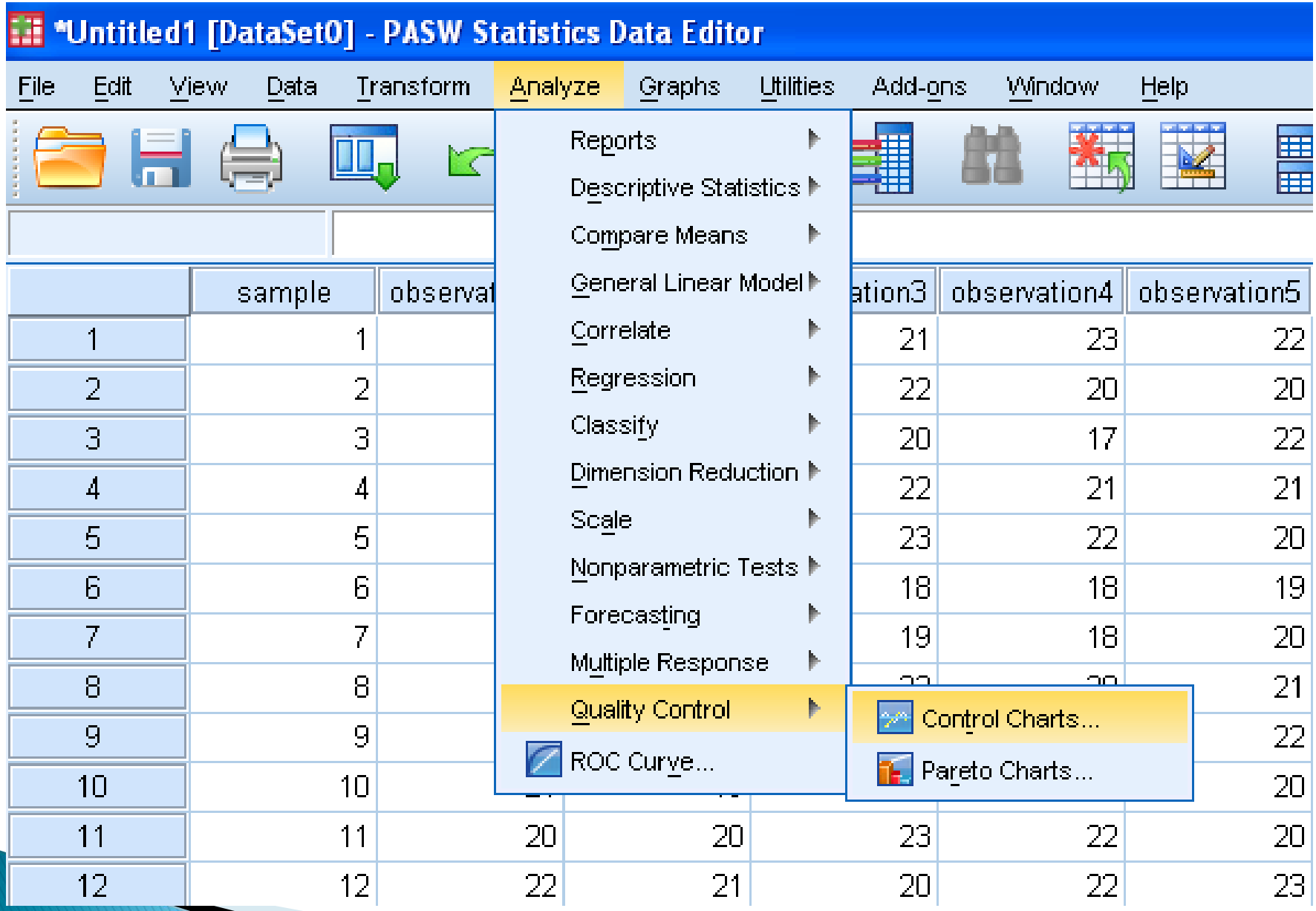
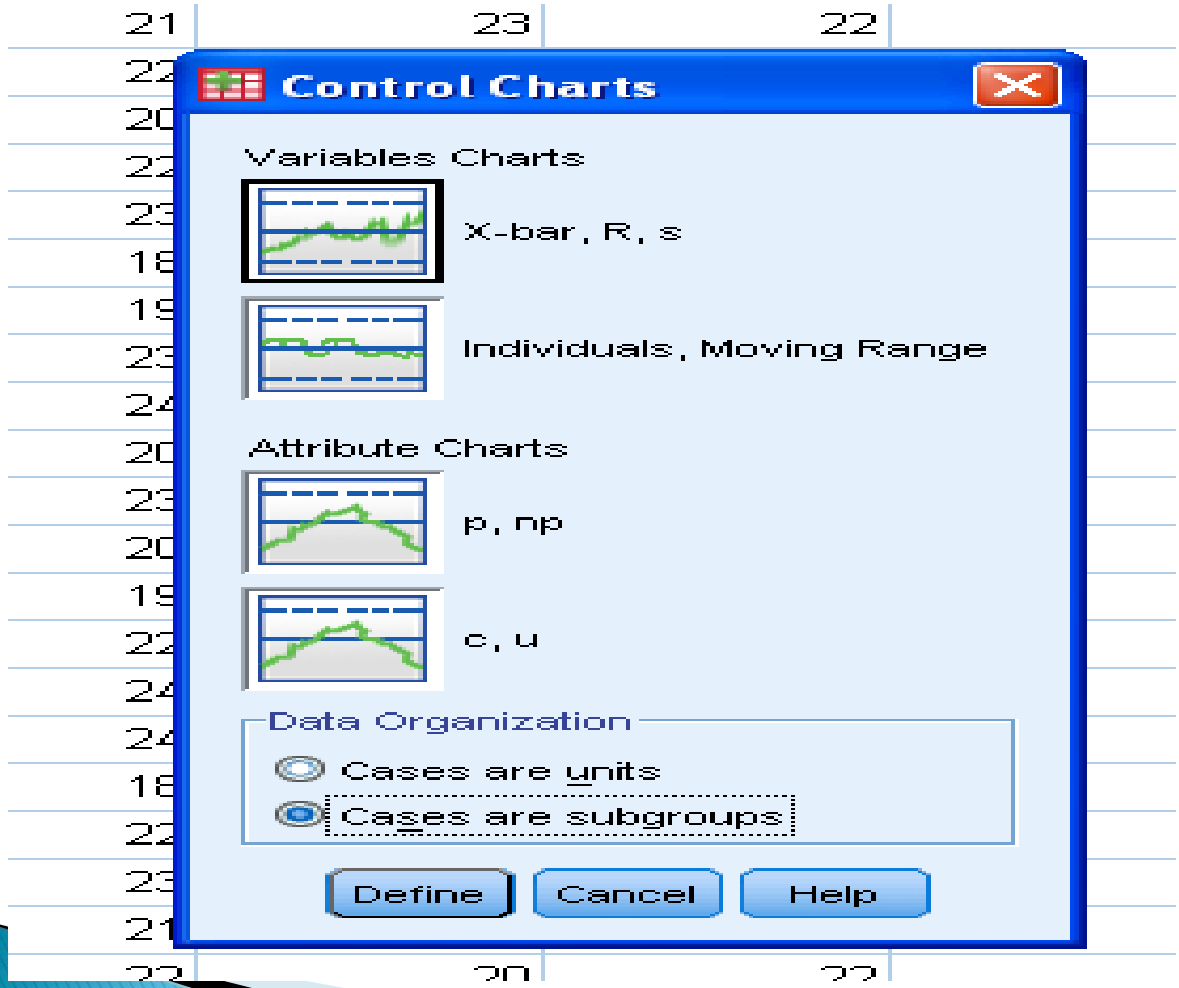
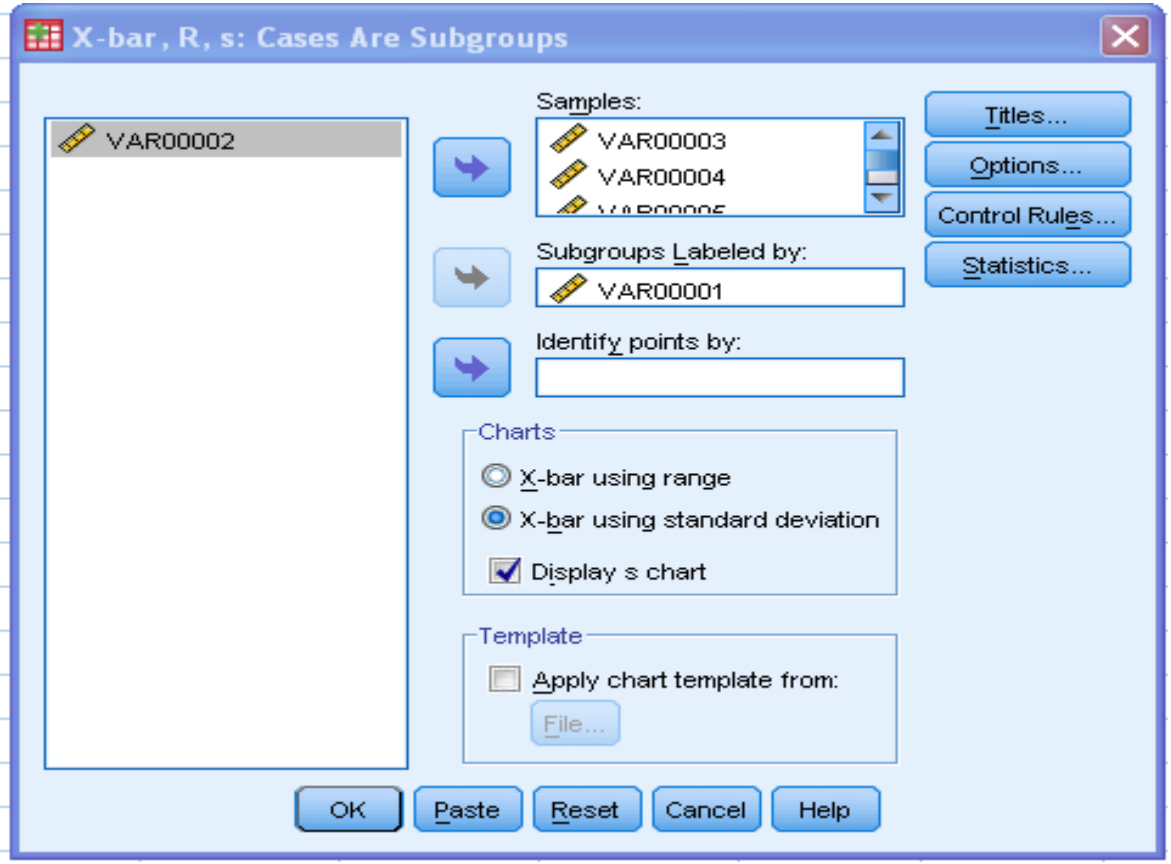
Control Charts Cont. ;

