	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 12:57:37 PM								
5	From File			EPC_026SurfR1_a.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					4300	Mean					15107
17	Maximum					34600	Median					15107
18	SD					7974	Std. Error of Mean					2522
19	Coefficient of Variation					0.528	Skewness					1.504
20												
21	Normal GOF Test											
22	Shapiro Wilk Test Statistic					0.716	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					19729	95% Adjusted-CLT UCL (Chen-1995)					20536
31							95% Modified-t UCL (Johnson-1978)					19929
32												
33	Gamma GOF Test											
34	A-D Test Statistic					1.369	Anderson-Darling Gamma GOF Test					
35	5% A-D Critical Value					0.729	Data Not Gamma Distributed at 5% Significance Level					
36	K-S Test Statistic					0.366	Kolmogrov-Smirnoff Gamma GOF Test					
37	5% K-S Critical Value					0.268	Data Not Gamma Distributed at 5% Significance Level					
38	Data Not Gamma Distributed at 5% Significance Level											
39												
40	Gamma Statistics											
41	k hat (MLE)					4.055	k star (bias corrected MLE)					2.905
42	Theta hat (MLE)					3726	Theta star (bias corrected MLE)					5200
43	nu hat (MLE)					81.09	nu star (bias corrected)					58.1
44	MLE Mean (bias corrected)					15107	MLE Sd (bias corrected)					8863
45							Approximate Chi Square Value (0.05)					41.58
46	Adjusted Level of Significance					0.0267	Adjusted Chi Square Value					39.16
47												
48	Assuming Gamma Distribution											
49	95% Approximate Gamma UCL (use when n>=50))					21110	95% Adjusted Gamma UCL (use when n<50)					22414
50												
51	Lognormal GOF Test											
52	Shapiro Wilk Test Statistic					0.771	Shapiro Wilk Lognormal GOF Test					

53	5% Shapiro Wilk Critical Value					0.842	Data Not Lognormal at 5% Significance Level					
54	Lilliefors Test Statistic					0.39	**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					8.366	Mean of logged Data					9.495
60	Maximum of Logged Data					10.45	SD of logged Data					0.561
61												
62	**Assuming Lognormal Distribution**											
63	95% H-UCL					23948	90% Chebyshev (MVUE) UCL					23593
64	95% Chebyshev (MVUE) UCL					27358	97.5% Chebyshev (MVUE) UCL					32583
65	99% Chebyshev (MVUE) UCL					42848						
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					19254	95% Jackknife UCL					19729
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					22671	95% Chebyshev(Mean, Sd) UCL					26098
76	97.5% Chebyshev(Mean, Sd) UCL					30854	99% Chebyshev(Mean, Sd) UCL					40196
77												
78	**Suggested UCL to Use**											
79	95% Chebyshev (Mean, Sd) UCL					26098						
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	Arsenic											
88												
89	**General Statistics**											
90	Total Number of Observations					10	Number of Distinct Observations					5
91							Number of Missing Observations					0
92	Minimum					4.2	Mean					22.51
93	Maximum					81.4	Median					22.51
94	SD					22.01	Std. Error of Mean					6.959
95	Coefficient of Variation					0.978	Skewness					2.482
96												
97	**Normal GOF Test**											
98	Shapiro Wilk Test Statistic					0.66	**Shapiro Wilk GOF Test**					
99	5% Shapiro Wilk Critical Value					0.842	Data Not Normal at 5% Significance Level					
100	Lilliefors Test Statistic					0.4	**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	35.27				95% Adjusted-CLT UCL (Chen-1995)		39.79
107										95% Modified-t UCL (Johnson-1978)		36.18
108												
109	Gamma GOF Test											
110					A-D Test Statistic	0.73	Anderson-Darling Gamma GOF Test					
111					5% A-D Critical Value	0.738	Detected data appear Gamma Distributed at 5% Significance Level					
112					K-S Test Statistic	0.299	Kolmogrov-Smirnoff Gamma GOF Test					
113					5% K-S Critical Value	0.271	Data Not Gamma Distributed at 5% Significance Level					
114	Detected data follow Appr. Gamma Distribution at 5% Significance Level											
115												
116	Gamma Statistics											
117					k hat (MLE)	1.714	k star (bias corrected MLE)					1.267
118					Theta hat (MLE)	13.13	Theta star (bias corrected MLE)					17.77
119					nu hat (MLE)	34.29	nu star (bias corrected)					25.34
120					MLE Mean (bias corrected)	22.51	MLE Sd (bias corrected)					20
121							Approximate Chi Square Value (0.05)					14.87
122					Adjusted Level of Significance	0.0267	Adjusted Chi Square Value					13.49
123												
124	Assuming Gamma Distribution											
125					95% Approximate Gamma UCL (use when n>=50)	38.36	95% Adjusted Gamma UCL (use when n<50)					42.27
126												
127	Lognormal GOF Test											
128					Shapiro Wilk Test Statistic	0.906	Shapiro Wilk Lognormal GOF Test					
129					5% Shapiro Wilk Critical Value	0.842	Data appear Lognormal at 5% Significance Level					
130					Lilliefors Test Statistic	0.25	Lilliefors Lognormal GOF Test					
131					5% Lilliefors Critical Value	0.28	Data appear Lognormal at 5% Significance Level					
132	Data appear Lognormal at 5% Significance Level											
133												
134	Lognormal Statistics											
135					Minimum of Logged Data	1.435	Mean of logged Data					2.795
136					Maximum of Logged Data	4.399	SD of logged Data					0.827
137												
138	Assuming Lognormal Distribution											
139					95% H-UCL	49.25	90% Chebyshev (MVUE) UCL					40.05
140					95% Chebyshev (MVUE) UCL	48.2	97.5% Chebyshev (MVUE) UCL					59.51
141					99% Chebyshev (MVUE) UCL	81.72						
142												
143	Nonparametric Distribution Free UCL Statistics											
144	Data appear to follow a Discernible Distribution at 5% Significance Level											
145												
146	Nonparametric Distribution Free UCLs											
147					95% CLT UCL	33.96	95% Jackknife UCL					35.27
148					95% Standard Bootstrap UCL	33.34	95% Bootstrap-t UCL					47.38
149					95% Hall's Bootstrap UCL	79.96	95% Percentile Bootstrap UCL					34.59
150					95% BCA Bootstrap UCL	37.68						
151					90% Chebyshev(Mean, Sd) UCL	43.39	95% Chebyshev(Mean, Sd) UCL					52.84
152					97.5% Chebyshev(Mean, Sd) UCL	65.97	99% Chebyshev(Mean, Sd) UCL					91.75
153												
154	Suggested UCL to Use											
155					95% Adjusted Gamma UCL	42.27						
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	**Beryllium**											
164												
165	**General Statistics**											
166	Total Number of Observations					10	Number of Distinct Observations				4	
167							Number of Missing Observations				0	
168	Minimum					0.37	Mean				5.527	
169	Maximum					15.7	Median				5.527	
170	SD					4.153	Std. Error of Mean				1.313	
171	Coefficient of Variation					0.751	Skewness				1.53	
172												
173	**Normal GOF Test**											
174	Shapiro Wilk Test Statistic					0.703	**Shapiro Wilk GOF Test**					
175	5% Shapiro Wilk Critical Value					0.842	Data Not Normal at 5% Significance Level					
176	Lilliefors Test Statistic					0.4	**Lilliefors GOF Test**					
177	5% Lilliefors Critical Value					0.28	Data Not Normal at 5% Significance Level					
178	**Data Not 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					7.935	95% Adjusted-CLT UCL (Chen-1995)				8.367	
183							95% Modified-t UCL (Johnson-1978)				8.041	
184												
185	**Gamma GOF Test**											
186	A-D Test Statistic					1.57	**Anderson-Darling Gamma GOF Test**					
187	5% A-D Critical Value					0.741	Data Not Gamma Distributed at 5% Significance Level					
188	K-S Test Statistic					0.413	**Kolmogrov-Smirnoff Gamma GOF Test**					
189	5% K-S Critical Value					0.272	Data Not Gamma Distributed at 5% Significance Level					
190	**Data Not Gamma Distributed at 5% Significance Level**											
191												
192	**Gamma Statistics**											
193	k hat (MLE)					1.381	k star (bias corrected MLE)				1.033	
194	Theta hat (MLE)					4.003	Theta star (bias corrected MLE)				5.35	
195	nu hat (MLE)					27.62	nu star (bias corrected)				20.66	
196	MLE Mean (bias corrected)					5.527	MLE Sd (bias corrected)				5.438	
197							Approximate Chi Square Value (0.05)				11.34	
198	Adjusted Level of Significance					0.0267	Adjusted Chi Square Value				10.16	
199												
200	**Assuming Gamma Distribution**											
201	95% Approximate Gamma UCL (use when n>=50))					10.07	95% Adjusted Gamma UCL (use when n<50)				11.24	
202												
203	**Lognormal GOF Test**											
204	Shapiro Wilk Test Statistic					0.692	**Shapiro Wilk Lognormal GOF Test**					
205	5% Shapiro Wilk Critical Value					0.842	Data Not Lognormal at 5% Significance Level					
206	Lilliefors Test Statistic					0.434	**Lilliefors Lognormal GOF Test**					
207	5% Lilliefors Critical Value					0.28	Data Not Lognormal at 5% Significance Level					
208	**Data Not 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	-0.994				Mean of logged Data		1.306
212					Maximum of Logged Data	2.754				SD of logged Data		1.175
213												
214						Assuming Lognormal Distribution						
215					95% H-UCL	28.71				90% Chebyshev (MVUE) UCL		14.49
216					95% Chebyshev (MVUE) UCL	18.04				97.5% Chebyshev (MVUE) UCL		22.97
217					99% Chebyshev (MVUE) UCL	32.64						
218												
219						Nonparametric Distribution Free UCL Statistics						
220						Data do not follow a Discernible Distribution (0.05)						
221												
222						Nonparametric Distribution Free UCLs						
223					95% CLT UCL	7.688				95% Jackknife UCL		7.935
224					95% Standard Bootstrap UCL	N/A				95% Bootstrap-t UCL		N/A
225					95% Hall's Bootstrap UCL	N/A				95% Percentile Bootstrap UCL		N/A
226					95% BCA Bootstrap UCL	N/A						
227					90% Chebyshev(Mean, Sd) UCL	9.467				95% Chebyshev(Mean, Sd) UCL		11.25
228					97.5% Chebyshev(Mean, Sd) UCL	13.73				99% Chebyshev(Mean, Sd) UCL		18.59
229												
230						Suggested UCL to Use						
231					95% Chebyshev (Mean, Sd) UCL	11.25						
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	Cesium-137											
240												
241						General Statistics						
242					Total Number of Observations	10				Number of Distinct Observations		4
243										Number of Missing Observations		0
244					Minimum	-0.00934				Mean		5.867
245					Maximum	11.2				Median		5.867
246					SD	2.651				Std. Error of Mean		0.838
247					Coefficient of Variation	0.452				Skewness		-0.381
248												
249						Normal GOF Test						
250					Shapiro Wilk Test Statistic	0.691				Shapiro Wilk GOF Test		
251					5% Shapiro Wilk Critical Value	0.842				Data Not Normal at 5% Significance Level		
252					Lilliefors Test Statistic	0.4				Lilliefors GOF Test		
253					5% Lilliefors Critical Value	0.28				Data Not Normal at 5% Significance Level		
254						Data Not 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	7.404				95% Adjusted-CLT UCL (Chen-1995)		7.138
259										95% Modified-t UCL (Johnson-1978)		7.387
260						Gamma Statistics Not Available						

