UCL	13.77				or 95% Modified-t UCL		13.85
156												

	A	B	C	D	E	F	G	H	I	J	K	L
157	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
158	These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)											
159	and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.											
160	For additional insight the user may want to consult a statistician.											
161												
162												
163	Iron											
164												
165	General Statistics											
166	Total Number of Observations					10	Number of Distinct Observations					10
167							Number of Missing Observations					0
168	Minimum					17294	Mean					21780
169	Maximum					31295	Median					20930
170	SD					4173	Std. Error of Mean					1320
171	Coefficient of Variation					0.192	Skewness					1.346
172												
173	Normal GOF Test											
174	Shapiro Wilk Test Statistic					0.894	Shapiro Wilk GOF Test					
175	5% Shapiro Wilk Critical Value					0.842	Data appear Normal at 5% Significance Level					
176	Lilliefors Test Statistic					0.159	Lilliefors GOF Test					
177	5% Lilliefors Critical Value					0.28	Data appear Normal at 5% Significance Level					
178	Data appear Normal at 5% Significance Level											
179												
180	Assuming Normal Distribution											
181	95% Normal UCL						95% UCLs (Adjusted for Skewness)					
182	95% Student's-t UCL					24199	95% Adjusted-CLT UCL (Chen-1995)					24551
183							95% Modified-t UCL (Johnson-1978)					24293
184												
185	Gamma GOF Test											
186	A-D Test Statistic					0.301	Anderson-Darling Gamma GOF Test					
187	5% A-D Critical Value					0.724	Detected data appear Gamma Distributed at 5% Significance Level					
188	K-S Test Statistic					0.143	Kolmogrov-Smirnoff Gamma GOF Test					
189	5% K-S Critical Value					0.266	Detected data appear Gamma Distributed at 5% Significance Level					
190	Detected data appear Gamma Distributed at 5% Significance Level											
191												
192	Gamma Statistics											
193	k hat (MLE)					33.41	k star (bias corrected MLE)					23.45
194	Theta hat (MLE)					652	Theta star (bias corrected MLE)					928.7
195	nu hat (MLE)					668.1	nu star (bias corrected)					469
196	MLE Mean (bias corrected)					21780	MLE Sd (bias corrected)					4498
197							Approximate Chi Square Value (0.05)					419.8
198	Adjusted Level of Significance					0.0267	Adjusted Chi Square Value					411.7
199												
200	Assuming Gamma Distribution											
201	95% Approximate Gamma UCL (use when n>=50))					24333	95% Adjusted Gamma UCL (use when n<50)					24812
202												
203	Lognormal GOF Test											
204	Shapiro Wilk Test Statistic					0.94	Shapiro Wilk Lognormal GOF Test					
205	5% Shapiro Wilk Critical Value					0.842	Data appear Lognormal at 5% Significance Level					
206	Lilliefors Test Statistic					0.131	Lilliefors Lognormal GOF Test					
207	5% Lilliefors Critical Value					0.28	Data appear Lognormal at 5% Significance Level					
208	Data appear Lognormal at 5% Significance Level											

	A	B	C	D	E	F	G	H	I	J	K	L
209												
210						Lognormal Statistics						
211					Minimum of Logged Data	9.758				Mean of logged Data		9.974
212					Maximum of Logged Data	10.35				SD of logged Data		0.179
213												
214						Assuming Lognormal Distribution						
215					95% H-UCL	24364				90% Chebyshev (MVUE) UCL		25471
216					95% Chebyshev (MVUE) UCL	27149				97.5% Chebyshev (MVUE) UCL		29478
217					99% Chebyshev (MVUE) UCL	34054						
218												
219						Nonparametric Distribution Free UCL Statistics						
220						Data appear to follow a Discernible Distribution at 5% Significance Level						
221												
222						Nonparametric Distribution Free UCLs						
223					95% CLT UCL	23951				95% Jackknife UCL		24199
224					95% Standard Bootstrap UCL	23811				95% Bootstrap-t UCL		25091
225					95% Hall's Bootstrap UCL	28217				95% Percentile Bootstrap UCL		23859
226					95% BCA Bootstrap UCL	24516						
227					90% Chebyshev(Mean, Sd) UCL	25739				95% Chebyshev(Mean, Sd) UCL		27533
228					97.5% Chebyshev(Mean, Sd) UCL	30022				99% Chebyshev(Mean, Sd) UCL		34911
229												
230						Suggested UCL to Use						
231					95% Student's-t UCL	24199						
232												
233						Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.						
234						These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)						
235						and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.						
236						For additional insight the user may want to consult a statistician.						
237												
238												
239	Manganese											
240												
241						General Statistics						
242					Total Number of Observations	10				Number of Distinct Observations		10
243										Number of Missing Observations		0
244					Minimum	248				Mean		642
245					Maximum	1843				Median		485
246					SD	459.6				Std. Error of Mean		145.3
247					Coefficient of Variation	0.716				Skewness		2.309
248												
249						Normal GOF Test						
250					Shapiro Wilk Test Statistic	0.734				Shapiro Wilk GOF Test		
251					5% Shapiro Wilk Critical Value	0.842				Data Not Normal at 5% Significance Level		
252					Lilliefors Test Statistic	0.243				Lilliefors GOF Test		
253					5% Lilliefors Critical Value	0.28				Data appear Normal at 5% Significance Level		
254						Data appear Approximate Normal at 5% Significance Level						
255												
256						Assuming Normal Distribution						
257					95% Normal UCL					95% UCLs (Adjusted for Skewness)		
258					95% Student's-t UCL	908.4				95% Adjusted-CLT UCL (Chen-1995)		994.4
259										95% Modified-t UCL (Johnson-1978)		926.1
260												