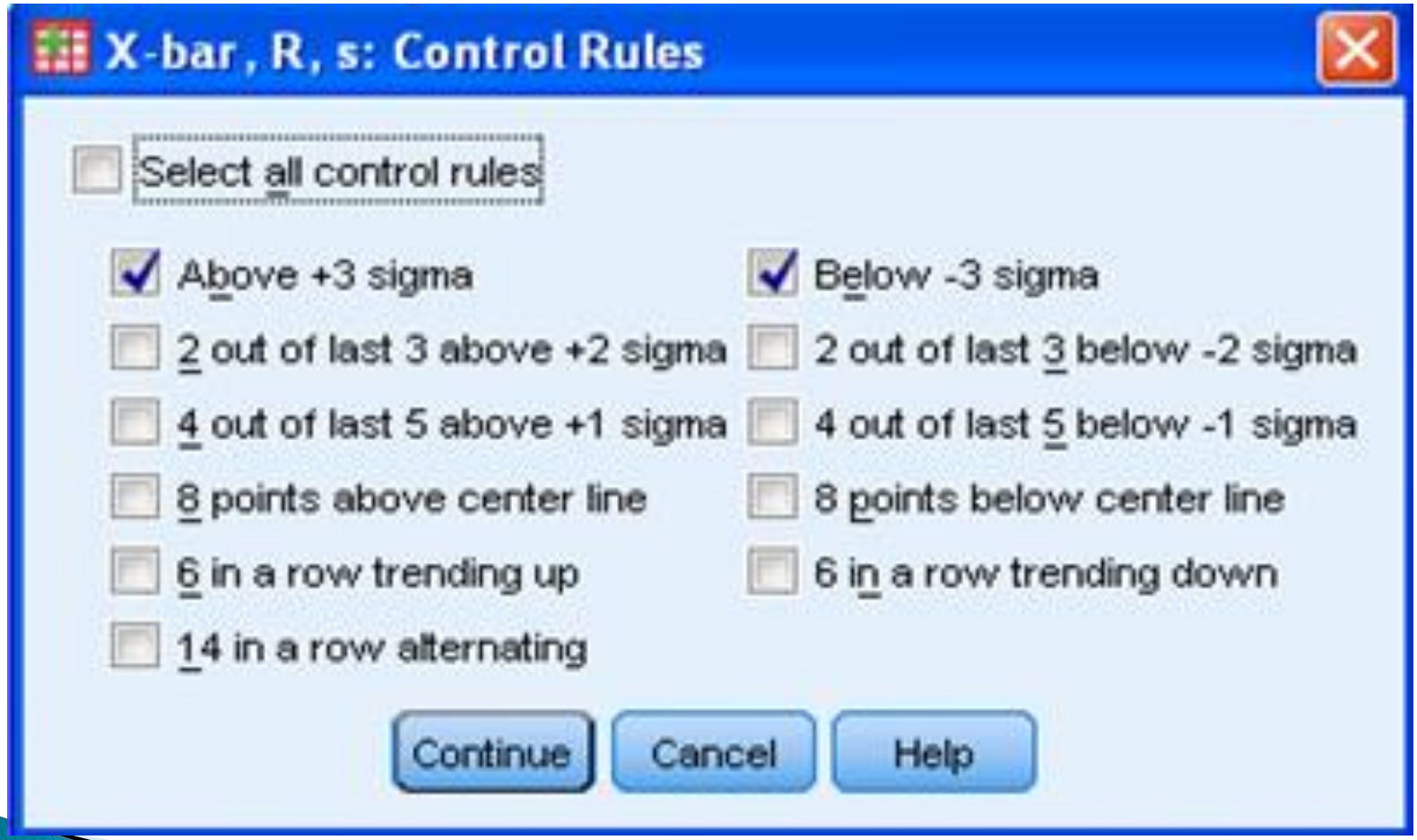
1. X-Bar and S Charts
2. MR- Chart
3. p Chart
4. np Chart
5. c- Chart