	A	B	C	D	E	F	G	H	I	J	K	L
261	Lognormal Statistics Not Available											
262												
263	Nonparametric Distribution Free UCL Statistics											
264	Data do not follow a Discernible Distribution (0.05)											
265												
266	Nonparametric Distribution Free UCLs											
267					95% CLT UCL	7.246				95% Jackknife UCL		7.404
268					95% Standard Bootstrap UCL	N/A				95% Bootstrap-t UCL		N/A
269					95% Hall's Bootstrap UCL	N/A				95% Percentile Bootstrap UCL		N/A
270					95% BCA Bootstrap UCL	N/A						
271					90% Chebyshev(Mean, Sd) UCL	8.382				95% Chebyshev(Mean, Sd) UCL		9.522
272					97.5% Chebyshev(Mean, Sd) UCL	11.1				99% Chebyshev(Mean, Sd) UCL		14.21
273												
274	Suggested UCL to Use											
275					95% Chebyshev (Mean, Sd) UCL	9.522						
276												
277	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
278	These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)											
279	and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.											
280	For additional insight the user may want to consult a statistician.											
281												
282	Note: For highly negatively-skewed data, confidence limits (e.g., Chen, Johnson, Lognormal, and Gamma) may not be											
283	reliable. Chen's and Johnson's methods provide adjustments for positvely skewed data sets.											
284												
285												
286	Chromium											
287												
288	General Statistics											
289					Total Number of Observations	10				Number of Distinct Observations		5
290										Number of Missing Observations		0
291					Minimum	8.2				Mean		21.3
292					Maximum	59.9				Median		21.3
293					SD	14.46				Std. Error of Mean		4.573
294					Coefficient of Variation	0.679				Skewness		2.449
295												
296	Normal GOF Test											
297					Shapiro Wilk Test Statistic	0.672				Shapiro Wilk GOF Test		
298					5% Shapiro Wilk Critical Value	0.842				Data Not Normal at 5% Significance Level		
299					Lilliefors Test Statistic	0.4				Lilliefors GOF Test		
300					5% Lilliefors Critical Value	0.28				Data Not Normal at 5% Significance Level		
301	Data Not Normal at 5% Significance Level											
302												
303	Assuming Normal Distribution											
304					95% Normal UCL					95% UCLs (Adjusted for Skewness)		
305					95% Student's-t UCL	29.68				95% Adjusted-CLT UCL (Chen-1995)		32.61
306										95% Modified-t UCL (Johnson-1978)		30.27
307												
308	Gamma GOF Test											
309					A-D Test Statistic	0.855				Anderson-Darling Gamma GOF Test		
310					5% A-D Critical Value	0.731				Data Not Gamma Distributed at 5% Significance Level		
311					K-S Test Statistic	0.33				Kolmogrov-Smirnoff Gamma GOF Test		
312					5% K-S Critical Value	0.268				Data Not Gamma Distributed at 5% Significance Level		

	A	B	C	D	E	F	G	H	I	J	K	L
313	**Data Not Gamma Distributed at 5% Significance Level**											
314												
315	**Gamma Statistics**											
316					k hat (MLE)	3.584				k star (bias corrected MLE)		2.575
317					Theta hat (MLE)	5.944				Theta star (bias corrected MLE)		8.271
318					nu hat (MLE)	71.67				nu star (bias corrected)		51.5
319					MLE Mean (bias corrected)	21.3				MLE Sd (bias corrected)		13.27
320										Approximate Chi Square Value (0.05)		36.02
321					Adjusted Level of Significance	0.0267				Adjusted Chi Square Value		33.78
322												
323	**Assuming Gamma Distribution**											
324				95% Approximate Gamma UCL (use when n>=50))		30.46				95% Adjusted Gamma UCL (use when n<50)		32.47
325												
326	**Lognormal GOF Test**											
327					Shapiro Wilk Test Statistic	0.873				**Shapiro Wilk Lognormal GOF Test**		
328					5% Shapiro Wilk Critical Value	0.842				Data appear Lognormal at 5% Significance Level		
329					Lilliefors Test Statistic	0.293				**Lilliefors Lognormal GOF Test**		
330					5% Lilliefors Critical Value	0.28				Data Not Lognormal at 5% Significance Level		
331	**Data appear Approximate Lognormal at 5% Significance Level**											
332												
333	**Lognormal Statistics**											
334					Minimum of Logged Data	2.104				Mean of logged Data		2.913
335					Maximum of Logged Data	4.093				SD of logged Data		0.535
336												
337	**Assuming Lognormal Distribution**											
338					95% H-UCL	31.85				90% Chebyshev (MVUE) UCL		31.74
339					95% Chebyshev (MVUE) UCL	36.65				97.5% Chebyshev (MVUE) UCL		43.46
340					99% Chebyshev (MVUE) UCL	56.84						
341												
342	**Nonparametric Distribution Free UCL Statistics**											
343	**Data appear to follow a Discernible Distribution at 5% Significance Level**											
344												
345	**Nonparametric Distribution Free UCLs**											
346					95% CLT UCL	28.82				95% Jackknife UCL		29.68
347					95% Standard Bootstrap UCL	28.41				95% Bootstrap-t UCL		37.53
348					95% Hall's Bootstrap UCL	59.97				95% Percentile Bootstrap UCL		28.78
349					95% BCA Bootstrap UCL	32.88						
350					90% Chebyshev(Mean, Sd) UCL	35.02				95% Chebyshev(Mean, Sd) UCL		41.23
351					97.5% Chebyshev(Mean, Sd) UCL	49.86				99% Chebyshev(Mean, Sd) UCL		66.8
352												
353	**Suggested UCL to Use**											
354					95% Chebyshev (Mean, Sd) UCL	41.23						
355												
356	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
357	These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)											
358	and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.											
359	For additional insight the user may want to consult a statistician.											
360												
361												
362	**Cobalt**											
363												
364	**General Statistics**											