	A	B	C	D	E	F	G	H	I	J	K	L
261	Gamma GOF Test											
262					A-D Test Statistic	0.491	Anderson-Darling Gamma GOF Test					
263					5% A-D Critical Value	0.732	Detected data appear Gamma Distributed at 5% Significance Level					
264					K-S Test Statistic	0.182	Kolmogrov-Smirnoff Gamma GOF Test					
265					5% K-S Critical Value	0.268	Detected data appear Gamma Distributed at 5% Significance Level					
266	Detected data appear Gamma Distributed at 5% Significance Level											
267												
268	Gamma Statistics											
269					k hat (MLE)	3.221	k star (bias corrected MLE)					2.321
270					Theta hat (MLE)	199.3	Theta star (bias corrected MLE)					276.6
271					nu hat (MLE)	64.41	nu star (bias corrected)					46.42
272					MLE Mean (bias corrected)	642	MLE Sd (bias corrected)					421.4
273							Approximate Chi Square Value (0.05)					31.79
274					Adjusted Level of Significance	0.0267	Adjusted Chi Square Value					29.7
275												
276	Assuming Gamma Distribution											
277				95% Approximate Gamma UCL (use when n>=50))		937.5	95% Adjusted Gamma UCL (use when n<50)					1004
278												
279	Lognormal GOF Test											
280					Shapiro Wilk Test Statistic	0.942	Shapiro Wilk Lognormal GOF Test					
281					5% Shapiro Wilk Critical Value	0.842	Data appear Lognormal at 5% Significance Level					
282					Lilliefors Test Statistic	0.147	Lilliefors Lognormal GOF Test					
283					5% Lilliefors Critical Value	0.28	Data appear Lognormal at 5% Significance Level					
284	Data appear Lognormal at 5% Significance Level											
285												
286	Lognormal Statistics											
287					Minimum of Logged Data	5.513	Mean of logged Data					6.301
288					Maximum of Logged Data	7.519	SD of logged Data					0.563
289												
290	Assuming Lognormal Distribution											
291					95% H-UCL	985.9	90% Chebyshev (MVUE) UCL					970.4
292					95% Chebyshev (MVUE) UCL	1126	97.5% Chebyshev (MVUE) UCL					1341
293					99% Chebyshev (MVUE) UCL	1764						
294												
295	Nonparametric Distribution Free UCL Statistics											
296	Data appear to follow a Discernible Distribution at 5% Significance Level											
297												
298	Nonparametric Distribution Free UCLs											
299					95% CLT UCL	881	95% Jackknife UCL					908.4
300					95% Standard Bootstrap UCL	869.9	95% Bootstrap-t UCL					1199
301					95% Hall's Bootstrap UCL	1832	95% Percentile Bootstrap UCL					889.5
302					95% BCA Bootstrap UCL	1003						
303					90% Chebyshev(Mean, Sd) UCL	1078	95% Chebyshev(Mean, Sd) UCL					1275
304					97.5% Chebyshev(Mean, Sd) UCL	1550	99% Chebyshev(Mean, Sd) UCL					2088
305												
306	Suggested UCL to Use											
307					95% Student's-t UCL	908.4						
308												
309	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
310	These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)											
311	and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.											
312	For additional insight the user may want to consult a statistician.											

	A	B	C	D	E	F	G	H	I	J	K	L
313												
314												
315	Neptunium-237											
316												
317						General Statistics						
318					Total Number of Observations	10				Number of Distinct Observations		4
319										Number of Missing Observations		0
320					Minimum	0.00377				Mean		0.201
321					Maximum	0.53				Median		0.201
322					SD	0.135				Std. Error of Mean		0.0427
323					Coefficient of Variation	0.671				Skewness		1.439
324												
325						Normal GOF Test						
326					Shapiro Wilk Test Statistic	0.725				Shapiro Wilk GOF Test		
327					5% Shapiro Wilk Critical Value	0.842				Data Not Normal at 5% Significance Level		
328					Lilliefors Test Statistic	0.4				Lilliefors GOF Test		
329					5% Lilliefors Critical Value	0.28				Data Not Normal at 5% Significance Level		
330						Data Not Normal at 5% Significance Level						
331												
332						Assuming Normal Distribution						
333					95% Normal UCL					95% UCLs (Adjusted for Skewness)		
334					95% Student's-t UCL	0.28				95% Adjusted-CLT UCL (Chen-1995)		0.292
335										95% Modified-t UCL (Johnson-1978)		0.283
336												
337						Gamma GOF Test						
338					A-D Test Statistic	1.564				Anderson-Darling Gamma GOF Test		
339					5% A-D Critical Value	0.742				Data Not Gamma Distributed at 5% Significance Level		
340					K-S Test Statistic	0.413				Kolmogrov-Smirnoff Gamma GOF Test		
341					5% K-S Critical Value	0.272				Data Not Gamma Distributed at 5% Significance Level		
342						Data Not Gamma Distributed at 5% Significance Level						
343												
344						Gamma Statistics						
345					k hat (MLE)	1.373				k star (bias corrected MLE)		1.028
346					Theta hat (MLE)	0.147				Theta star (bias corrected MLE)		0.196
347					nu hat (MLE)	27.47				nu star (bias corrected)		20.56
348					MLE Mean (bias corrected)	0.201				MLE Sd (bias corrected)		0.199
349										Approximate Chi Square Value (0.05)		11.26
350					Adjusted Level of Significance	0.0267				Adjusted Chi Square Value		10.09
351												
352						Assuming Gamma Distribution						
353					95% Approximate Gamma UCL (use when n>=50))	0.367				95% Adjusted Gamma UCL (use when n<50)		0.41
354												
355						Lognormal GOF Test						
356					Shapiro Wilk Test Statistic	0.626				Shapiro Wilk Lognormal GOF Test		
357					5% Shapiro Wilk Critical Value	0.842				Data Not Lognormal at 5% Significance Level		
358					Lilliefors Test Statistic	0.419				Lilliefors Lognormal GOF Test		
359					5% Lilliefors Critical Value	0.28				Data Not Lognormal at 5% Significance Level		
360						Data Not Lognormal at 5% Significance Level						
361												
362						Lognormal Statistics						
363					Minimum of Logged Data	-5.581				Mean of logged Data		-2.009
364					Maximum of Logged Data	-0.635				SD of logged Data		1.342