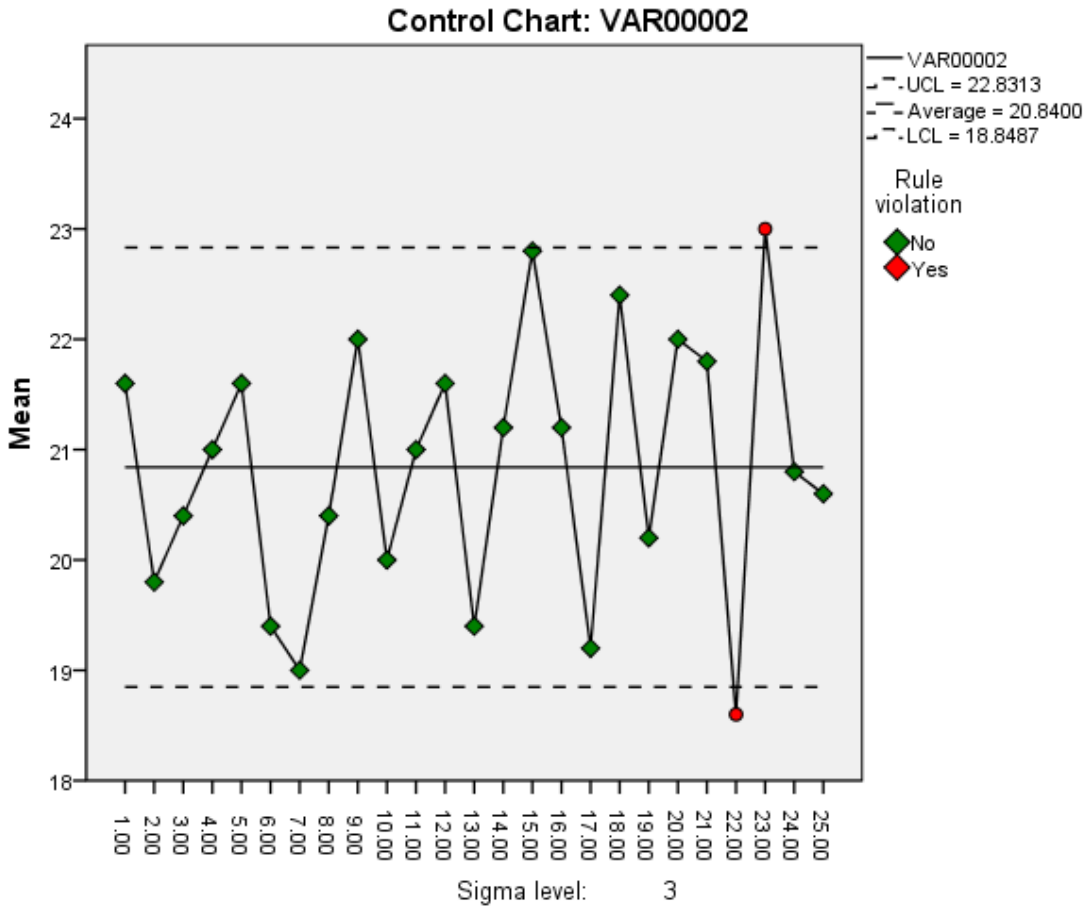
Please open the excel file that you download from the course web page. And copy and paste the data related with Q1 to the Spss program.

