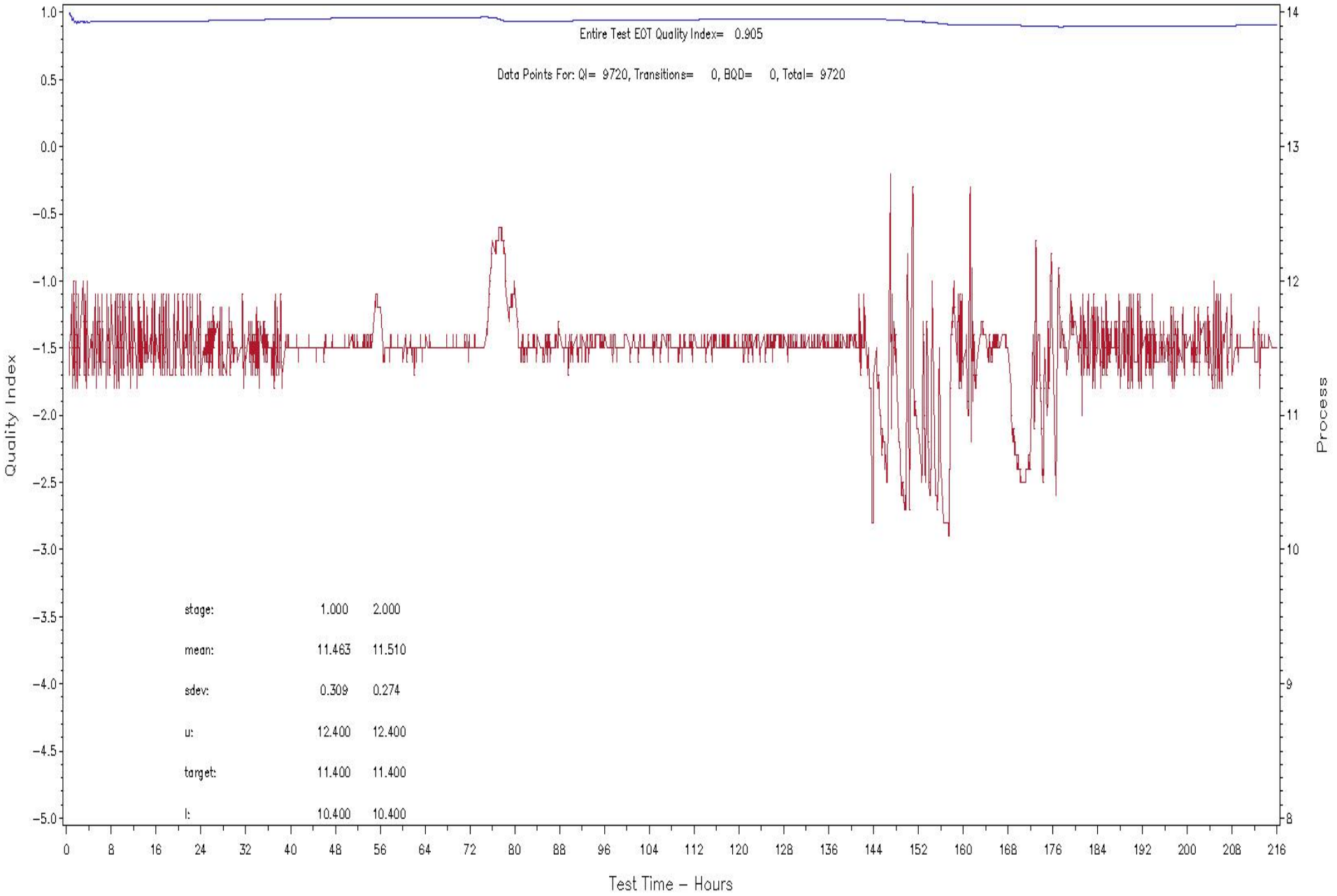
Chain Wear QI Plots

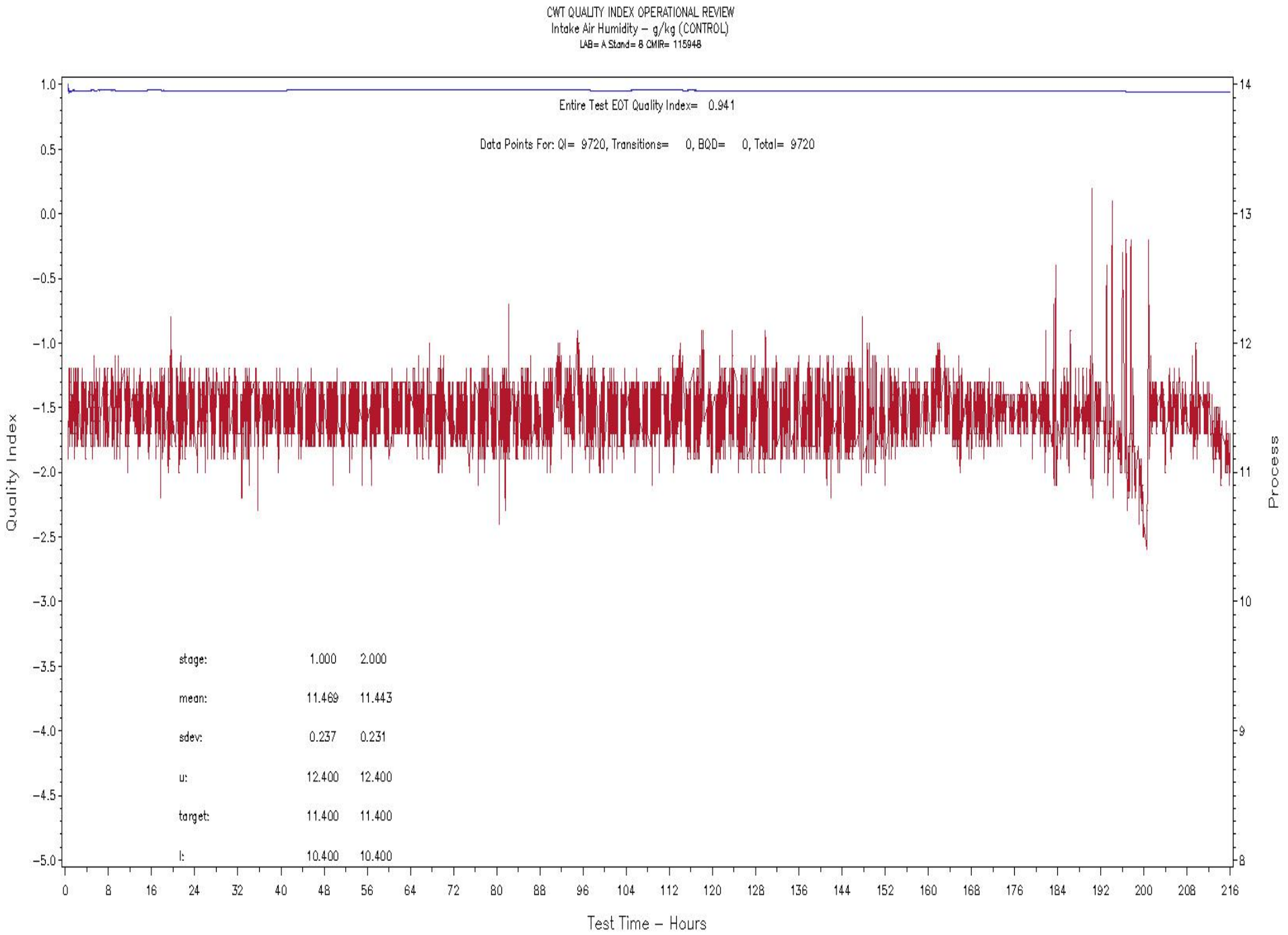
Data from Testkeys 113424, 115086, 115498, 113314, 113421, 113319, and 116585

Humidity