	A	B	C	D	E	F	G	H	I	J	K	L
365												
366					Assuming Lognormal Distribution							
367					95% H-UCL	1.845			90% Chebyshev (MVUE) UCL			0.672
368					95% Chebyshev (MVUE) UCL	0.847			97.5% Chebyshev (MVUE) UCL			1.09
369					99% Chebyshev (MVUE) UCL	1.567						
370												
371					Nonparametric Distribution Free UCL Statistics							
372					Data do not follow a Discernible Distribution (0.05)							
373												
374					Nonparametric Distribution Free UCLs							
375					95% CLT UCL	0.272			95% Jackknife UCL			0.28
376					95% Standard Bootstrap UCL	N/A			95% Bootstrap-t UCL			N/A
377					95% Hall's Bootstrap UCL	N/A			95% Percentile Bootstrap UCL			N/A
378					95% BCA Bootstrap UCL	N/A						
379					90% Chebyshev(Mean, Sd) UCL	0.329			95% Chebyshev(Mean, Sd) UCL			0.388
380					97.5% Chebyshev(Mean, Sd) UCL	0.468			99% Chebyshev(Mean, Sd) UCL			0.626
381												
382					Suggested UCL to Use							
383					95% Chebyshev (Mean, Sd) UCL	0.388						
384												
385					Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.							
386					These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)							
387					and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.							
388					For additional insight the user may want to consult a statistician.							
389												
390												
391	PAH, Total											
392												
393					General Statistics							
394					Total Number of Observations	10			Number of Distinct Observations			4
395									Number of Missing Observations			0
396					Minimum	0.0663			Mean			0.301
397					Maximum	0.49			Median			0.301
398					SD	0.102			Std. Error of Mean			0.0321
399					Coefficient of Variation	0.337			Skewness			-0.811
400												
401					Normal GOF Test							
402					Shapiro Wilk Test Statistic	0.718			Shapiro Wilk GOF Test			
403					5% Shapiro Wilk Critical Value	0.842			Data Not Normal at 5% Significance Level			
404					Lilliefors Test Statistic	0.4			Lilliefors GOF Test			
405					5% Lilliefors Critical Value	0.28			Data Not Normal at 5% Significance Level			
406					Data Not Normal at 5% Significance Level							
407												
408					Assuming Normal Distribution							
409					95% Normal UCL				95% UCLs (Adjusted for Skewness)			
410					95% Student's-t UCL	0.36			95% Adjusted-CLT UCL (Chen-1995)			0.345
411									95% Modified-t UCL (Johnson-1978)			0.359
412												
413					Gamma GOF Test							
414					A-D Test Statistic	1.935			Anderson-Darling Gamma GOF Test			
415					5% A-D Critical Value	0.729			Data Not Gamma Distributed at 5% Significance Level			
416					K-S Test Statistic	0.455			Kolmogrov-Smirnoff Gamma GOF Test			

	A	B	C	D	E	F	G	H	I	J	K	L
417					5% K-S Critical Value	0.267	Data Not Gamma Distributed at 5% Significance Level					
418	**Data Not Gamma Distributed at 5% Significance Level**											
419												
420	**Gamma Statistics**											
421					k hat (MLE)	5.811	k star (bias corrected MLE)					4.135
422					Theta hat (MLE)	0.0518	Theta star (bias corrected MLE)					0.0728
423					nu hat (MLE)	116.2	nu star (bias corrected)					82.69
424					MLE Mean (bias corrected)	0.301	MLE Sd (bias corrected)					0.148
425							Approximate Chi Square Value (0.05)					62.74
426					Adjusted Level of Significance	0.0267	Adjusted Chi Square Value					59.72
427												
428	**Assuming Gamma Distribution**											
429			95% Approximate Gamma UCL (use when n>=50))			0.397	95% Adjusted Gamma UCL (use when n<50)					0.417
430												
431	**Lognormal GOF Test**											
432					Shapiro Wilk Test Statistic	0.578	**Shapiro Wilk Lognormal GOF Test**					
433					5% Shapiro Wilk Critical Value	0.842	Data Not Lognormal at 5% Significance Level					
434					Lilliefors Test Statistic	0.467	**Lilliefors Lognormal GOF Test**					
435					5% Lilliefors Critical Value	0.28	Data Not Lognormal at 5% Significance Level					
436	**Data Not Lognormal at 5% Significance Level**											
437												
438	**Lognormal Statistics**											
439					Minimum of Logged Data	-2.714	Mean of logged Data					-1.289
440					Maximum of Logged Data	-0.713	SD of logged Data					0.524
441												
442	**Assuming Lognormal Distribution**											
443					95% H-UCL	0.469	90% Chebyshev (MVUE) UCL					0.469
444					95% Chebyshev (MVUE) UCL	0.541	97.5% Chebyshev (MVUE) UCL					0.64
445					99% Chebyshev (MVUE) UCL	0.835						
446												
447	**Nonparametric Distribution Free UCL Statistics**											
448	**Data do not follow a Discernible Distribution (0.05)**											
449												
450	**Nonparametric Distribution Free UCLs**											
451					95% CLT UCL	0.354	95% Jackknife UCL					0.36
452					95% Standard Bootstrap UCL	N/A	95% Bootstrap-t UCL					N/A
453					95% Hall's Bootstrap UCL	N/A	95% Percentile Bootstrap UCL					N/A
454					95% BCA Bootstrap UCL	N/A						
455					90% Chebyshev(Mean, Sd) UCL	0.398	95% Chebyshev(Mean, Sd) UCL					0.441
456					97.5% Chebyshev(Mean, Sd) UCL	0.502	99% Chebyshev(Mean, Sd) UCL					0.621
457												
458	**Suggested UCL to Use**											
459					95% Chebyshev (Mean, Sd) UCL	0.441						
460												
461	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
462	These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)											
463	and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.											
464	For additional insight the user may want to consult a statistician.											
465												
466	**Note: For highly negatively-skewed data, confidence limits (e.g., Chen, Johnson, Lognormal, and Gamma) may not be**											
467	**reliable. Chen's and Johnson's methods provide adjustments for positvely skewed data sets.**											
468												