	A	B	C	D	E	F	G	H	I	J	K	L
365					Total Number of Observations	10					Number of Distinct Observations	4
366											Number of Missing Observations	0
367					Minimum	5.5					Mean	34.21
368					Maximum	90.5					Median	34.21
369					SD	22.98					Std. Error of Mean	7.267
370					Coefficient of Variation	0.672					Skewness	1.53
371												
372					**Normal GOF Test**							
373					Shapiro Wilk Test Statistic	0.704	**Shapiro Wilk GOF Test**					
374					5% Shapiro Wilk Critical Value	0.842	Data Not Normal at 5% Significance Level					
375					Lilliefors Test Statistic	0.4	**Lilliefors GOF Test**					
376					5% Lilliefors Critical Value	0.28	Data Not Normal at 5% Significance Level					
377					**Data Not Normal at 5% Significance Level**							
378												
379					**Assuming Normal Distribution**							
380			**95% Normal UCL**				**95% UCLs (Adjusted for Skewness)**					
381					95% Student's-t UCL	47.53					95% Adjusted-CLT UCL (Chen-1995)	49.92
382											95% Modified-t UCL (Johnson-1978)	48.12
383												
384					**Gamma GOF Test**							
385					A-D Test Statistic	1.483	**Anderson-Darling Gamma GOF Test**					
386					5% A-D Critical Value	0.735	Data Not Gamma Distributed at 5% Significance Level					
387					K-S Test Statistic	0.391	**Kolmogrov-Smirnoff Gamma GOF Test**					
388					5% K-S Critical Value	0.27	Data Not Gamma Distributed at 5% Significance Level					
389					**Data Not Gamma Distributed at 5% Significance Level**							
390												
391					**Gamma Statistics**							
392					k hat (MLE)	2.156					k star (bias corrected MLE)	1.576
393					Theta hat (MLE)	15.87					Theta star (bias corrected MLE)	21.71
394					nu hat (MLE)	43.12					nu star (bias corrected)	31.52
395					MLE Mean (bias corrected)	34.21					MLE Sd (bias corrected)	27.25
396											Approximate Chi Square Value (0.05)	19.69
397					Adjusted Level of Significance	0.0267					Adjusted Chi Square Value	18.08
398												
399					**Assuming Gamma Distribution**							
400					95% Approximate Gamma UCL (use when n>=50))	54.76					95% Adjusted Gamma UCL (use when n<50)	59.64
401												
402					**Lognormal GOF Test**							
403					Shapiro Wilk Test Statistic	0.725	**Shapiro Wilk Lognormal GOF Test**					
404					5% Shapiro Wilk Critical Value	0.842	Data Not Lognormal at 5% Significance Level					
405					Lilliefors Test Statistic	0.417	**Lilliefors Lognormal GOF Test**					
406					5% Lilliefors Critical Value	0.28	Data Not Lognormal at 5% Significance Level					
407					**Data Not Lognormal at 5% Significance Level**							
408												
409					**Lognormal Statistics**							
410					Minimum of Logged Data	1.705					Mean of logged Data	3.283
411					Maximum of Logged Data	4.505					SD of logged Data	0.84
412												
413					**Assuming Lognormal Distribution**							
414					95% H-UCL	82.78					90% Chebyshev (MVUE) UCL	66.41
415					95% Chebyshev (MVUE) UCL	80.04					97.5% Chebyshev (MVUE) UCL	98.97
416					99% Chebyshev (MVUE) UCL	136.1						

	A	B	C	D	E	F	G	H	I	J	K	L
417												
418						**Nonparametric Distribution Free UCL Statistics**						
419						**Data do not follow a Discernible Distribution (0.05)**						
420												
421						**Nonparametric Distribution Free UCLs**						
422					95% CLT UCL	46.17				95% Jackknife UCL		47.53
423					95% Standard Bootstrap UCL	N/A				95% Bootstrap-t UCL		N/A
424					95% Hall's Bootstrap UCL	N/A				95% Percentile Bootstrap UCL		N/A
425					95% BCA Bootstrap UCL	N/A						
426					90% Chebyshev(Mean, Sd) UCL	56.01				95% Chebyshev(Mean, Sd) UCL		65.89
427					97.5% Chebyshev(Mean, Sd) UCL	79.6				99% Chebyshev(Mean, Sd) UCL		106.5
428												
429						**Suggested UCL to Use**						
430					95% Chebyshev (Mean, Sd) UCL	65.89						
431												
432					Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.							
433					These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)							
434					and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.							
435					For additional insight the user may want to consult a statistician.							
436												
437												
438	**Iron**											
439												
440						**General Statistics**						
441					Total Number of Observations	10				Number of Distinct Observations		6
442										Number of Missing Observations		0
443					Minimum	15600				Mean		35612
444					Maximum	85100				Median		35612
445					SD	19771				Std. Error of Mean		6252
446					Coefficient of Variation	0.555				Skewness		1.836
447												
448						**Normal GOF Test**						
449					Shapiro Wilk Test Statistic	0.757				**Shapiro Wilk GOF Test**		
450					5% Shapiro Wilk Critical Value	0.842				Data Not Normal at 5% Significance Level		
451					Lilliefors Test Statistic	0.3				**Lilliefors GOF Test**		
452					5% Lilliefors Critical Value	0.28				Data Not Normal at 5% Significance Level		
453						**Data Not Normal at 5% Significance Level**						
454												
455						**Assuming Normal Distribution**						
456					**95% Normal UCL**					**95% UCLs (Adjusted for Skewness)**		
457					95% Student's-t UCL	47073				95% Adjusted-CLT UCL (Chen-1995)		49774
458										95% Modified-t UCL (Johnson-1978)		47678
459												
460						**Gamma GOF Test**						
461					A-D Test Statistic	0.815				**Anderson-Darling Gamma GOF Test**		
462					5% A-D Critical Value	0.729				Data Not Gamma Distributed at 5% Significance Level		
463					K-S Test Statistic	0.263				**Kolmogrov-Smirnoff Gamma GOF Test**		
464					5% K-S Critical Value	0.268				Detected data appear Gamma Distributed at 5% Significance Level		
465						**Detected data follow Appr. Gamma Distribution at 5% Significance Level**						
466												
467						**Gamma Statistics**						
468					k hat (MLE)	4.396				k star (bias corrected MLE)		3.144

	A	B	C	D	E	F	G	H	I	J	K	L
469					Theta hat (MLE)	8101				Theta star (bias corrected MLE)		11327
470					nu hat (MLE)	87.92				nu star (bias corrected)		62.88
471					MLE Mean (bias corrected)	35612				MLE Sd (bias corrected)		20085
472										Approximate Chi Square Value (0.05)		45.64
473					Adjusted Level of Significance	0.0267				Adjusted Chi Square Value		43.1
474												
475					**Assuming Gamma Distribution**							
476				95% Approximate Gamma UCL (use when n>=50)		49065				95% Adjusted Gamma UCL (use when n<50)		51960
477												
478					**Lognormal GOF Test**							
479					Shapiro Wilk Test Statistic	0.865				**Shapiro Wilk Lognormal GOF Test**		
480					5% Shapiro Wilk Critical Value	0.842				Data appear Lognormal at 5% Significance Level		
481					Lilliefors Test Statistic	0.293				**Lilliefors Lognormal GOF Test**		
482					5% Lilliefors Critical Value	0.28				Data Not Lognormal at 5% Significance Level		
483					**Data appear Approximate Lognormal at 5% Significance Level**							
484												
485					**Lognormal Statistics**							
486					Minimum of Logged Data	9.655				Mean of logged Data		10.36
487					Maximum of Logged Data	11.35				SD of logged Data		0.504
488												
489					**Assuming Lognormal Distribution**							
490					95% H-UCL	52214				90% Chebyshev (MVUE) UCL		52682
491					95% Chebyshev (MVUE) UCL	60494				97.5% Chebyshev (MVUE) UCL		71337
492					99% Chebyshev (MVUE) UCL	92635						
493												
494					**Nonparametric Distribution Free UCL Statistics**							
495					**Data appear to follow a Discernible Distribution at 5% Significance Level**							
496												
497					**Nonparametric Distribution Free UCLs**							
498					95% CLT UCL	45896				95% Jackknife UCL		47073
499					95% Standard Bootstrap UCL	45392				95% Bootstrap-t UCL		51853
500					95% Hall's Bootstrap UCL	96328				95% Percentile Bootstrap UCL		46412
501					95% BCA Bootstrap UCL	50423						
502					90% Chebyshev(Mean, Sd) UCL	54368				95% Chebyshev(Mean, Sd) UCL		62864
503					97.5% Chebyshev(Mean, Sd) UCL	74656				99% Chebyshev(Mean, Sd) UCL		97819
504												
505					**Suggested UCL to Use**							
506					95% Adjusted Gamma UCL	51960						
507												
508					Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.							
509					These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)							
510					and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.							
511					For additional insight the user may want to consult a statistician.							
512												
513												
514	**Neptunium-237**											
515												
516					**General Statistics**							
517					Total Number of Observations	10				Number of Distinct Observations		4
518										Number of Missing Observations		0
519					Minimum	0.00303				Mean		0.131
520					Maximum	0.26				Median		0.131