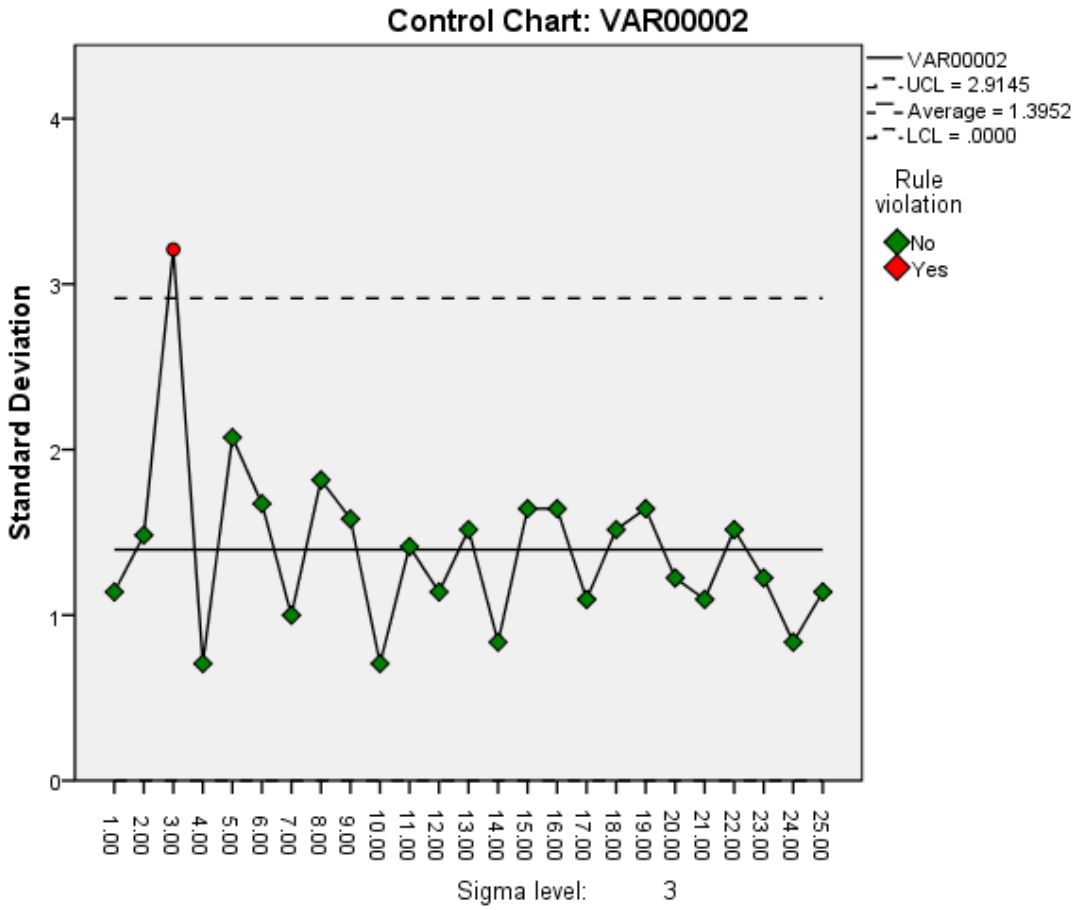

*Untitled1 [DataSet0] - PASW Statistics Data Editor
File
Edit
View
Data
Transform
Analyze
Graphs
Utilities
Add-ons
Window
Help
Reports
Descriptive Statistics
Compare Means
General Linear Model
Correlate
Regression
Classify
Dimension Reduction
Scale
Nonparametric Tests
Forecasting
Multiple Response
Quality Control
ROC Curve...
Control Charts...
Pareto Charts...
sample
observation4
observation5
1 1 21 23 22
2 2 22 20 20
3 3 20 17 22
4 4 22 21 21
5 5 23 22 20
6 6 18 18 19
7 7 19 18 20
8 8 21
9 9 22
10 10 20
11 11 20 20 23 22 20
12 12 22 21 20 22 23


Control Charts
Variables Charts
X-bar, R, s
Individuals, Moving Range
Attribute Charts
p, np
c, u
Data Organization
Cases are units
Cases are subgroups
Define
Cancel
Help


X-bar, R, s: Cases Are Subgroups
VAR00002
Samples:
VAR00003
VAR00004
Subgroups Labeled by:
VAR00001
Identify points by:
Titles...
Options...
Control Rules...
Statistics...
Charts
X-bar using range
X-bar using standard deviation
Display s chart
Template
Apply chart template from:
File...
OK
Paste
Reset
Cancel
Help


X-bar, R, s: Control Rules
Select all control rules
Above +3 sigma
Below -3 sigma
2 out of last 3 above +2 sigma
2 out of last 3 below -2 sigma
4 out of last 5 above +1 sigma
4 out of last 5 below -1 sigma
8 points above center line
8 points below center line
6 in a row trending up
6 in a row trending down
14 in a row alternating
Continue
Cancel
Help