	A	B	C	D	E	F	G	H	I	J	K	L
469												
470	PCB, Total											
471												
472						General Statistics						
473					Total Number of Observations	10				Number of Distinct Observations		4
474										Number of Missing Observations		0
475					Minimum	0.1				Mean		3.663
476					Maximum	5				Median		5
477					SD	2.172				Std. Error of Mean		0.687
478					Coefficient of Variation	0.593				Skewness		-1.101
479												
480						Normal GOF Test						
481					Shapiro Wilk Test Statistic	0.629				Shapiro Wilk GOF Test		
482					5% Shapiro Wilk Critical Value	0.842				Data Not Normal at 5% Significance Level		
483					Lilliefors Test Statistic	0.431				Lilliefors GOF Test		
484					5% Lilliefors Critical Value	0.28				Data Not Normal at 5% Significance Level		
485						Data Not 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	4.922				95% Adjusted-CLT UCL (Chen-1995)		4.537
490										95% Modified-t UCL (Johnson-1978)		4.882
491												
492						Gamma GOF Test						
493					A-D Test Statistic	1.892				Anderson-Darling Gamma GOF Test		
494					5% A-D Critical Value	0.746				Data Not Gamma Distributed at 5% Significance Level		
495					K-S Test Statistic	0.445				Kolmogrov-Smirnoff Gamma GOF Test		
496					5% K-S Critical Value	0.273				Data Not Gamma Distributed at 5% Significance Level		
497						Data Not Gamma Distributed at 5% Significance Level						
498												
499						Gamma Statistics						
500					k hat (MLE)	1.124				k star (bias corrected MLE)		0.853
501					Theta hat (MLE)	3.259				Theta star (bias corrected MLE)		4.293
502					nu hat (MLE)	22.48				nu star (bias corrected)		17.07
503					MLE Mean (bias corrected)	3.663				MLE Sd (bias corrected)		3.965
504										Approximate Chi Square Value (0.05)		8.72
505					Adjusted Level of Significance	0.0267				Adjusted Chi Square Value		7.705
506												
507						Assuming Gamma Distribution						
508					95% Approximate Gamma UCL (use when n>=50))	7.169				95% Adjusted Gamma UCL (use when n<50)		8.114
509												
510						Lognormal GOF Test						
511					Shapiro Wilk Test Statistic	0.647				Shapiro Wilk Lognormal GOF Test		
512					5% Shapiro Wilk Critical Value	0.842				Data Not Lognormal at 5% Significance Level		
513					Lilliefors Test Statistic	0.414				Lilliefors Lognormal GOF Test		
514					5% Lilliefors Critical Value	0.28				Data Not Lognormal at 5% Significance Level		
515						Data Not Lognormal at 5% Significance Level						
516												
517						Lognormal Statistics						
518					Minimum of Logged Data	-2.303				Mean of logged Data		0.791
519					Maximum of Logged Data	1.609				SD of logged Data		1.447
520												

	A	B	C	D	E	F	G	H	I	J	K	L
521					Assuming Lognormal Distribution							
522					95% H-UCL	45.04				90% Chebyshev (MVUE) UCL		12.96
523					95% Chebyshev (MVUE) UCL	16.43				97.5% Chebyshev (MVUE) UCL		21.26
524					99% Chebyshev (MVUE) UCL	30.73						
525												
526					Nonparametric Distribution Free UCL Statistics							
527					Data do not follow a Discernible Distribution (0.05)							
528												
529					Nonparametric Distribution Free UCLs							
530					95% CLT UCL	4.793				95% Jackknife UCL		4.922
531					95% Standard Bootstrap UCL	N/A				95% Bootstrap-t UCL		N/A
532					95% Hall's Bootstrap UCL	N/A				95% Percentile Bootstrap UCL		N/A
533					95% BCA Bootstrap UCL	N/A						
534					90% Chebyshev(Mean, Sd) UCL	5.724				95% Chebyshev(Mean, Sd) UCL		6.657
535					97.5% Chebyshev(Mean, Sd) UCL	7.953				99% Chebyshev(Mean, Sd) UCL		10.5
536												
537					Suggested UCL to Use							
538					95% Chebyshev (Mean, Sd) UCL	6.657						
539												
540					Recommended UCL exceeds the maximum observation							
541												
542					Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.							
543					These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)							
544					and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.							
545					For additional insight the user may want to consult a statistician.							
546												
547					Note: For highly negatively-skewed data, confidence limits (e.g., Chen, Johnson, Lognormal, and Gamma) may not be							
548					reliable. Chen's and Johnson's methods provide adjustments for positvely skewed data sets.							
549												
550												
551	Technetium-99											
552												
553					General Statistics							
554					Total Number of Observations	10				Number of Distinct Observations		4
555										Number of Missing Observations		0
556					Minimum	0				Mean		50.88
557					Maximum	150				Median		50.88
558					SD	40.47				Std. Error of Mean		12.8
559					Coefficient of Variation	0.795				Skewness		1.529
560												
561					Normal GOF Test							
562					Shapiro Wilk Test Statistic	0.705				Shapiro Wilk GOF Test		
563					5% Shapiro Wilk Critical Value	0.842				Data Not Normal at 5% Significance Level		
564					Lilliefors Test Statistic	0.4				Lilliefors GOF Test		
565					5% Lilliefors Critical Value	0.28				Data Not Normal at 5% Significance Level		
566					Data Not Normal at 5% Significance Level							
567												
568					Assuming Normal Distribution							
569					95% Normal UCL					95% UCLs (Adjusted for Skewness)		
570					95% Student's-t UCL	74.34				95% Adjusted-CLT UCL (Chen-1995)		78.54
571										95% Modified-t UCL (Johnson-1978)		75.37
572					Gamma Statistics Not Available							