	A	B	C	D	E	F	G	H	I	J	K	L
521					SD	0.0606					Std. Error of Mean	0.0192
522					Coefficient of Variation	0.461					Skewness	0.0106
523												
524					Normal GOF Test							
525					Shapiro Wilk Test Statistic	0.66	Shapiro Wilk GOF Test					
526					5% Shapiro Wilk Critical Value	0.842	Data Not Normal at 5% Significance Level					
527					Lilliefors Test Statistic	0.4	Lilliefors GOF Test					
528					5% Lilliefors Critical Value	0.28	Data Not Normal at 5% Significance Level					
529					Data Not Normal at 5% Significance Level							
530												
531					Assuming Normal Distribution							
532				95% Normal UCL			95% UCLs (Adjusted for Skewness)					
533					95% Student's-t UCL	0.166					95% Adjusted-CLT UCL (Chen-1995)	0.163
534											95% Modified-t UCL (Johnson-1978)	0.166
535												
536					Gamma GOF Test							
537					A-D Test Statistic	2.467	Anderson-Darling Gamma GOF Test					
538					5% A-D Critical Value	0.737	Data Not Gamma Distributed at 5% Significance Level					
539					K-S Test Statistic	0.499	Kolmogrov-Smirnoff Gamma GOF Test					
540					5% K-S Critical Value	0.27	Data Not Gamma Distributed at 5% Significance Level					
541					Data Not Gamma Distributed at 5% Significance Level							
542												
543					Gamma Statistics							
544					k hat (MLE)	1.767					k star (bias corrected MLE)	1.304
545					Theta hat (MLE)	0.0743					Theta star (bias corrected MLE)	0.101
546					nu hat (MLE)	35.34					nu star (bias corrected)	26.07
547					MLE Mean (bias corrected)	0.131					MLE Sd (bias corrected)	0.115
548											Approximate Chi Square Value (0.05)	15.43
549					Adjusted Level of Significance	0.0267					Adjusted Chi Square Value	14.03
550												
551					Assuming Gamma Distribution							
552					95% Approximate Gamma UCL (use when n>=50))	0.222					95% Adjusted Gamma UCL (use when n<50)	0.244
553												
554					Lognormal GOF Test							
555					Shapiro Wilk Test Statistic	0.476	Shapiro Wilk Lognormal GOF Test					
556					5% Shapiro Wilk Critical Value	0.842	Data Not Lognormal at 5% Significance Level					
557					Lilliefors Test Statistic	0.498	Lilliefors Lognormal GOF Test					
558					5% Lilliefors Critical Value	0.28	Data Not Lognormal at 5% Significance Level					
559					Data Not Lognormal at 5% Significance Level							
560												
561					Lognormal Statistics							
562					Minimum of Logged Data	-5.799					Mean of logged Data	-2.339
563					Maximum of Logged Data	-1.347					SD of logged Data	1.235
564												
565					Assuming Lognormal Distribution							
566					95% H-UCL	0.911					90% Chebyshev (MVUE) UCL	0.413
567					95% Chebyshev (MVUE) UCL	0.516					97.5% Chebyshev (MVUE) UCL	0.659
568					99% Chebyshev (MVUE) UCL	0.941						
569												
570					Nonparametric Distribution Free UCL Statistics							
571					Data do not follow a Discernible Distribution (0.05)							
572												

	A	B	C	D	E	F	G	H	I	J	K	L
573	Nonparametric Distribution Free UCLs											
574					95% CLT UCL	0.163				95% Jackknife UCL		0.166
575					95% Standard Bootstrap UCL	N/A				95% Bootstrap-t UCL		N/A
576					95% Hall's Bootstrap UCL	N/A				95% Percentile Bootstrap UCL		N/A
577					95% BCA Bootstrap UCL	N/A						
578					90% Chebyshev(Mean, Sd) UCL	0.189				95% Chebyshev(Mean, Sd) UCL		0.215
579					97.5% Chebyshev(Mean, Sd) UCL	0.251				99% Chebyshev(Mean, Sd) UCL		0.322
580												
581	Suggested UCL to Use											
582					95% Chebyshev (Mean, Sd) UCL	0.215						
583												
584	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
585	These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)											
586	and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.											
587	For additional insight the user may want to consult a statistician.											
588												
589												
590	Nickel											
591												
592	General Statistics											
593					Total Number of Observations	10				Number of Distinct Observations		6
594										Number of Missing Observations		0
595					Minimum	4				Mean		51
596					Maximum	188				Median		51
597					SD	51.32				Std. Error of Mean		16.23
598					Coefficient of Variation	1.006				Skewness		2.45
599												
600	Normal GOF Test											
601					Shapiro Wilk Test Statistic	0.673				Shapiro Wilk GOF Test		
602					5% Shapiro Wilk Critical Value	0.842				Data Not Normal at 5% Significance Level		
603					Lilliefors Test Statistic	0.4				Lilliefors GOF Test		
604					5% Lilliefors Critical Value	0.28				Data Not Normal at 5% Significance Level		
605	Data Not Normal at 5% Significance Level											
606												
607	Assuming Normal Distribution											
608					95% Normal UCL					95% UCLs (Adjusted for Skewness)		
609					95% Student's-t UCL	80.75				95% Adjusted-CLT UCL (Chen-1995)		91.13
610										95% Modified-t UCL (Johnson-1978)		82.84
611												
612	Gamma GOF Test											
613					A-D Test Statistic	0.673				Anderson-Darling Gamma GOF Test		
614					5% A-D Critical Value	0.741				Detected data appear Gamma Distributed at 5% Significance Level		
615					K-S Test Statistic	0.288				Kolmogrov-Smirnoff Gamma GOF Test		
616					5% K-S Critical Value	0.272				Data Not Gamma Distributed at 5% Significance Level		
617	Detected data follow Appr. Gamma Distribution at 5% Significance Level											
618												
619	Gamma Statistics											
620					k hat (MLE)	1.415				k star (bias corrected MLE)		1.057
621					Theta hat (MLE)	36.03				Theta star (bias corrected MLE)		48.23
622					nu hat (MLE)	28.31				nu star (bias corrected)		21.15
623					MLE Mean (bias corrected)	51				MLE Sd (bias corrected)		49.6
624										Approximate Chi Square Value (0.05)		11.7

	A	B	C	D	E	F	G	H	I	J	K	L
625					Adjusted Level of Significance	0.0267					Adjusted Chi Square Value	10.5
626												
627					Assuming Gamma Distribution							
628				95% Approximate Gamma UCL (use when n>=50)		92.17					95% Adjusted Gamma UCL (use when n<50)	102.7
629												
630					Lognormal GOF Test							
631					Shapiro Wilk Test Statistic	0.886		Shapiro Wilk Lognormal GOF Test				
632					5% Shapiro Wilk Critical Value	0.842		Data appear Lognormal at 5% Significance Level				
633					Lilliefors Test Statistic	0.252		Lilliefors Lognormal GOF Test				
634					5% Lilliefors Critical Value	0.28		Data appear Lognormal at 5% Significance Level				
635					Data appear Lognormal at 5% Significance Level							
636												
637					Lognormal Statistics							
638					Minimum of Logged Data	1.386					Mean of logged Data	3.539
639					Maximum of Logged Data	5.236					SD of logged Data	1.006
640												
641					Assuming Lognormal Distribution							
642					95% H-UCL	162.2					90% Chebyshev (MVUE) UCL	106.7
643					95% Chebyshev (MVUE) UCL	130.9					97.5% Chebyshev (MVUE) UCL	164.5
644					99% Chebyshev (MVUE) UCL	230.4						
645												
646					Nonparametric Distribution Free UCL Statistics							
647					Data appear to follow a Discernible Distribution at 5% Significance Level							
648												
649					Nonparametric Distribution Free UCLs							
650					95% CLT UCL	77.69					95% Jackknife UCL	80.75
651					95% Standard Bootstrap UCL	76.76					95% Bootstrap-t UCL	109.9
652					95% Hall's Bootstrap UCL	187.9					95% Percentile Bootstrap UCL	80.8
653					95% BCA Bootstrap UCL	86.4						
654					90% Chebyshev(Mean, Sd) UCL	99.69					95% Chebyshev(Mean, Sd) UCL	121.7
655					97.5% Chebyshev(Mean, Sd) UCL	152.3					99% Chebyshev(Mean, Sd) UCL	212.5
656												
657					Suggested UCL to Use							
658					95% Adjusted Gamma UCL	102.7						
659												
660					Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.							
661					These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)							
662					and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.							
663					For additional insight the user may want to consult a statistician.							
664												
665												
666	PCB, Total											
667												
668					General Statistics							
669					Total Number of Observations	10					Number of Distinct Observations	5
670											Number of Missing Observations	0
671					Minimum	0.05					Mean	2.29
672					Maximum	5					Median	2.29
673					SD	1.66					Std. Error of Mean	0.525
674					Coefficient of Variation	0.725					Skewness	0.62
675												
676					Normal GOF Test							