Control Chart: VAR00002
VAR00002
UCL = 22.8313
Average = 20.8400
LCL = 18.8487
Rule violation
No
Yes
Mean
24
23
22
21
20
19
18
1.00
2.00
3.00
4.00
5.00
6.00
7.00
8.00
9.00
10.00
11.00
12.00
13.00
14.00
15.00
16.00
17.00
18.00
19.00
20.00
21.00
22.00
23.00
24.00
25.00
Sigma level: 3


Control Chart: VAR00002
VAR00002
UCL = 2.9145
Average = 1.3952
LCL = .0000
Rule violation
No
Yes
Standard Deviation
0
1
2
3
4
1.00
2.00
3.00
4.00
5.00
6.00
7.00
8.00
9.00
10.00
11.00
12.00
13.00
14.00
15.00
16.00
17.00
18.00
19.00
20.00
21.00
22.00
23.00
24.00
25.00
Sigma level: 3

Rule Violations for X-bar

VAR00001	Violations for Points
22.00	Less than -3 sigma
23.00	Greater than +3 sigma

2 points violate control rules.

Rule Violations for SD

VAR00001	Violations for Points
3.00	Greater than +3 sigma

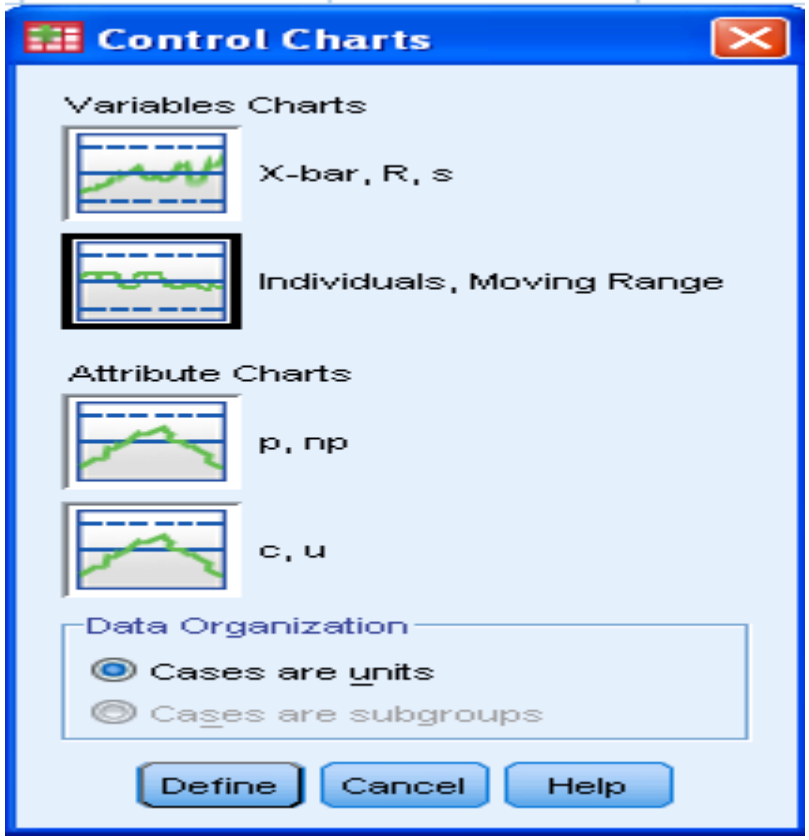
1 points violate control rules.

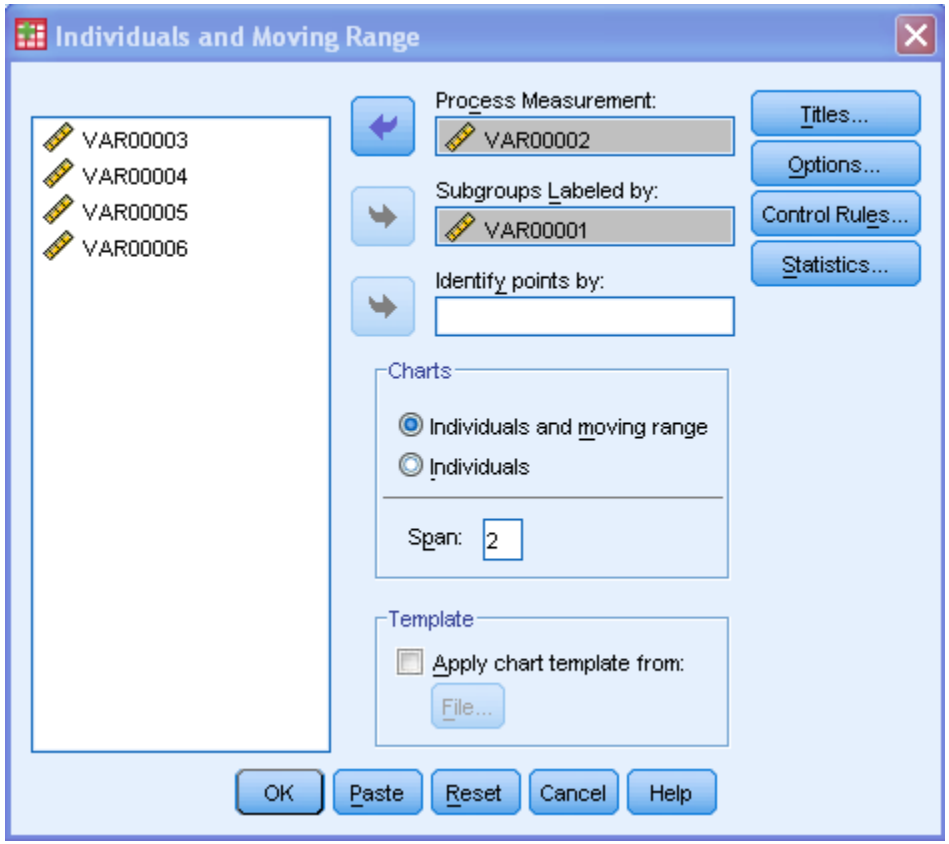
Remedial actions were taken to rectify this situation.