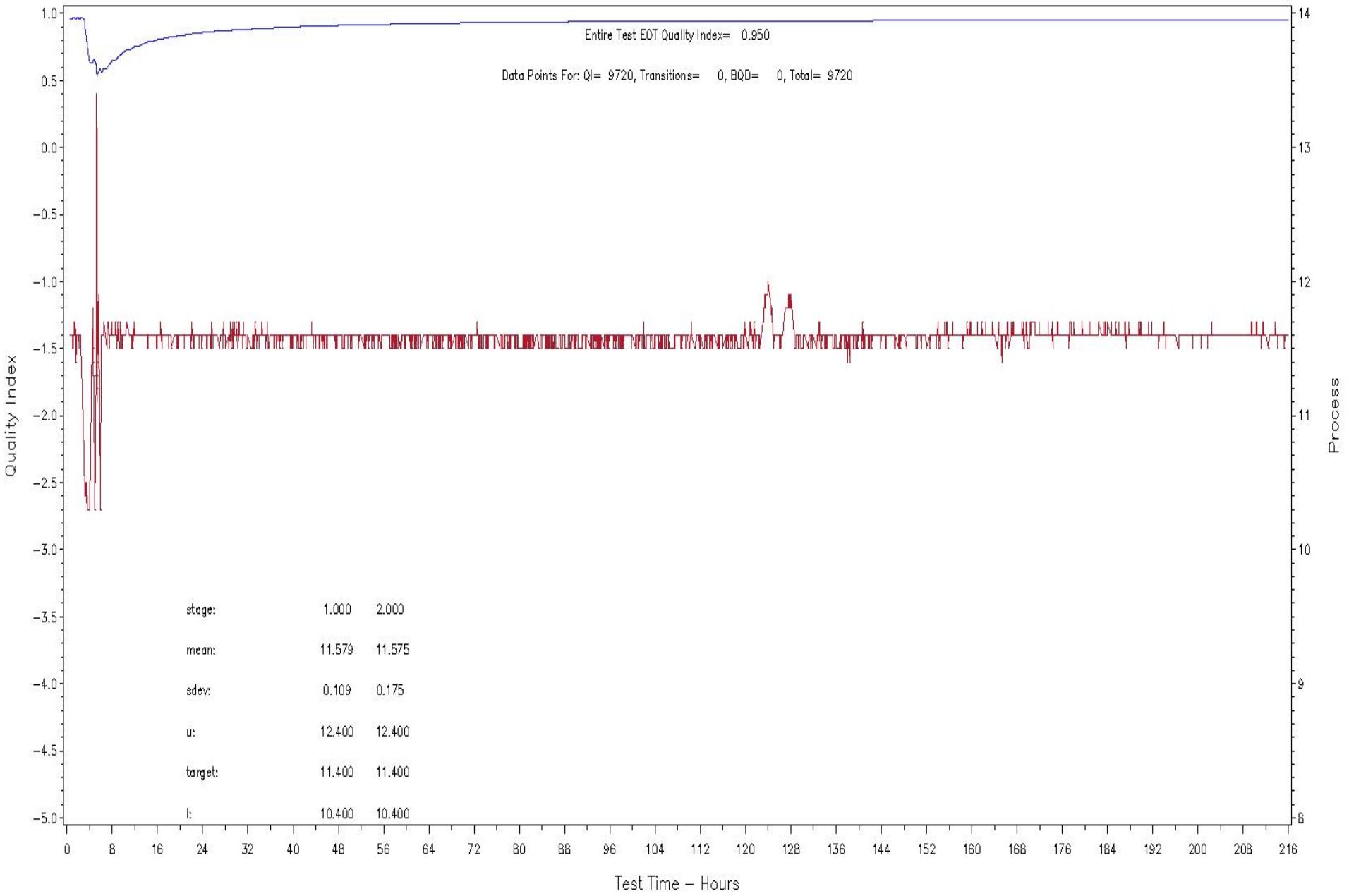
- All Values Positive

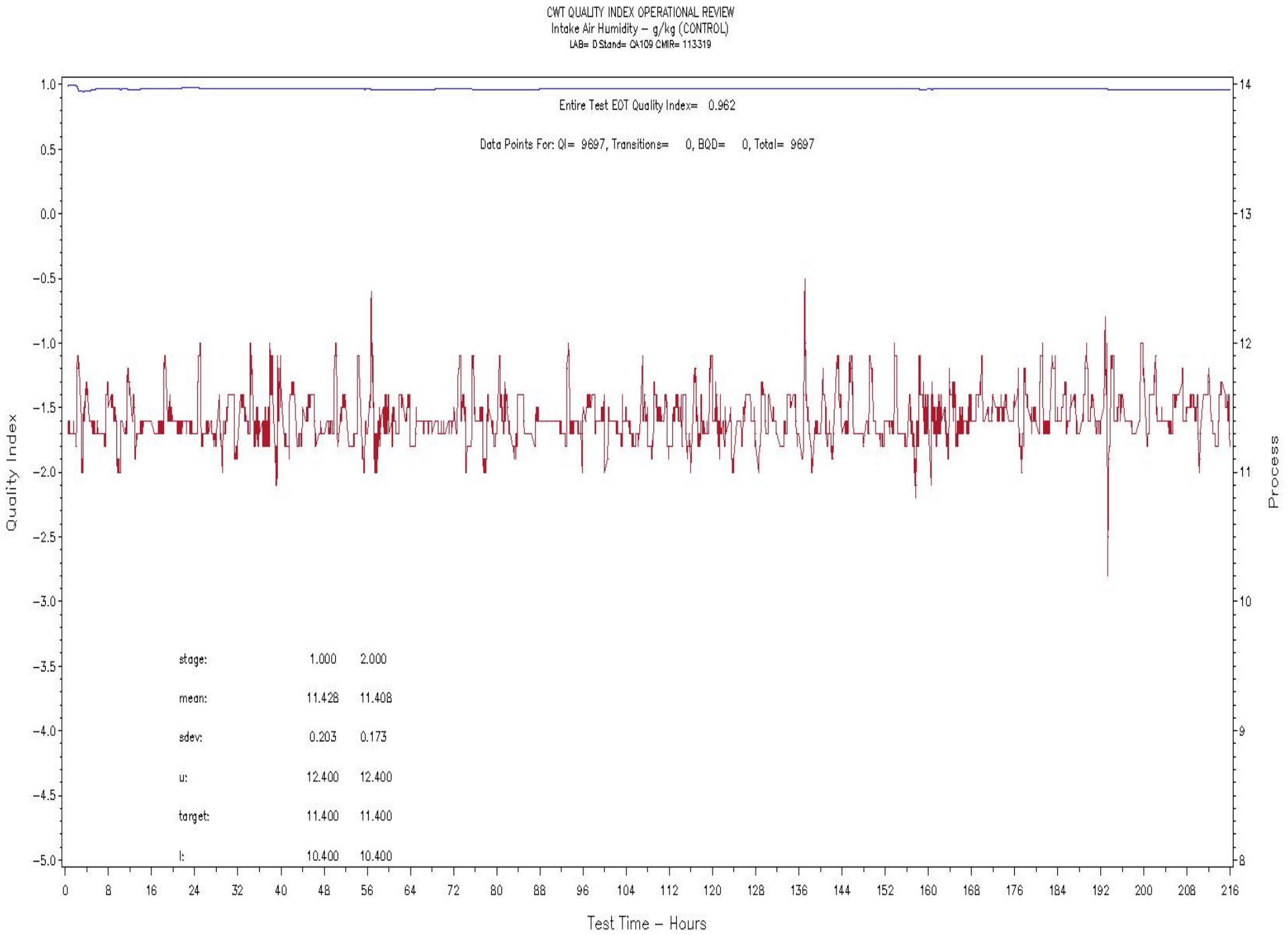
CWT QUALITY INDEX OPERATIONAL REVIEW
Intake Air Humidity – g/kg (CONTROL)