	A	B	C	D	E	F	G	H	I	J	K	L
677					Shapiro Wilk Test Statistic	0.857	**Shapiro Wilk GOF Test**					
678					5% Shapiro Wilk Critical Value	0.842	Data appear Normal at 5% Significance Level					
679					Lilliefors Test Statistic	0.3	**Lilliefors GOF Test**					
680					5% Lilliefors Critical Value	0.28	Data Not Normal at 5% Significance Level					
681	**Data appear Approximate Normal at 5% Significance Level**											
682												
683	**Assuming Normal Distribution**											
684	**95% Normal UCL**						**95% UCLs (Adjusted for Skewness)**					
685					95% Student's-t UCL	3.252	95% Adjusted-CLT UCL (Chen-1995)					3.263
686							95% Modified-t UCL (Johnson-1978)					3.269
687												
688	**Gamma GOF Test**											
689					A-D Test Statistic	0.737	**Anderson-Darling Gamma GOF Test**					
690					5% A-D Critical Value	0.744	Detected data appear Gamma Distributed at 5% Significance Level					
691					K-S Test Statistic	0.32	**Kolmogrov-Smirnoff Gamma GOF Test**					
692					5% K-S Critical Value	0.273	Data Not Gamma Distributed at 5% Significance Level					
693	**Detected data follow Appr. Gamma Distribution at 5% Significance Level**											
694												
695	**Gamma Statistics**											
696					k hat (MLE)	1.213	k star (bias corrected MLE)					0.916
697					Theta hat (MLE)	1.888	Theta star (bias corrected MLE)					2.501
698					nu hat (MLE)	24.26	nu star (bias corrected)					18.31
699					MLE Mean (bias corrected)	2.29	MLE Sd (bias corrected)					2.393
700							Approximate Chi Square Value (0.05)					9.619
701					Adjusted Level of Significance	0.0267	Adjusted Chi Square Value					8.544
702												
703	**Assuming Gamma Distribution**											
704					95% Approximate Gamma UCL (use when n>=50))	4.36	95% Adjusted Gamma UCL (use when n<50)					4.909
705												
706	**Lognormal GOF Test**											
707					Shapiro Wilk Test Statistic	0.767	**Shapiro Wilk Lognormal GOF Test**					
708					5% Shapiro Wilk Critical Value	0.842	Data Not Lognormal at 5% Significance Level					
709					Lilliefors Test Statistic	0.334	**Lilliefors Lognormal GOF Test**					
710					5% Lilliefors Critical Value	0.28	Data Not Lognormal at 5% Significance Level					
711	**Data Not Lognormal at 5% Significance Level**											
712												
713	**Lognormal Statistics**											
714					Minimum of Logged Data	-2.996	Mean of logged Data					0.363
715					Maximum of Logged Data	1.609	SD of logged Data					1.358
716												
717	**Assuming Lognormal Distribution**											
718					95% H-UCL	20.92	90% Chebyshev (MVUE) UCL					7.377
719					95% Chebyshev (MVUE) UCL	9.303	97.5% Chebyshev (MVUE) UCL					11.98
720					99% Chebyshev (MVUE) UCL	17.23						
721												
722	**Nonparametric Distribution Free UCL Statistics**											
723	**Data appear to follow a Discernible Distribution at 5% Significance Level**											
724												
725	**Nonparametric Distribution Free UCLs**											
726					95% CLT UCL	3.153	95% Jackknife UCL					3.252
727					95% Standard Bootstrap UCL	3.125	95% Bootstrap-t UCL					3.55
728					95% Hall's Bootstrap UCL	4.193	95% Percentile Bootstrap UCL					3.103

	A	B	C	D	E	F	G	H	I	J	K	L
729					95% BCA Bootstrap UCL	3.226						
730					90% Chebyshev(Mean, Sd) UCL	3.864					95% Chebyshev(Mean, Sd) UCL	4.577
731					97.5% Chebyshev(Mean, Sd) UCL	5.567					99% Chebyshev(Mean, Sd) UCL	7.512
732												
733					**Suggested UCL to Use**							
734					95% Student's-t UCL	3.252						
735												
736	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
737	These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)											
738	and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.											
739	For additional insight the user may want to consult a statistician.											
740												
741												
742	**Radium-228**											
743												
744					**General Statistics**							
745					Total Number of Observations	10					Number of Distinct Observations	1
746											Number of Missing Observations	0
747					Minimum	1.69					Mean	1.69
748					Maximum	1.69					Median	1.69
749												
750	**Warning: There is only one distinct observation value in this data set - resulting in '0' variance!**											
751	**ProUCL (or any other software) should not be used on such a data set!**											
752	**The data set for variable Radium-228 was not processed!**											
753												
754	**If possible, compute and collect Data Quality Objectives (DQOs) based sample size and analytical results.**											
755	**The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).**											
756												
757												
758												
759	**Thallium**											
760												
761					**General Statistics**							
762					Total Number of Observations	10					Number of Distinct Observations	4
763											Number of Missing Observations	0
764					Minimum	0.095					Mean	10.37
765					Maximum	17.1					Median	10.37
766					SD	4.26					Std. Error of Mean	1.347
767					Coefficient of Variation	0.411					Skewness	-1.318
768												
769					**Normal GOF Test**							
770					Shapiro Wilk Test Statistic	0.73			**Shapiro Wilk GOF Test**			
771					5% Shapiro Wilk Critical Value	0.842			Data Not Normal at 5% Significance Level			
772					Lilliefors Test Statistic	0.4			**Lilliefors GOF Test**			
773					5% Lilliefors Critical Value	0.28			Data Not Normal at 5% Significance Level			
774					**Data Not Normal at 5% Significance Level**							
775												
776					**Assuming Normal Distribution**							
777					**95% Normal UCL**				**95% UCLs (Adjusted for Skewness)**			
778					95% Student's-t UCL	12.83			95% Adjusted-CLT UCL (Chen-1995)			11.98
779									95% Modified-t UCL (Johnson-1978)			12.74
780												

	A	B	C	D	E	F	G	H	I	J	K	L
781	**Gamma GOF Test**											
782					A-D Test Statistic	2.482	**Anderson-Darling Gamma GOF Test**					
783					5% A-D Critical Value	0.741	Data Not Gamma Distributed at 5% Significance Level					
784					K-S Test Statistic	0.511	**Kolmogrov-Smirnoff Gamma GOF Test**					
785					5% K-S Critical Value	0.272	Data Not Gamma Distributed at 5% Significance Level					
786	**Data Not Gamma Distributed at 5% Significance Level**											
787												
788	**Gamma Statistics**											
789					k hat (MLE)	1.426			k star (bias corrected MLE)			1.065
790					Theta hat (MLE)	7.267			Theta star (bias corrected MLE)			9.731
791					nu hat (MLE)	28.53			nu star (bias corrected)			21.3
792					MLE Mean (bias corrected)	10.37			MLE Sd (bias corrected)			10.04
793									Approximate Chi Square Value (0.05)			11.82
794					Adjusted Level of Significance	0.0267			Adjusted Chi Square Value			10.61
795												
796	**Assuming Gamma Distribution**											
797				95% Approximate Gamma UCL (use when n>=50))		18.69			95% Adjusted Gamma UCL (use when n<50)			20.81
798												
799	**Lognormal GOF Test**											
800					Shapiro Wilk Test Statistic	0.454	**Shapiro Wilk Lognormal GOF Test**					
801					5% Shapiro Wilk Critical Value	0.842	Data Not Lognormal at 5% Significance Level					
802					Lilliefors Test Statistic	0.501	**Lilliefors Lognormal GOF Test**					
803					5% Lilliefors Critical Value	0.28	Data Not Lognormal at 5% Significance Level					
804	**Data Not Lognormal at 5% Significance Level**											
805												
806	**Lognormal Statistics**											
807					Minimum of Logged Data	-2.354			Mean of logged Data			1.949
808					Maximum of Logged Data	2.839			SD of logged Data			1.522
809												
810	**Assuming Lognormal Distribution**											
811					95% H-UCL	193.5			90% Chebyshev (MVUE) UCL			46.25
812					95% Chebyshev (MVUE) UCL	58.9			97.5% Chebyshev (MVUE) UCL			76.45
813					99% Chebyshev (MVUE) UCL	110.9						
814												
815	**Nonparametric Distribution Free UCL Statistics**											
816	**Data do not follow a Discernible Distribution (0.05)**											
817												
818	**Nonparametric Distribution Free UCLs**											
819					95% CLT UCL	12.58			95% Jackknife UCL			12.83
820					95% Standard Bootstrap UCL	N/A			95% Bootstrap-t UCL			N/A
821					95% Hall's Bootstrap UCL	N/A			95% Percentile Bootstrap UCL			N/A
822					95% BCA Bootstrap UCL	N/A						
823					90% Chebyshev(Mean, Sd) UCL	14.41			95% Chebyshev(Mean, Sd) UCL			16.24
824					97.5% Chebyshev(Mean, Sd) UCL	18.78			99% Chebyshev(Mean, Sd) UCL			23.77
825												
826	**Suggested UCL to Use**											
827					99% Chebyshev (Mean, Sd) UCL	23.77						
828												
829	**Recommended UCL exceeds the maximum observation**											
830												
831	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
832	These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)											