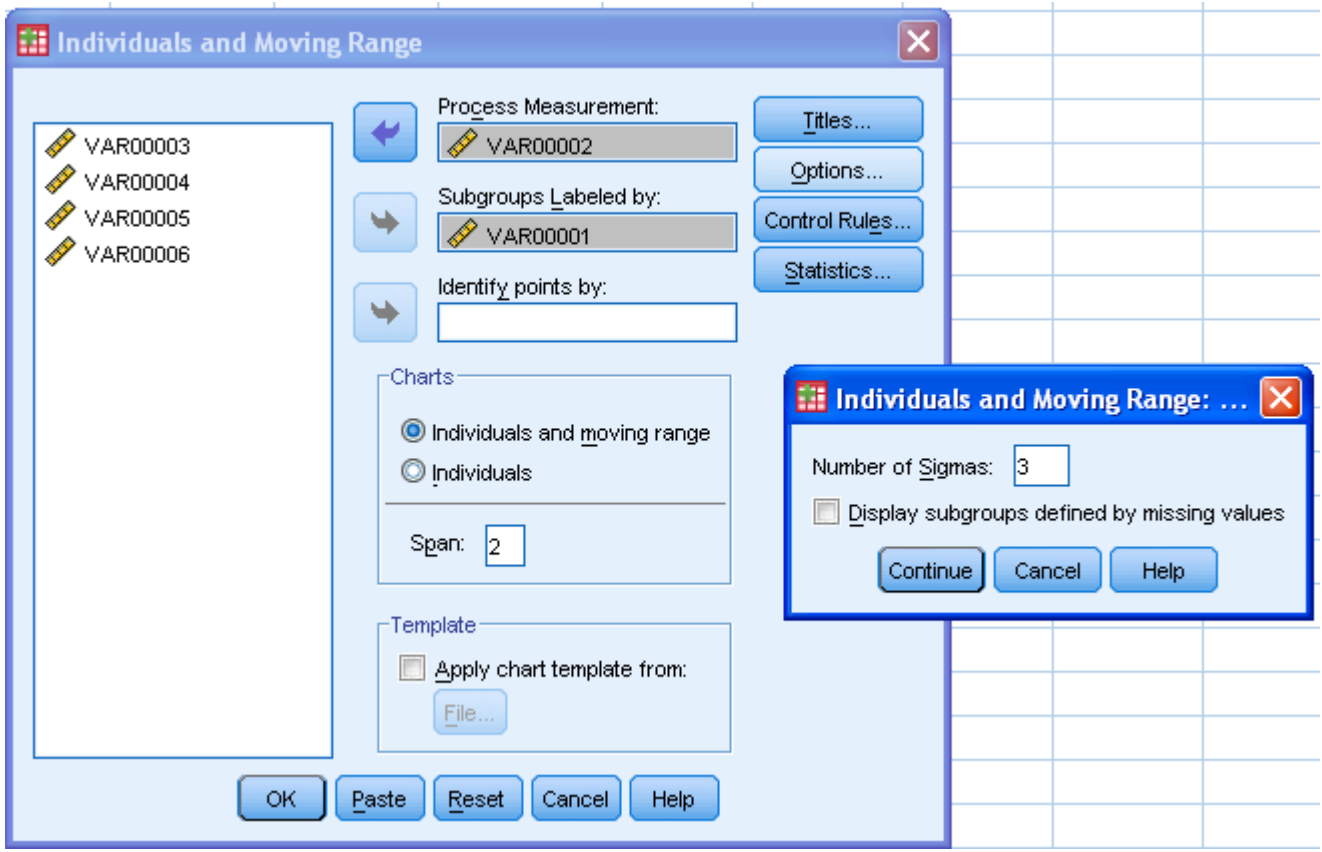
- Delete samples necessary and revised the control limits.