LAB= A Stand= 27 CMR= 113424

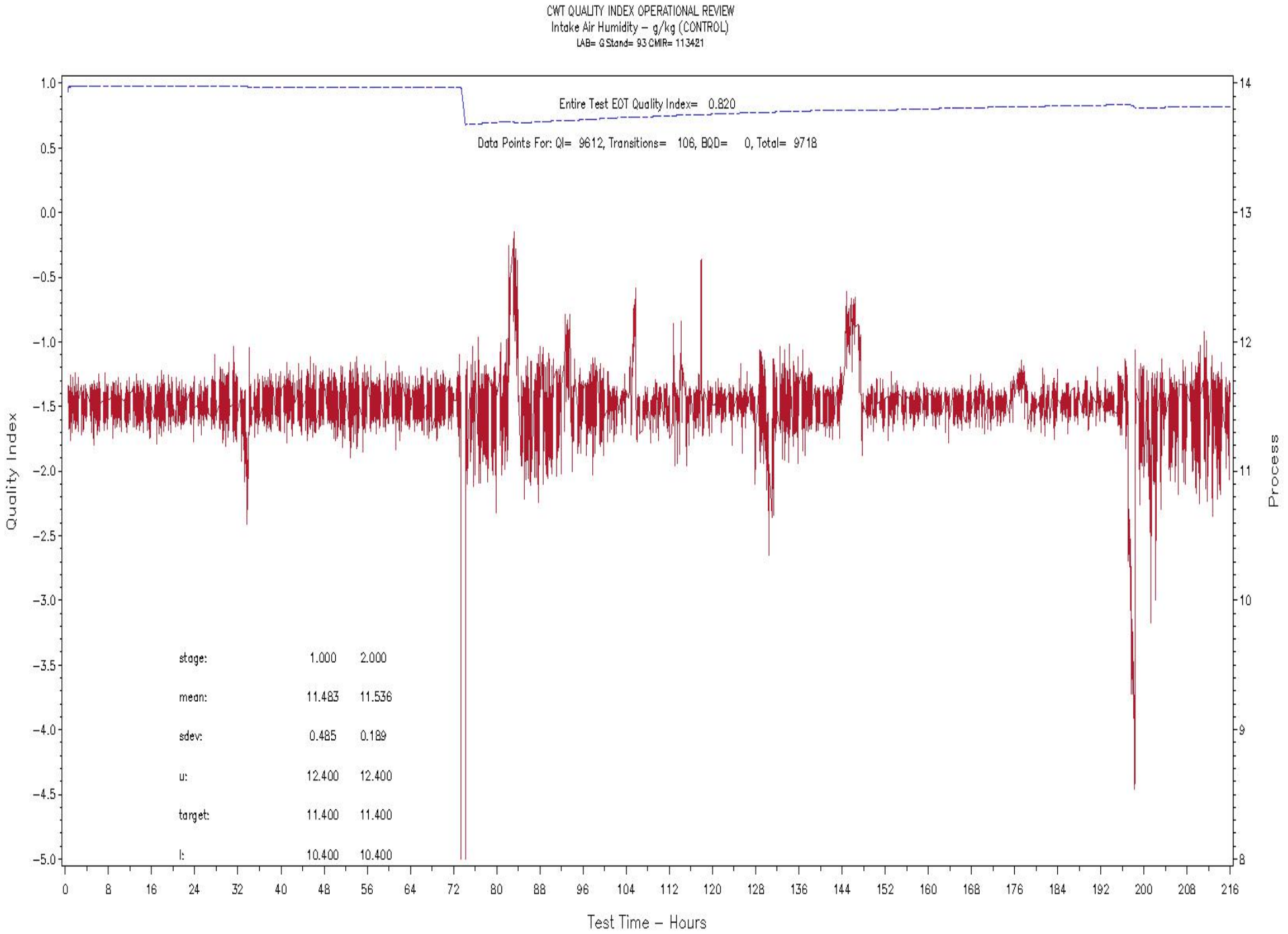


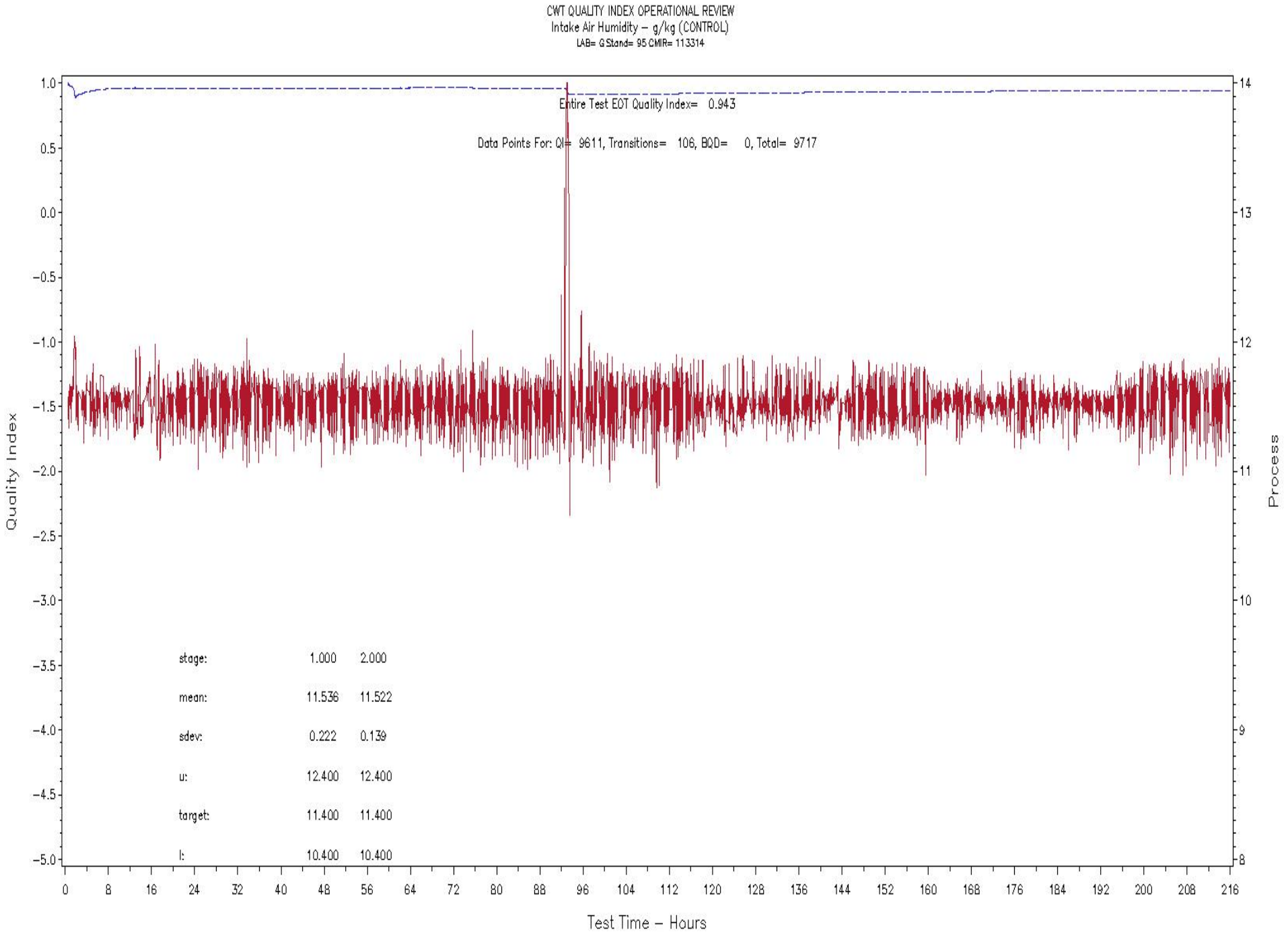

CWT QUALITY INDEX OPERATIONAL REVIEW
Intake Air Humidity – g/kg (CONTROL)
LAB= A Stand= 8 CMIR= 115948