	A	B	C	D	E	F	G	H	I	J	K	L
833	and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.											
834	For additional insight the user may want to consult a statistician.											
835												
836	**Note: For highly negatively-skewed data, confidence limits (e.g., Chen, Johnson, Lognormal, and Gamma) may not be**											
837	**reliable. Chen's and Johnson's methods provide adjustments for positvely skewed data sets.**											
838												
839												
840	**Thorium-230**											
841												
842	**General Statistics**											
843					Total Number of Observations	10	Number of Distinct Observations				4	
844							Number of Missing Observations				0	
845					Minimum	1.14	Mean				2.993	
846					Maximum	5.42	Median				2.993	
847					SD	1.036	Std. Error of Mean				0.327	
848					Coefficient of Variation	0.346	Skewness				0.967	
849												
850	**Normal GOF Test**											
851					Shapiro Wilk Test Statistic	0.725	**Shapiro Wilk GOF Test**					
852					5% Shapiro Wilk Critical Value	0.842	Data Not Normal at 5% Significance Level					
853					Lilliefors Test Statistic	0.4	**Lilliefors GOF Test**					
854					5% Lilliefors Critical Value	0.28	Data Not Normal at 5% Significance Level					
855	**Data Not Normal at 5% Significance Level**											
856												
857	**Assuming Normal Distribution**											
858	**95% Normal UCL**						**95% UCLs (Adjusted for Skewness)**					
859					95% Student's-t UCL	3.594	95% Adjusted-CLT UCL (Chen-1995)				3.639	
860							95% Modified-t UCL (Johnson-1978)				3.61	
861												
862	**Gamma GOF Test**											
863					A-D Test Statistic	1.53	**Anderson-Darling Gamma GOF Test**					
864					5% A-D Critical Value	0.726	Data Not Gamma Distributed at 5% Significance Level					
865					K-S Test Statistic	0.355	**Kolmogrov-Smirnoff Gamma GOF Test**					
866					5% K-S Critical Value	0.267	Data Not Gamma Distributed at 5% Significance Level					
867	**Data Not Gamma Distributed at 5% Significance Level**											
868												
869	**Gamma Statistics**											
870					k hat (MLE)	8.721	k star (bias corrected MLE)				6.171	
871					Theta hat (MLE)	0.343	Theta star (bias corrected MLE)				0.485	
872					nu hat (MLE)	174.4	nu star (bias corrected)				123.4	
873					MLE Mean (bias corrected)	2.993	MLE Sd (bias corrected)				1.205	
874							Approximate Chi Square Value (0.05)				98.77	
875					Adjusted Level of Significance	0.0267	Adjusted Chi Square Value				94.94	
876												
877	**Assuming Gamma Distribution**											
878					95% Approximate Gamma UCL (use when n>=50))	3.741	95% Adjusted Gamma UCL (use when n<50)				3.891	
879												
880	**Lognormal GOF Test**											
881					Shapiro Wilk Test Statistic	0.718	**Shapiro Wilk Lognormal GOF Test**					
882					5% Shapiro Wilk Critical Value	0.842	Data Not Lognormal at 5% Significance Level					
883					Lilliefors Test Statistic	0.361	**Lilliefors Lognormal GOF Test**					
884					5% Lilliefors Critical Value	0.28	Data Not Lognormal at 5% Significance Level					

	A	B	C	D	E	F	G	H	I	J	K	L
885	Data Not Lognormal at 5% Significance Level											
886												
887	Lognormal Statistics											
888					Minimum of Logged Data	0.131				Mean of logged Data		1.038
889					Maximum of Logged Data	1.69				SD of logged Data		0.379
890												
891	Assuming Lognormal Distribution											
892					95% H-UCL	3.939				90% Chebyshev (MVUE) UCL		4.107
893					95% Chebyshev (MVUE) UCL	4.603				97.5% Chebyshev (MVUE) UCL		5.292
894					99% Chebyshev (MVUE) UCL	6.645						
895												
896	Nonparametric Distribution Free UCL Statistics											
897	Data do not follow a Discernible Distribution (0.05)											
898												
899	Nonparametric Distribution Free UCLs											
900					95% CLT UCL	3.532				95% Jackknife UCL		3.594
901					95% Standard Bootstrap UCL	N/A				95% Bootstrap-t UCL		N/A
902					95% Hall's Bootstrap UCL	N/A				95% Percentile Bootstrap UCL		N/A
903					95% BCA Bootstrap UCL	N/A						
904					90% Chebyshev(Mean, Sd) UCL	3.976				95% Chebyshev(Mean, Sd) UCL		4.421
905					97.5% Chebyshev(Mean, Sd) UCL	5.038				99% Chebyshev(Mean, Sd) UCL		6.252
906												
907	Suggested UCL to Use											
908					95% Student's-t UCL	3.594				or 95% Modified-t UCL		3.61
909												
910	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
911	These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)											
912	and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.											
913	For additional insight the user may want to consult a statistician.											
914												
915												
916	Uranium											
917												
918	General Statistics											
919					Total Number of Observations	10				Number of Distinct Observations		5
920										Number of Missing Observations		0
921					Minimum	1.9				Mean		220.1
922					Maximum	1050				Median		220.1
923					SD	309.4				Std. Error of Mean		97.83
924					Coefficient of Variation	1.406				Skewness		2.513
925												
926	Normal GOF Test											
927					Shapiro Wilk Test Statistic	0.634				Shapiro Wilk GOF Test		
928					5% Shapiro Wilk Critical Value	0.842				Data Not Normal at 5% Significance Level		
929					Lilliefors Test Statistic	0.4				Lilliefors GOF Test		
930					5% Lilliefors Critical Value	0.28				Data Not Normal at 5% Significance Level		
931	Data Not Normal at 5% Significance Level											
932												
933	Assuming Normal Distribution											
934	95% Normal UCL						95% UCLs (Adjusted for Skewness)					
935					95% Student's-t UCL	399.4				95% Adjusted-CLT UCL (Chen-1995)		464.1
936										95% Modified-t UCL (Johnson-1978)		412.4

	A	B	C	D	E	F	G	H	I	J	K	L
937												
938						Gamma GOF Test						
939					A-D Test Statistic	0.682	Anderson-Darling Gamma GOF Test					
940					5% A-D Critical Value	0.773	Detected data appear Gamma Distributed at 5% Significance Level					
941					K-S Test Statistic	0.275	Kolmogrov-Smirnoff Gamma GOF Test					
942					5% K-S Critical Value	0.28	Detected data appear Gamma Distributed at 5% Significance Level					
943						Detected data appear Gamma Distributed at 5% Significance Level						
944												
945						Gamma Statistics						
946					k hat (MLE)	0.549	k star (bias corrected MLE)					0.451
947					Theta hat (MLE)	401.2	Theta star (bias corrected MLE)					488.3
948					nu hat (MLE)	10.97	nu star (bias corrected)					9.014
949					MLE Mean (bias corrected)	220.1	MLE Sd (bias corrected)					327.8
950							Approximate Chi Square Value (0.05)					3.336
951					Adjusted Level of Significance	0.0267	Adjusted Chi Square Value					2.763
952												
953						Assuming Gamma Distribution						
954					95% Approximate Gamma UCL (use when n>=50)	594.8	95% Adjusted Gamma UCL (use when n<50)					718
955												
956						Lognormal GOF Test						
957					Shapiro Wilk Test Statistic	0.874	Shapiro Wilk Lognormal GOF Test					
958					5% Shapiro Wilk Critical Value	0.842	Data appear Lognormal at 5% Significance Level					
959					Lilliefors Test Statistic	0.318	Lilliefors Lognormal GOF Test					
960					5% Lilliefors Critical Value	0.28	Data Not Lognormal at 5% Significance Level					
961						Data appear Approximate Lognormal at 5% Significance Level						
962												
963						Lognormal Statistics						
964					Minimum of Logged Data	0.642	Mean of logged Data					4.253
965					Maximum of Logged Data	6.957	SD of logged Data					1.98
966												
967						Assuming Lognormal Distribution						
968					95% H-UCL	17006	90% Chebyshev (MVUE) UCL					973.7
969					95% Chebyshev (MVUE) UCL	1264	97.5% Chebyshev (MVUE) UCL					1668
970					99% Chebyshev (MVUE) UCL	2460						
971												
972						Nonparametric Distribution Free UCL Statistics						
973						Data appear to follow a Discernible Distribution at 5% Significance Level						
974												
975						Nonparametric Distribution Free UCLs						
976					95% CLT UCL	381	95% Jackknife UCL					399.4
977					95% Standard Bootstrap UCL	372.7	95% Bootstrap-t UCL					578.9
978					95% Hall's Bootstrap UCL	1012	95% Percentile Bootstrap UCL					404.4
979					95% BCA Bootstrap UCL	448.1						
980					90% Chebyshev(Mean, Sd) UCL	513.6	95% Chebyshev(Mean, Sd) UCL					646.5
981					97.5% Chebyshev(Mean, Sd) UCL	831	99% Chebyshev(Mean, Sd) UCL					1193
982												
983						Suggested UCL to Use						
984					95% Adjusted Gamma UCL	718						
985												
986						Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.						
987						These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)						
988						and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.						