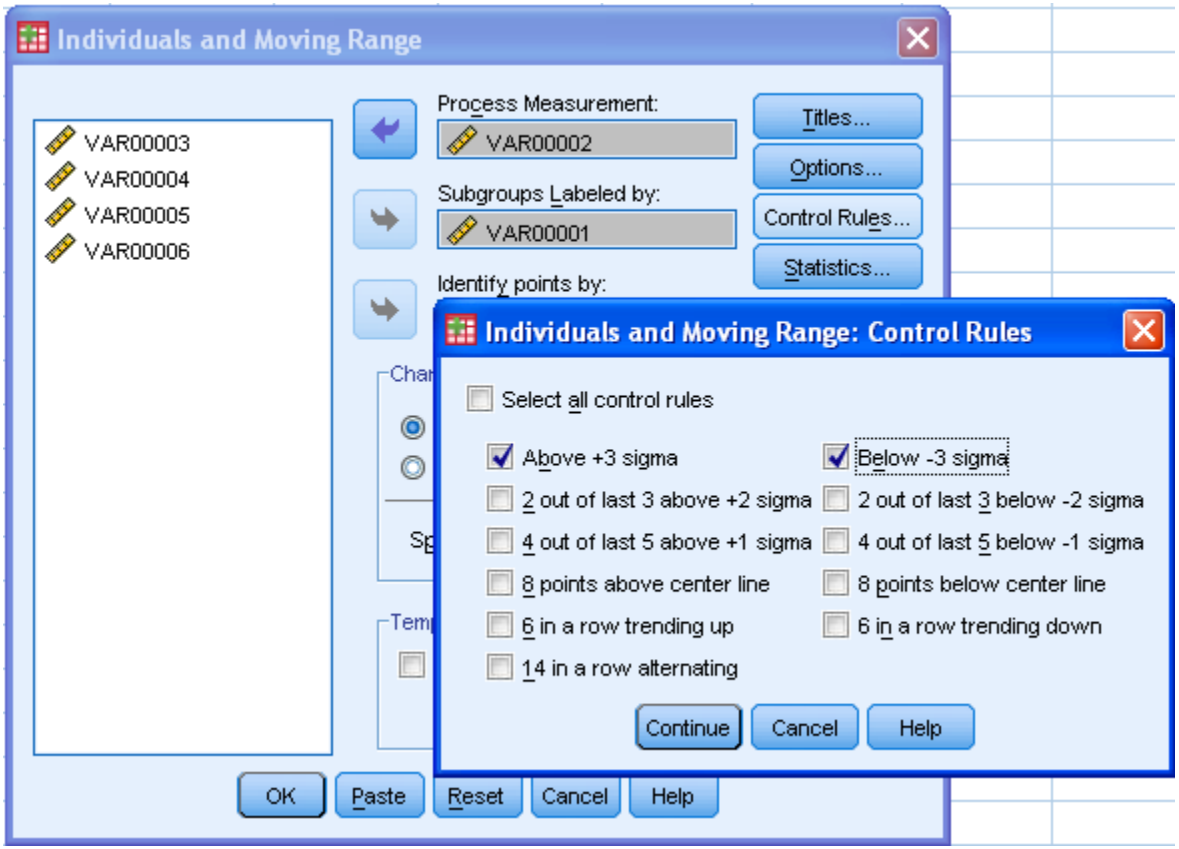
Example 2; MR-Chart

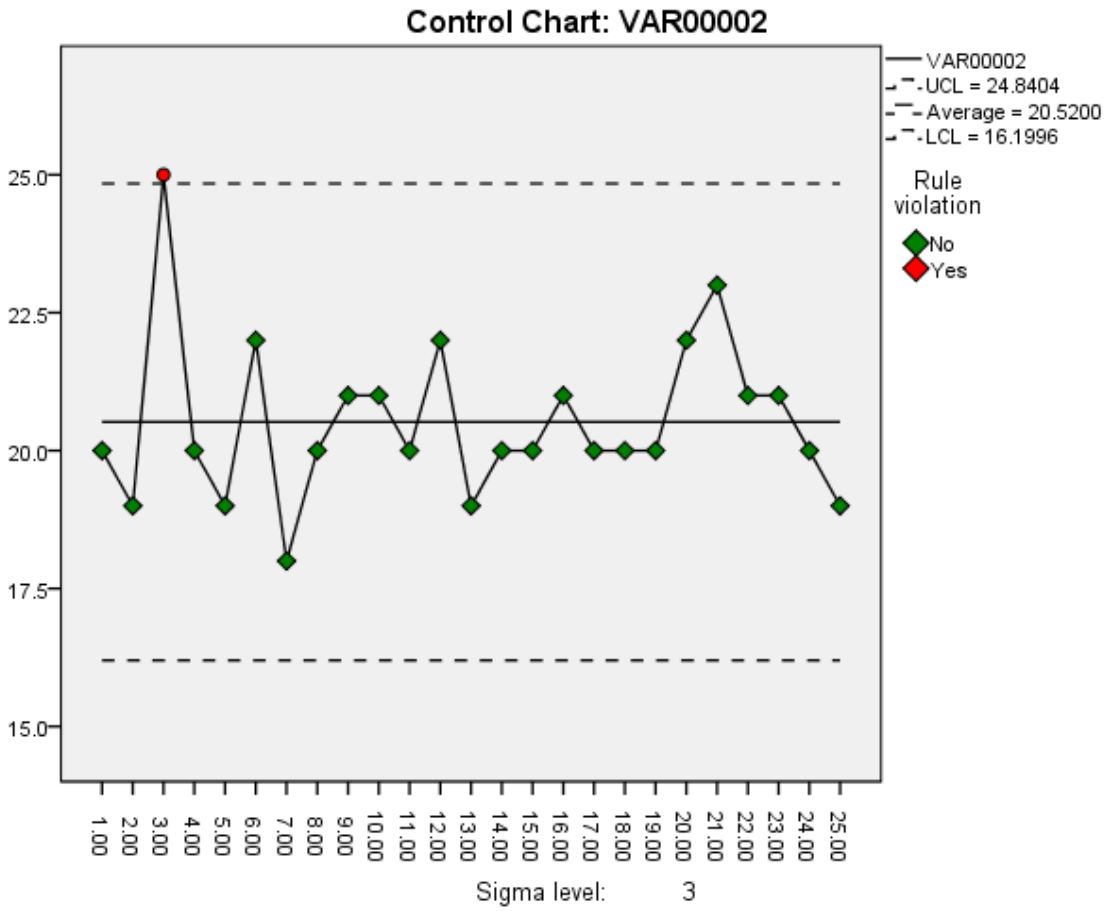
- Please open the excel file that you download from the course web page. And copy and paste the data related with Q2 to the Spss program.