	A	B	C	D	E	F	G	H	I	J	K	L
573	Lognormal Statistics Not Available											
574												
575	Nonparametric Distribution Free UCL Statistics											
576	Data do not follow a Discernible Distribution (0.05)											
577												
578	Nonparametric Distribution Free UCLs											
579					95% CLT UCL	71.93			95% Jackknife UCL			74.34
580					95% Standard Bootstrap UCL	N/A			95% Bootstrap-t UCL			N/A
581					95% Hall's Bootstrap UCL	N/A			95% Percentile Bootstrap UCL			N/A
582					95% BCA Bootstrap UCL	N/A						
583					90% Chebyshev(Mean, Sd) UCL	89.27			95% Chebyshev(Mean, Sd) UCL			106.7
584					97.5% Chebyshev(Mean, Sd) UCL	130.8			99% Chebyshev(Mean, Sd) UCL			178.2
585												
586	Suggested UCL to Use											
587					95% Chebyshev (Mean, Sd) UCL	106.7						
588												
589	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
590	These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)											
591	and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.											
592	For additional insight the user may want to consult a statistician.											
593												
594												
595	Uranium											
596												
597	General Statistics											
598					Total Number of Observations	10			Number of Distinct Observations			3
599									Number of Missing Observations			0
600					Minimum	4.9			Mean			21.49
601					Maximum	130			Median			10
602					SD	38.16			Std. Error of Mean			12.07
603					Coefficient of Variation	1.776			Skewness			3.152
604												
605	Normal GOF Test											
606					Shapiro Wilk Test Statistic	0.393			Shapiro Wilk GOF Test			
607					5% Shapiro Wilk Critical Value	0.842			Data Not Normal at 5% Significance Level			
608					Lilliefors Test Statistic	0.518			Lilliefors GOF Test			
609					5% Lilliefors Critical Value	0.28			Data Not Normal at 5% Significance Level			
610	Data Not Normal at 5% Significance Level											
611												
612	Assuming Normal Distribution											
613					95% Normal UCL				95% UCLs (Adjusted for Skewness)			
614					95% Student's-t UCL	43.61			95% Adjusted-CLT UCL (Chen-1995)			54.19
615									95% Modified-t UCL (Johnson-1978)			45.62
616												
617	Gamma GOF Test											
618					A-D Test Statistic	2.827			Anderson-Darling Gamma GOF Test			
619					5% A-D Critical Value	0.748			Data Not Gamma Distributed at 5% Significance Level			
620					K-S Test Statistic	0.527			Kolmogrov-Smirnoff Gamma GOF Test			
621					5% K-S Critical Value	0.274			Data Not Gamma Distributed at 5% Significance Level			
622	Data Not Gamma Distributed at 5% Significance Level											
623												
624	Gamma Statistics											

	A	B	C	D	E	F	G	H	I	J	K	L
625					k hat (MLE)	0.996				k star (bias corrected MLE)		0.764
626					Theta hat (MLE)	21.58				Theta star (bias corrected MLE)		28.13
627					nu hat (MLE)	19.92				nu star (bias corrected)		15.28
628					MLE Mean (bias corrected)	21.49				MLE Sd (bias corrected)		24.59
629										Approximate Chi Square Value (0.05)		7.454
630					Adjusted Level of Significance	0.0267				Adjusted Chi Square Value		6.527
631												
632					**Assuming Gamma Distribution**							
633					95% Approximate Gamma UCL (use when n>=50))	44.04				95% Adjusted Gamma UCL (use when n<50)		50.3
634												
635					**Lognormal GOF Test**							
636					Shapiro Wilk Test Statistic	0.525				**Shapiro Wilk Lognormal GOF Test**		
637					5% Shapiro Wilk Critical Value	0.842				Data Not Lognormal at 5% Significance Level		
638					Lilliefors Test Statistic	0.485				**Lilliefors Lognormal GOF Test**		
639					5% Lilliefors Critical Value	0.28				Data Not Lognormal at 5% Significance Level		
640					**Data Not Lognormal at 5% Significance Level**							
641												
642					**Lognormal Statistics**							
643					Minimum of Logged Data	1.589				Mean of logged Data		2.488
644					Maximum of Logged Data	4.868				SD of logged Data		0.866
645												
646					**Assuming Lognormal Distribution**							
647					95% H-UCL	39.66				90% Chebyshev (MVUE) UCL		30.98
648					95% Chebyshev (MVUE) UCL	37.45				97.5% Chebyshev (MVUE) UCL		46.43
649					99% Chebyshev (MVUE) UCL	64.07						
650												
651					**Nonparametric Distribution Free UCL Statistics**							
652					**Data do not follow a Discernible Distribution (0.05)**							
653												
654					**Nonparametric Distribution Free UCLs**							
655					95% CLT UCL	41.34				95% Jackknife UCL		43.61
656					95% Standard Bootstrap UCL	N/A				95% Bootstrap-t UCL		N/A
657					95% Hall's Bootstrap UCL	N/A				95% Percentile Bootstrap UCL		N/A
658					95% BCA Bootstrap UCL	N/A						
659					90% Chebyshev(Mean, Sd) UCL	57.69				95% Chebyshev(Mean, Sd) UCL		74.09
660					97.5% Chebyshev(Mean, Sd) UCL	96.85				99% Chebyshev(Mean, Sd) UCL		141.6
661												
662					**Suggested UCL to Use**							
663					95% Chebyshev (Mean, Sd) UCL	74.09						
664												
665					Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.							
666					These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)							
667					and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.							
668					For additional insight the user may want to consult a statistician.							
669												
670												
671	**Uranium-234**											
672												
673					**General Statistics**							
674					Total Number of Observations	10				Number of Distinct Observations		4
675										Number of Missing Observations		0
676					Minimum	1.16				Mean		12.88