	A	B	C	D	E	F	G	H	I	J	K	L
989	For additional insight the user may want to consult a statistician.											
990												
991												
992	Uranium-234											
993												
994	General Statistics											
995					Total Number of Observations	10			Number of Distinct Observations			4
996									Number of Missing Observations			0
997					Minimum	0.924			Mean			9.818
998					Maximum	27.5			Median			9.818
999					SD	7.219			Std. Error of Mean			2.283
1000					Coefficient of Variation	0.735			Skewness			1.531
1001												
1002	Normal GOF Test											
1003					Shapiro Wilk Test Statistic	0.702			Shapiro Wilk GOF Test			
1004					5% Shapiro Wilk Critical Value	0.842			Data Not Normal at 5% Significance Level			
1005					Lilliefors Test Statistic	0.4			Lilliefors GOF Test			
1006					5% Lilliefors Critical Value	0.28			Data Not Normal at 5% Significance Level			
1007	Data Not Normal at 5% Significance Level											
1008												
1009	Assuming Normal Distribution											
1010				95% Normal UCL					95% UCLs (Adjusted for Skewness)			
1011					95% Student's-t UCL	14			95% Adjusted-CLT UCL (Chen-1995)			14.75
1012									95% Modified-t UCL (Johnson-1978)			14.19
1013												
1014	Gamma GOF Test											
1015					A-D Test Statistic	1.567			Anderson-Darling Gamma GOF Test			
1016					5% A-D Critical Value	0.739			Data Not Gamma Distributed at 5% Significance Level			
1017					K-S Test Statistic	0.407			Kolmogrov-Smirnoff Gamma GOF Test			
1018					5% K-S Critical Value	0.271			Data Not Gamma Distributed at 5% Significance Level			
1019	Data Not Gamma Distributed at 5% Significance Level											
1020												
1021	Gamma Statistics											
1022					k hat (MLE)	1.539			k star (bias corrected MLE)			1.144
1023					Theta hat (MLE)	6.379			Theta star (bias corrected MLE)			8.582
1024					nu hat (MLE)	30.78			nu star (bias corrected)			22.88
1025					MLE Mean (bias corrected)	9.818			MLE Sd (bias corrected)			9.179
1026									Approximate Chi Square Value (0.05)			13
1027					Adjusted Level of Significance	0.0267			Adjusted Chi Square Value			11.72
1028												
1029	Assuming Gamma Distribution											
1030					95% Approximate Gamma UCL (use when n>=50))	17.28			95% Adjusted Gamma UCL (use when n<50)			19.16
1031												
1032	Lognormal GOF Test											
1033					Shapiro Wilk Test Statistic	0.693			Shapiro Wilk Lognormal GOF Test			
1034					5% Shapiro Wilk Critical Value	0.842			Data Not Lognormal at 5% Significance Level			
1035					Lilliefors Test Statistic	0.43			Lilliefors Lognormal GOF Test			
1036					5% Lilliefors Critical Value	0.28			Data Not Lognormal at 5% Significance Level			
1037	Data Not Lognormal at 5% Significance Level											
1038												
1039	Lognormal Statistics											
1040					Minimum of Logged Data	-0.079			Mean of logged Data			1.925

	A	B	C	D	E	F	G	H	I	J	K	L
1041					Maximum of Logged Data	3.314					SD of logged Data	1.077
1042												
1043					Assuming Lognormal Distribution							
1044					95% H-UCL	39.54					90% Chebyshev (MVUE) UCL	23.45
1045					95% Chebyshev (MVUE) UCL	28.96					97.5% Chebyshev (MVUE) UCL	36.59
1046					99% Chebyshev (MVUE) UCL	51.6						
1047												
1048					Nonparametric Distribution Free UCL Statistics							
1049					Data do not follow a Discernible Distribution (0.05)							
1050												
1051					Nonparametric Distribution Free UCLs							
1052					95% CLT UCL	13.57					95% Jackknife UCL	14
1053					95% Standard Bootstrap UCL	N/A					95% Bootstrap-t UCL	N/A
1054					95% Hall's Bootstrap UCL	N/A					95% Percentile Bootstrap UCL	N/A
1055					95% BCA Bootstrap UCL	N/A						
1056					90% Chebyshev(Mean, Sd) UCL	16.67					95% Chebyshev(Mean, Sd) UCL	19.77
1057					97.5% Chebyshev(Mean, Sd) UCL	24.07					99% Chebyshev(Mean, Sd) UCL	32.53
1058												
1059					Suggested UCL to Use							
1060					95% Chebyshev (Mean, Sd) UCL	19.77						
1061												
1062					Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.							
1063					These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)							
1064					and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.							
1065					For additional insight the user may want to consult a statistician.							
1066												
1067												
1068	Uranium-235											
1069												
1070					General Statistics							
1071					Total Number of Observations	10					Number of Distinct Observations	4
1072											Number of Missing Observations	0
1073					Minimum	0.0615					Mean	1.15
1074					Maximum	3.3					Median	1.15
1075					SD	0.878					Std. Error of Mean	0.278
1076					Coefficient of Variation	0.763					Skewness	1.531
1077												
1078					Normal GOF Test							
1079					Shapiro Wilk Test Statistic	0.703					Shapiro Wilk GOF Test	
1080					5% Shapiro Wilk Critical Value	0.842					Data Not Normal at 5% Significance Level	
1081					Lilliefors Test Statistic	0.4					Lilliefors GOF Test	
1082					5% Lilliefors Critical Value	0.28					Data Not Normal at 5% Significance Level	
1083					Data Not Normal at 5% Significance Level							
1084												
1085					Assuming Normal Distribution							
1086					95% Normal UCL						95% UCLs (Adjusted for Skewness)	
1087					95% Student's-t UCL	1.659					95% Adjusted-CLT UCL (Chen-1995)	1.75
1088											95% Modified-t UCL (Johnson-1978)	1.681
1089												
1090					Gamma GOF Test							
1091					A-D Test Statistic	1.592					Anderson-Darling Gamma GOF Test	
1092					5% A-D Critical Value	0.743					Data Not Gamma Distributed at 5% Significance Level	

	A	B	C	D	E	F	G	H	I	J	K	L
1093					K-S Test Statistic	0.418	**Kolmogrov-Smirnoff Gamma GOF Test**					
1094					5% K-S Critical Value	0.272	Data Not Gamma Distributed at 5% Significance Level					
1095	**Data Not Gamma Distributed at 5% Significance Level**											
1096												
1097	**Gamma Statistics**											
1098					k hat (MLE)	1.27	k star (bias corrected MLE)					0.956
1099					Theta hat (MLE)	0.906	Theta star (bias corrected MLE)					1.204
1100					nu hat (MLE)	25.4	nu star (bias corrected)					19.11
1101					MLE Mean (bias corrected)	1.15	MLE Sd (bias corrected)					1.177
1102							Approximate Chi Square Value (0.05)					10.2
1103					Adjusted Level of Significance	0.0267	Adjusted Chi Square Value					9.09
1104												
1105	**Assuming Gamma Distribution**											
1106					95% Approximate Gamma UCL (use when n>=50))	2.156	95% Adjusted Gamma UCL (use when n<50)					2.419
1107												
1108	**Lognormal GOF Test**											
1109					Shapiro Wilk Test Statistic	0.686	**Shapiro Wilk Lognormal GOF Test**					
1110					5% Shapiro Wilk Critical Value	0.842	Data Not Lognormal at 5% Significance Level					
1111					Lilliefors Test Statistic	0.438	**Lilliefors Lognormal GOF Test**					
1112					5% Lilliefors Critical Value	0.28	Data Not Lognormal at 5% Significance Level					
1113	**Data Not Lognormal at 5% Significance Level**											
1114												
1115	**Lognormal Statistics**											
1116					Minimum of Logged Data	-2.789	Mean of logged Data					-0.303
1117					Maximum of Logged Data	1.194	SD of logged Data					1.258
1118												
1119	**Assuming Lognormal Distribution**											
1120					95% H-UCL	7.554	90% Chebyshev (MVUE) UCL					3.271
1121					95% Chebyshev (MVUE) UCL	4.097	97.5% Chebyshev (MVUE) UCL					5.244
1122					99% Chebyshev (MVUE) UCL	7.497						
1123												
1124	**Nonparametric Distribution Free UCL Statistics**											
1125	**Data do not follow a Discernible Distribution (0.05)**											
1126												
1127	**Nonparametric Distribution Free UCLs**											
1128					95% CLT UCL	1.607	95% Jackknife UCL					1.659
1129					95% Standard Bootstrap UCL	N/A	95% Bootstrap-t UCL					N/A
1130					95% Hall's Bootstrap UCL	N/A	95% Percentile Bootstrap UCL					N/A
1131					95% BCA Bootstrap UCL	N/A						
1132					90% Chebyshev(Mean, Sd) UCL	1.983	95% Chebyshev(Mean, Sd) UCL					2.36
1133					97.5% Chebyshev(Mean, Sd) UCL	2.884	99% Chebyshev(Mean, Sd) UCL					3.912
1134												
1135	**Suggested UCL to Use**											
1136					95% Chebyshev (Mean, Sd) UCL	2.36						
1137												
1138	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
1139	These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)											
1140	and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.											
1141	For additional insight the user may want to consult a statistician.											
1142												
1143												
1144	**Uranium-238**											