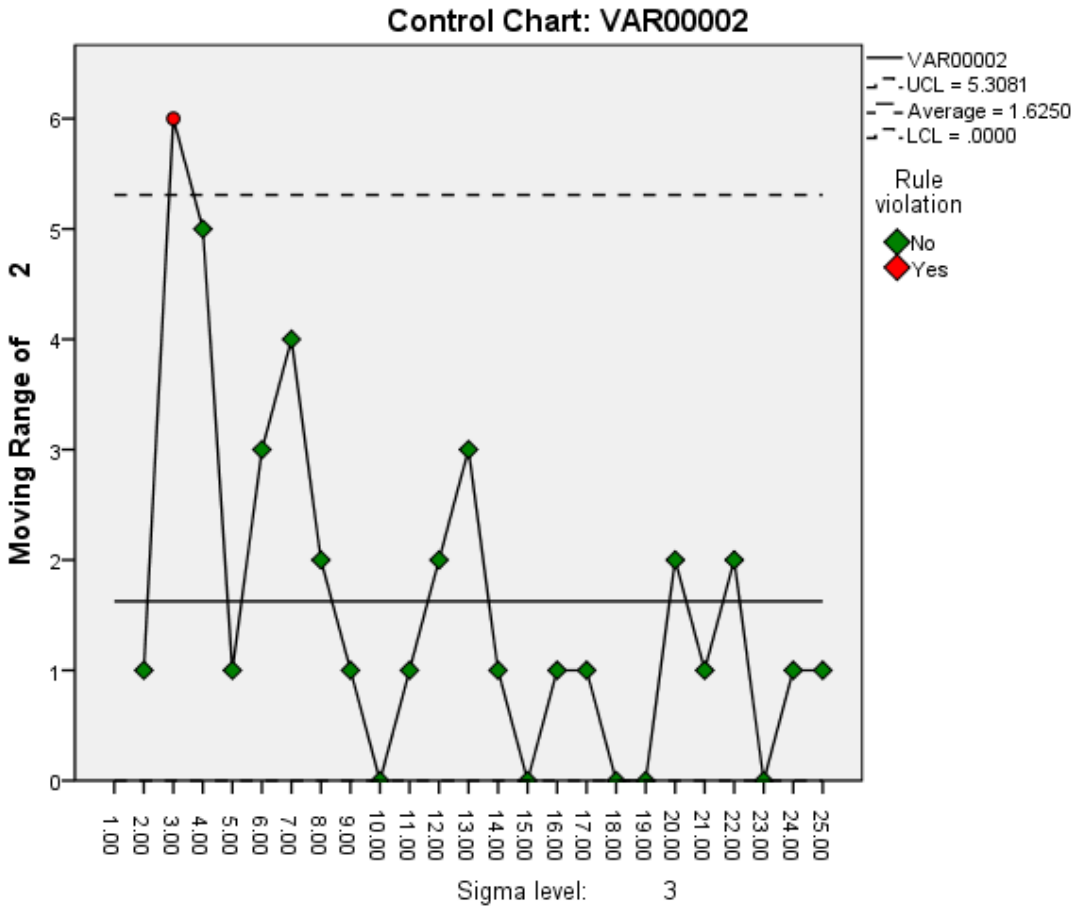

Control Charts
Variables Charts
X-bar, R, s
Individuals, Moving Range
Attribute Charts
p, np
c, u
Data Organization
Cases are units
Cases are subgroups
Define
Cancel
Help


Individuals and Moving Range
VAR00003
VAR00004
VAR00005
VAR00006
Process Measurement:
VAR00002
Subgroups Labeled by:
VAR00001
Identify points by:
Titles...
Options...
Control Rules...
Statistics...
Charts
Individuals and moving range
Individuals
Span:
2
Template
Apply chart template from:
File...
OK
Paste
Reset
Cancel
Help


Individuals and Moving Range
VAR00003
VAR00004
VAR00005
VAR00006
Process Measurement:
VAR00002
Subgroups Labeled by:
VAR00001
Identify points by:
Titles...
Options...
Control Rules...
Statistics...
Charts
Individuals and moving range
Individuals
Span:
2
Template
Apply chart template from:
File...
OK
Paste
Reset
Cancel
Help
Individuals and Moving Range: ...
Number of Sigmas:
3
Display subgroups defined by missing values
Continue
Cancel
Help


Individuals and Moving Range
VAR00003
VAR00004
VAR00005
VAR00006
Process Measurement:
VAR00002
Subgroups Labeled by:
VAR00001
Identify points by:
Titles...
Options...
Control Rules...
Statistics...
OK
Paste
Reset
Cancel
Help
Individuals and Moving Range: Control Rules
Select all control rules
Above +3 sigma
Below -3 sigma
2 out of last 3 above +2 sigma
2 out of last 3 below -2 sigma
4 out of last 5 above +1 sigma
4 out of last 5 below -1 sigma
8 points above center line
8 points below center line
6 in a row trending up
6 in a row trending down
14 in a row alternating
Continue
Cancel
Help


Control Chart: VAR00002
VAR00002
UCL = 24.8404
Average = 20.5200
LCL = 16.1996
Rule violation
No
Yes
25.0
22.5
20.0
17.5
15.0
1.00
2.00
3.00
4.00
5.00
6.00
7.00
8.00
9.00
10.00
11.00
12.00
13.00
14.00
15.00
16.00
17.00
18.00
19.00
20.00
21.00
22.00
23.00
24.00
25.00
Sigma level: 3


Control Chart: VAR00002
Moving Range of 2
VAR00002
UCL = 5.3081
Average = 1.6250
LCL = .0000
Rule violation
No
Yes
0
1
2
3
4
5
6
1.00
2.00
3.00
4.00
5.00
6.00
7.00
8.00
9.00
10.00
11.00
12.00
13.00
14.00
15.00
16.00
17.00
18.00
19.00
20.00
21.00
22.00
23.00
24.00
25.00
Sigma level: 3

Rule Violations for Run

VAR00001	Violations for Points
3.00	Greater than +3 sigma

1 points violate control rules.

Rule Violations for MR

VAR00001	Violations for Points
3.00	Greater than +3 sigma

1 points violate control rules.

Remedial actions were taken to rectify this situation.

- Delete samples necessary and revised the control limits.