	A	B	C	D	E	F	G	H	I	J	K	L
677					Maximum	35.7					Median	12.88
678					SD	9.316					Std. Error of Mean	2.946
679					Coefficient of Variation	0.723					Skewness	1.529
680												
681					Normal GOF Test							
682					Shapiro Wilk Test Statistic	0.705	Shapiro Wilk GOF Test					
683					5% Shapiro Wilk Critical Value	0.842	Data Not Normal at 5% Significance Level					
684					Lilliefors Test Statistic	0.4	Lilliefors GOF Test					
685					5% Lilliefors Critical Value	0.28	Data Not Normal at 5% Significance Level					
686					Data Not Normal at 5% Significance Level							
687												
688					Assuming Normal Distribution							
689			95% Normal UCL				95% UCLs (Adjusted for Skewness)					
690					95% Student's-t UCL	18.28	95% Adjusted-CLT UCL (Chen-1995)					19.25
691							95% Modified-t UCL (Johnson-1978)					18.52
692												
693					Gamma GOF Test							
694					A-D Test Statistic	1.509	Anderson-Darling Gamma GOF Test					
695					5% A-D Critical Value	0.738	Data Not Gamma Distributed at 5% Significance Level					
696					K-S Test Statistic	0.404	Kolmogrov-Smirnoff Gamma GOF Test					
697					5% K-S Critical Value	0.271	Data Not Gamma Distributed at 5% Significance Level					
698					Data Not Gamma Distributed at 5% Significance Level							
699												
700					Gamma Statistics							
701					k hat (MLE)	1.634	k star (bias corrected MLE)					1.21
702					Theta hat (MLE)	7.885	Theta star (bias corrected MLE)					10.64
703					nu hat (MLE)	32.68	nu star (bias corrected)					24.21
704					MLE Mean (bias corrected)	12.88	MLE Sd (bias corrected)					11.71
705							Approximate Chi Square Value (0.05)					14.01
706					Adjusted Level of Significance	0.0267	Adjusted Chi Square Value					12.68
707												
708					Assuming Gamma Distribution							
709					95% Approximate Gamma UCL (use when n>=50))	22.27	95% Adjusted Gamma UCL (use when n<50)					24.6
710												
711					Lognormal GOF Test							
712					Shapiro Wilk Test Statistic	0.713	Shapiro Wilk Lognormal GOF Test					
713					5% Shapiro Wilk Critical Value	0.842	Data Not Lognormal at 5% Significance Level					
714					Lilliefors Test Statistic	0.428	Lilliefors Lognormal GOF Test					
715					5% Lilliefors Critical Value	0.28	Data Not Lognormal at 5% Significance Level					
716					Data Not Lognormal at 5% Significance Level							
717												
718					Lognormal Statistics							
719					Minimum of Logged Data	0.148	Mean of logged Data					2.22
720					Maximum of Logged Data	3.575	SD of logged Data					1.033
721												
722					Assuming Lognormal Distribution							
723					95% H-UCL	46.74	90% Chebyshev (MVUE) UCL					29.61
724					95% Chebyshev (MVUE) UCL	36.41	97.5% Chebyshev (MVUE) UCL					45.85
725					99% Chebyshev (MVUE) UCL	64.39						
726												
727					Nonparametric Distribution Free UCL Statistics							
728					Data do not follow a Discernible Distribution (0.05)							

	A	B	C	D	E	F	G	H	I	J	K	L
729												
730					Nonparametric Distribution Free UCLs							
731					95% CLT UCL	17.73				95% Jackknife UCL		18.28
732				95% Standard Bootstrap UCL		N/A				95% Bootstrap-t UCL		N/A
733				95% Hall's Bootstrap UCL		N/A				95% Percentile Bootstrap UCL		N/A
734				95% BCA Bootstrap UCL		N/A						
735				90% Chebyshev(Mean, Sd) UCL		21.72				95% Chebyshev(Mean, Sd) UCL		25.72
736				97.5% Chebyshev(Mean, Sd) UCL		31.28				99% Chebyshev(Mean, Sd) UCL		42.2
737												
738					Suggested UCL to Use							
739				95% Chebyshev (Mean, Sd) UCL		25.72						
740												
741					Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.							
742					These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)							
743					and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.							
744					For additional insight the user may want to consult a statistician.							
745												
746												
747	Uranium-235											
748												
749					General Statistics							
750				Total Number of Observations		10				Number of Distinct Observations		4
751										Number of Missing Observations		0
752				Minimum		0.0572				Mean		1.436
753				Maximum		4.12				Median		1.436
754				SD		1.096				Std. Error of Mean		0.347
755				Coefficient of Variation		0.763				Skewness		1.529
756												
757					Normal GOF Test							
758				Shapiro Wilk Test Statistic		0.705				Shapiro Wilk GOF Test		
759				5% Shapiro Wilk Critical Value		0.842				Data Not Normal at 5% Significance Level		
760				Lilliefors Test Statistic		0.4				Lilliefors GOF Test		
761				5% Lilliefors Critical Value		0.28				Data Not Normal at 5% Significance Level		
762					Data Not Normal at 5% Significance Level							
763												
764					Assuming Normal Distribution							
765				95% Normal UCL						95% UCLs (Adjusted for Skewness)		
766				95% Student's-t UCL		2.071				95% Adjusted-CLT UCL (Chen-1995)		2.185
767										95% Modified-t UCL (Johnson-1978)		2.099
768												
769					Gamma GOF Test							
770				A-D Test Statistic		1.56				Anderson-Darling Gamma GOF Test		
771				5% A-D Critical Value		0.744				Data Not Gamma Distributed at 5% Significance Level		
772				K-S Test Statistic		0.419				Kolmogrov-Smirnoff Gamma GOF Test		
773				5% K-S Critical Value		0.273				Data Not Gamma Distributed at 5% Significance Level		
774					Data Not Gamma Distributed at 5% Significance Level							
775												
776					Gamma Statistics							
777				k hat (MLE)		1.234				k star (bias corrected MLE)		0.93
778				Theta hat (MLE)		1.164				Theta star (bias corrected MLE)		1.543
779				nu hat (MLE)		24.68				nu star (bias corrected)		18.61
780				MLE Mean (bias corrected)		1.436				MLE Sd (bias corrected)		1.488