	A	B	C	D	E	F	G	H	I	J	K	L
1145												
1146						General Statistics						
1147					Total Number of Observations	10				Number of Distinct Observations		4
1148										Number of Missing Observations		0
1149					Minimum	0.921				Mean		24.36
1150					Maximum	70				Median		24.36
1151					SD	18.63				Std. Error of Mean		5.892
1152					Coefficient of Variation	0.765				Skewness		1.529
1153												
1154						Normal GOF Test						
1155					Shapiro Wilk Test Statistic	0.705				Shapiro Wilk GOF Test		
1156					5% Shapiro Wilk Critical Value	0.842				Data Not Normal at 5% Significance Level		
1157					Lilliefors Test Statistic	0.4				Lilliefors GOF Test		
1158					5% Lilliefors Critical Value	0.28				Data Not Normal at 5% Significance Level		
1159						Data Not Normal at 5% Significance Level						
1160												
1161						Assuming Normal Distribution						
1162					95% Normal UCL					95% UCLs (Adjusted for Skewness)		
1163					95% Student's-t UCL	35.17				95% Adjusted-CLT UCL (Chen-1995)		37.1
1164										95% Modified-t UCL (Johnson-1978)		35.64
1165												
1166						Gamma GOF Test						
1167					A-D Test Statistic	1.562				Anderson-Darling Gamma GOF Test		
1168					5% A-D Critical Value	0.744				Data Not Gamma Distributed at 5% Significance Level		
1169					K-S Test Statistic	0.42				Kolmogrov-Smirnoff Gamma GOF Test		
1170					5% K-S Critical Value	0.273				Data Not Gamma Distributed at 5% Significance Level		
1171						Data Not Gamma Distributed at 5% Significance Level						
1172												
1173						Gamma Statistics						
1174					k hat (MLE)	1.218				k star (bias corrected MLE)		0.919
1175					Theta hat (MLE)	20.01				Theta star (bias corrected MLE)		26.51
1176					nu hat (MLE)	24.35				nu star (bias corrected)		18.38
1177					MLE Mean (bias corrected)	24.36				MLE Sd (bias corrected)		25.41
1178										Approximate Chi Square Value (0.05)		9.666
1179					Adjusted Level of Significance	0.0267				Adjusted Chi Square Value		8.589
1180												
1181						Assuming Gamma Distribution						
1182					95% Approximate Gamma UCL (use when n>=50))	46.33				95% Adjusted Gamma UCL (use when n<50)		52.14
1183												
1184						Lognormal GOF Test						
1185					Shapiro Wilk Test Statistic	0.693				Shapiro Wilk Lognormal GOF Test		
1186					5% Shapiro Wilk Critical Value	0.842				Data Not Lognormal at 5% Significance Level		
1187					Lilliefors Test Statistic	0.438				Lilliefors Lognormal GOF Test		
1188					5% Lilliefors Critical Value	0.28				Data Not Lognormal at 5% Significance Level		
1189						Data Not Lognormal at 5% Significance Level						
1190												
1191						Lognormal Statistics						
1192					Minimum of Logged Data	-0.0823				Mean of logged Data		2.729
1193					Maximum of Logged Data	4.248				SD of logged Data		1.314
1194												
1195						Assuming Lognormal Distribution						
1196					95% H-UCL	190.3				90% Chebyshev (MVUE) UCL		73.65

1197				95% Chebyshev (MVUE) UCL		92.62				97.5% Chebyshev (MVUE) UCL		119
1198				99% Chebyshev (MVUE) UCL		170.7						
1199												
1200						**Nonparametric Distribution Free UCL Statistics**						
1201						**Data do not follow a Discernible Distribution (0.05)**						
1202												
1203						**Nonparametric Distribution Free UCLs**						
1204				95% CLT UCL		34.06				95% Jackknife UCL		35.17
1205				95% Standard Bootstrap UCL		N/A				95% Bootstrap-t UCL		N/A
1206				95% Hall's Bootstrap UCL		N/A				95% Percentile Bootstrap UCL		N/A
1207				95% BCA Bootstrap UCL		N/A						
1208				90% Chebyshev(Mean, Sd) UCL		42.04				95% Chebyshev(Mean, Sd) UCL		50.05
1209				97.5% Chebyshev(Mean, Sd) UCL		61.16				99% Chebyshev(Mean, Sd) UCL		82.99
1210												
1211						**Suggested UCL to Use**						
1212				95% Chebyshev (Mean, Sd) UCL		50.05						
1213												
1214						Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.						
1215						These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)						
1216						and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.						
1217						For additional insight the user may want to consult a statistician.						
1218												
1219												
1220	**Vanadium**											
1221												
1222						**General Statistics**						
1223				Total Number of Observations		10				Number of Distinct Observations		6
1224										Number of Missing Observations		0
1225				Minimum		20				Mean		93.16
1226				Maximum		143				Median		93.16
1227				SD		38.93				Std. Error of Mean		12.31
1228				Coefficient of Variation		0.418				Skewness		-0.66
1229												
1230						**Normal GOF Test**						
1231				Shapiro Wilk Test Statistic		0.879				**Shapiro Wilk GOF Test**		
1232				5% Shapiro Wilk Critical Value		0.842				Data appear Normal at 5% Significance Level		
1233				Lilliefors Test Statistic		0.3				**Lilliefors GOF Test**		
1234				5% Lilliefors Critical Value		0.28				Data Not Normal at 5% Significance Level		
1235						**Data appear Approximate Normal at 5% Significance Level**						
1236												
1237						**Assuming Normal Distribution**						
1238				**95% Normal UCL**						**95% UCLs (Adjusted for Skewness)**		
1239				95% Student's-t UCL		115.7				95% Adjusted-CLT UCL (Chen-1995)		110.7
1240										95% Modified-t UCL (Johnson-1978)		115.3
1241												
1242						**Gamma GOF Test**						
1243				A-D Test Statistic		0.95				**Anderson-Darling Gamma GOF Test**		
1244				5% A-D Critical Value		0.729				Data Not Gamma Distributed at 5% Significance Level		
1245				K-S Test Statistic		0.365				**Kolmogrov-Smirnoff Gamma GOF Test**		
1246				5% K-S Critical Value		0.268				Data Not Gamma Distributed at 5% Significance Level		
1247						**Data Not Gamma Distributed at 5% Significance Level**						
1248												

	A	B	C	D	E	F	G	H	I	J	K	L
1249	**Gamma Statistics**											
1250					k hat (MLE)	4.128				k star (bias corrected MLE)		2.956
1251					Theta hat (MLE)	22.57				Theta star (bias corrected MLE)		31.51
1252					nu hat (MLE)	82.57				nu star (bias corrected)		59.13
1253					MLE Mean (bias corrected)	93.16				MLE Sd (bias corrected)		54.18
1254										Approximate Chi Square Value (0.05)		42.45
1255					Adjusted Level of Significance	0.0267				Adjusted Chi Square Value		40
1256												
1257	**Assuming Gamma Distribution**											
1258				95% Approximate Gamma UCL (use when n>=50))		129.8				95% Adjusted Gamma UCL (use when n<50)		137.7
1259												
1260	**Lognormal GOF Test**											
1261					Shapiro Wilk Test Statistic	0.766				**Shapiro Wilk Lognormal GOF Test**		
1262					5% Shapiro Wilk Critical Value	0.842				Data Not Lognormal at 5% Significance Level		
1263					Lilliefors Test Statistic	0.382				**Lilliefors Lognormal GOF Test**		
1264					5% Lilliefors Critical Value	0.28				Data Not Lognormal at 5% Significance Level		
1265	**Data Not Lognormal at 5% Significance Level**											
1266												
1267	**Lognormal Statistics**											
1268					Minimum of Logged Data	2.996				Mean of logged Data		4.408
1269					Maximum of Logged Data	4.963				SD of logged Data		0.607
1270												
1271	**Assuming Lognormal Distribution**											
1272					95% H-UCL	159.7				90% Chebyshev (MVUE) UCL		153.7
1273					95% Chebyshev (MVUE) UCL	179.6				97.5% Chebyshev (MVUE) UCL		215.5
1274					99% Chebyshev (MVUE) UCL	285.9						
1275												
1276	**Nonparametric Distribution Free UCL Statistics**											
1277	**Data appear to follow a Discernible Distribution at 5% Significance Level**											
1278												
1279	**Nonparametric Distribution Free UCLs**											
1280					95% CLT UCL	113.4				95% Jackknife UCL		115.7
1281					95% Standard Bootstrap UCL	112.4				95% Bootstrap-t UCL		112.6
1282					95% Hall's Bootstrap UCL	112.6				95% Percentile Bootstrap UCL		111
1283					95% BCA Bootstrap UCL	110.5						
1284					90% Chebyshev(Mean, Sd) UCL	130.1				95% Chebyshev(Mean, Sd) UCL		146.8
1285					97.5% Chebyshev(Mean, Sd) UCL	170				99% Chebyshev(Mean, Sd) UCL		215.7
1286												
1287	**Suggested UCL to Use**											
1288					95% Student's-t UCL	115.7						
1289												
1290	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
1291	These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)											
1292	and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.											
1293	For additional insight the user may want to consult a statistician.											
1294												
1295	**Note: For highly negatively-skewed data, confidence limits (e.g., Chen, Johnson, Lognormal, and Gamma) may not be**											
1296	**reliable. Chen's and Johnson's methods provide adjustments for positvely skewed data sets.**											
1297												