	A	B	C	D	E	F	G	H	I	J	K	L
781											Approximate Chi Square Value (0.05)	9.832
782					Adjusted Level of Significance	0.0267					Adjusted Chi Square Value	8.744
783												
784					Assuming Gamma Distribution							
785				95% Approximate Gamma UCL (use when n>=50))		2.717					95% Adjusted Gamma UCL (use when n<50)	3.055
786												
787					Lognormal GOF Test							
788					Shapiro Wilk Test Statistic	0.694			Shapiro Wilk Lognormal GOF Test			
789					5% Shapiro Wilk Critical Value	0.842			Data Not Lognormal at 5% Significance Level			
790					Lilliefors Test Statistic	0.438			Lilliefors Lognormal GOF Test			
791					5% Lilliefors Critical Value	0.28			Data Not Lognormal at 5% Significance Level			
792					Data Not Lognormal at 5% Significance Level							
793												
794					Lognormal Statistics							
795					Minimum of Logged Data	-2.861					Mean of logged Data	-0.0954
796					Maximum of Logged Data	1.416					SD of logged Data	1.299
797												
798					Assuming Lognormal Distribution							
799					95% H-UCL	10.7					90% Chebyshev (MVUE) UCL	4.272
800					95% Chebyshev (MVUE) UCL	5.366					97.5% Chebyshev (MVUE) UCL	6.885
801					99% Chebyshev (MVUE) UCL	9.87						
802												
803					Nonparametric Distribution Free UCL Statistics							
804					Data do not follow a Discernible Distribution (0.05)							
805												
806					Nonparametric Distribution Free UCLs							
807					95% CLT UCL	2.006					95% Jackknife UCL	2.071
808					95% Standard Bootstrap UCL	N/A					95% Bootstrap-t UCL	N/A
809					95% Hall's Bootstrap UCL	N/A					95% Percentile Bootstrap UCL	N/A
810					95% BCA Bootstrap UCL	N/A						
811					90% Chebyshev(Mean, Sd) UCL	2.475					95% Chebyshev(Mean, Sd) UCL	2.946
812					97.5% Chebyshev(Mean, Sd) UCL	3.6					99% Chebyshev(Mean, Sd) UCL	4.884
813												
814					Suggested UCL to Use							
815					95% Chebyshev (Mean, Sd) UCL	2.946						
816												
817					Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.							
818					These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)							
819					and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.							
820					For additional insight the user may want to consult a statistician.							
821												
822												
823	Uranium-238											
824												
825					General Statistics							
826					Total Number of Observations	10					Number of Distinct Observations	4
827											Number of Missing Observations	0
828					Minimum	1.17					Mean	22.59
829					Maximum	64.1					Median	22.59
830					SD	16.95					Std. Error of Mean	5.359
831					Coefficient of Variation	0.75					Skewness	1.529
832												

	A	B	C	D	E	F	G	H	I	J	K	L
833						Normal GOF Test						
834					Shapiro Wilk Test Statistic	0.706	Shapiro Wilk GOF Test					
835					5% Shapiro Wilk Critical Value	0.842	Data Not Normal at 5% Significance Level					
836					Lilliefors Test Statistic	0.4	Lilliefors GOF Test					
837					5% Lilliefors Critical Value	0.28	Data Not Normal at 5% Significance Level					
838					Data Not Normal at 5% Significance Level							
839												
840					Assuming Normal Distribution							
841			95% Normal UCL				95% UCLs (Adjusted for Skewness)					
842					95% Student's-t UCL	32.42	95% Adjusted-CLT UCL (Chen-1995)					34.18
843							95% Modified-t UCL (Johnson-1978)					32.85
844												
845					Gamma GOF Test							
846					A-D Test Statistic	1.531	Anderson-Darling Gamma GOF Test					
847					5% A-D Critical Value	0.742	Data Not Gamma Distributed at 5% Significance Level					
848					K-S Test Statistic	0.414	Kolmogrov-Smirnoff Gamma GOF Test					
849					5% K-S Critical Value	0.272	Data Not Gamma Distributed at 5% Significance Level					
850					Data Not Gamma Distributed at 5% Significance Level							
851												
852					Gamma Statistics							
853					k hat (MLE)	1.358	k star (bias corrected MLE)					1.017
854					Theta hat (MLE)	16.64	Theta star (bias corrected MLE)					22.22
855					nu hat (MLE)	27.15	nu star (bias corrected)					20.34
856					MLE Mean (bias corrected)	22.59	MLE Sd (bias corrected)					22.4
857							Approximate Chi Square Value (0.05)					11.1
858					Adjusted Level of Significance	0.0267	Adjusted Chi Square Value					9.935
859												
860					Assuming Gamma Distribution							
861					95% Approximate Gamma UCL (use when n>=50))	41.39	95% Adjusted Gamma UCL (use when n<50)					46.25
862												
863					Lognormal GOF Test							
864					Shapiro Wilk Test Statistic	0.703	Shapiro Wilk Lognormal GOF Test					
865					5% Shapiro Wilk Critical Value	0.842	Data Not Lognormal at 5% Significance Level					
866					Lilliefors Test Statistic	0.434	Lilliefors Lognormal GOF Test					
867					5% Lilliefors Critical Value	0.28	Data Not Lognormal at 5% Significance Level					
868					Data Not Lognormal at 5% Significance Level							
869												
870					Lognormal Statistics							
871					Minimum of Logged Data	0.157	Mean of logged Data					2.706
872					Maximum of Logged Data	4.16	SD of logged Data					1.201
873												
874					Assuming Lognormal Distribution							
875					95% H-UCL	126.7	90% Chebyshev (MVUE) UCL					61.03
876					95% Chebyshev (MVUE) UCL	76.13	97.5% Chebyshev (MVUE) UCL					97.09
877					99% Chebyshev (MVUE) UCL	138.2						
878												
879					Nonparametric Distribution Free UCL Statistics							
880					Data do not follow a Discernible Distribution (0.05)							
881												
882					Nonparametric Distribution Free UCLs							
883					95% CLT UCL	31.41	95% Jackknife UCL					32.42
884					95% Standard Bootstrap UCL	N/A	95% Bootstrap-t UCL					N/A

	A	B	C	D	E	F	G	H	I	J	K	L
885					95% Hall's Bootstrap UCL	N/A				95% Percentile Bootstrap UCL		N/A
886					95% BCA Bootstrap UCL	N/A						
887					90% Chebyshev(Mean, Sd) UCL	38.67				95% Chebyshev(Mean, Sd) UCL		45.95
888					97.5% Chebyshev(Mean, Sd) UCL	56.06				99% Chebyshev(Mean, Sd) UCL		75.92
889												
890					**Suggested UCL to Use**							
891					95% Chebyshev (Mean, Sd) UCL	45.95						
892												
893					Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.							
894					These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)							
895					and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.							
896					For additional insight the user may want to consult a statistician.							
897												
898												
899	**Vanadium**											
900												
901					**General Statistics**							
902					Total Number of Observations	10				Number of Distinct Observations		9
903										Number of Missing Observations		0
904					Minimum	73				Mean		95
905					Maximum	138				Median		92.5
906					SD	18.11				Std. Error of Mean		5.727
907					Coefficient of Variation	0.191				Skewness		1.458
908												
909					**Normal GOF Test**							
910					Shapiro Wilk Test Statistic	0.875				**Shapiro Wilk GOF Test**		
911					5% Shapiro Wilk Critical Value	0.842				Data appear Normal at 5% Significance Level		
912					Lilliefors Test Statistic	0.191				**Lilliefors GOF Test**		
913					5% Lilliefors Critical Value	0.28				Data appear Normal at 5% Significance Level		
914					**Data appear Normal at 5% Significance Level**							
915												
916					**Assuming Normal Distribution**							
917					**95% Normal UCL**					**95% UCLs (Adjusted for Skewness)**		
918					95% Student's-t UCL	105.5				95% Adjusted-CLT UCL (Chen-1995)		107.2
919										95% Modified-t UCL (Johnson-1978)		105.9
920												
921					**Gamma GOF Test**							
922					A-D Test Statistic	0.4				**Anderson-Darling Gamma GOF Test**		
923					5% A-D Critical Value	0.724				Detected data appear Gamma Distributed at 5% Significance Level		
924					K-S Test Statistic	0.16				**Kolmogrov-Smirnoff Gamma GOF Test**		
925					5% K-S Critical Value	0.266				Detected data appear Gamma Distributed at 5% Significance Level		
926					**Detected data appear Gamma Distributed at 5% Significance Level**							
927												
928					**Gamma Statistics**							
929					k hat (MLE)	33.86				k star (bias corrected MLE)		23.77
930					Theta hat (MLE)	2.806				Theta star (bias corrected MLE)		3.997
931					nu hat (MLE)	677.2				nu star (bias corrected)		475.4
932					MLE Mean (bias corrected)	95				MLE Sd (bias corrected)		19.49
933										Approximate Chi Square Value (0.05)		425.8
934					Adjusted Level of Significance	0.0267				Adjusted Chi Square Value		417.7
935												
936					**Assuming Gamma Distribution**							

	A	B	C	D	E	F	G	H	I	J	K	L
937	95% Approximate Gamma UCL (use when n>=50))					106.1	95% Adjusted Gamma UCL (use when n<50)					108.1
938												
939	**Lognormal GOF Test**											
940	Shapiro Wilk Test Statistic					0.93	**Shapiro Wilk Lognormal GOF Test**					
941	5% Shapiro Wilk Critical Value					0.842	Data appear Lognormal at 5% Significance Level					
942	Lilliefors Test Statistic					0.161	**Lilliefors Lognormal GOF Test**					
943	5% Lilliefors Critical Value					0.28	Data appear Lognormal at 5% Significance Level					
944	**Data appear Lognormal at 5% Significance Level**											
945												
946	**Lognormal Statistics**											
947	Minimum of Logged Data					4.29	Mean of logged Data					4.539
948	Maximum of Logged Data					4.927	SD of logged Data					0.178
949												
950	**Assuming Lognormal Distribution**											
951	95% H-UCL					106.2	90% Chebyshev (MVUE) UCL					111
952	95% Chebyshev (MVUE) UCL					118.3	97.5% Chebyshev (MVUE) UCL					128.4
953	99% Chebyshev (MVUE) UCL					148.2						
954												
955	**Nonparametric Distribution Free UCL Statistics**											
956	**Data appear to follow a Discernible Distribution at 5% Significance Level**											
957												
958	**Nonparametric Distribution Free UCLs**											
959	95% CLT UCL					104.4	95% Jackknife UCL					105.5
960	95% Standard Bootstrap UCL					103.7	95% Bootstrap-t UCL					109.7
961	95% Hall's Bootstrap UCL					154.2	95% Percentile Bootstrap UCL					104.5
962	95% BCA Bootstrap UCL					106.7						
963	90% Chebyshev(Mean, Sd) UCL					112.2	95% Chebyshev(Mean, Sd) UCL					120
964	97.5% Chebyshev(Mean, Sd) UCL					130.8	99% Chebyshev(Mean, Sd) UCL					152
965												
966	**Suggested UCL to Use**											
967	95% Student's-t UCL					105.5						
968												
969	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
970	These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)											
971	and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.											
972	For additional insight the user may want to consult a statistician.											
973												