Entire Test EOT Quality Index= 0.941
Data Points For: QI= 9720, Transitions= 0, BQD= 0, Total= 9720
stage: 1.000 2.000
mean: 11.469 11.443
sdev: 0.237 0.231
u: 12.400 12.400
target: 11.400 11.400
l: 10.400 10.400
Quality Index
Process
Test Time – Hours

CWT QUALITY INDEX OPERATIONAL REVIEW
Intake Air Humidity – g/kg (CONTROL)
LAB= A Stand= 27 CMR= 116588



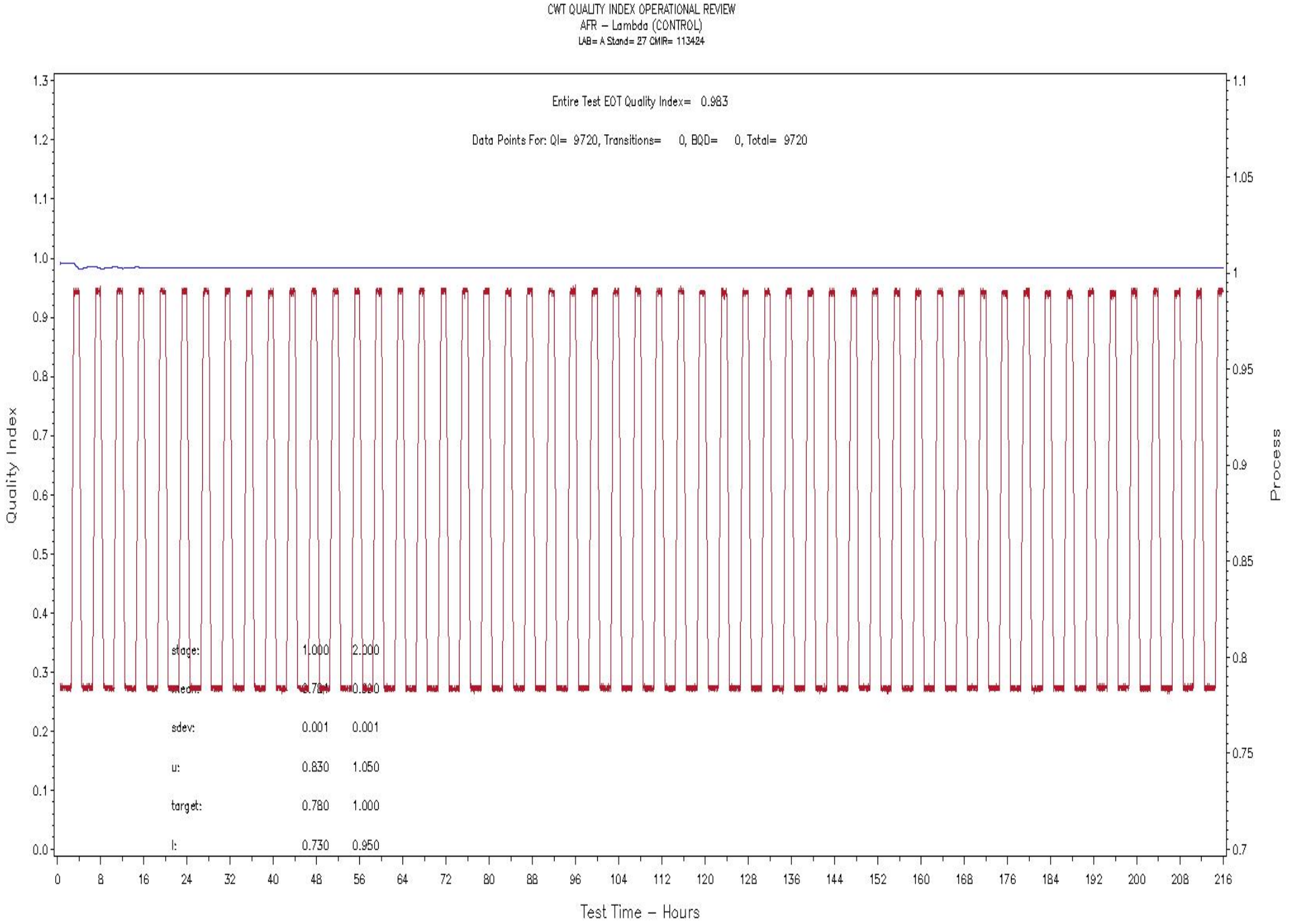

CWT QUALITY INDEX OPERATIONAL REVIEW
Intake Air Humidity – g/kg (CONTROL)
LAB= D Stand= CA109 CMR= 113319
Entire Test EOT Quality Index= 0.962
Data Points For: QI= 9697, Transitions= 0, BQD= 0, Total= 9697
stage: 1.000 2.000
mean: 11.428 11.408
sdev: 0.203 0.173
u: 12.400 12.400
target: 11.400 11.400
l: 10.400 10.400
Quality Index
Process
Test Time – Hours

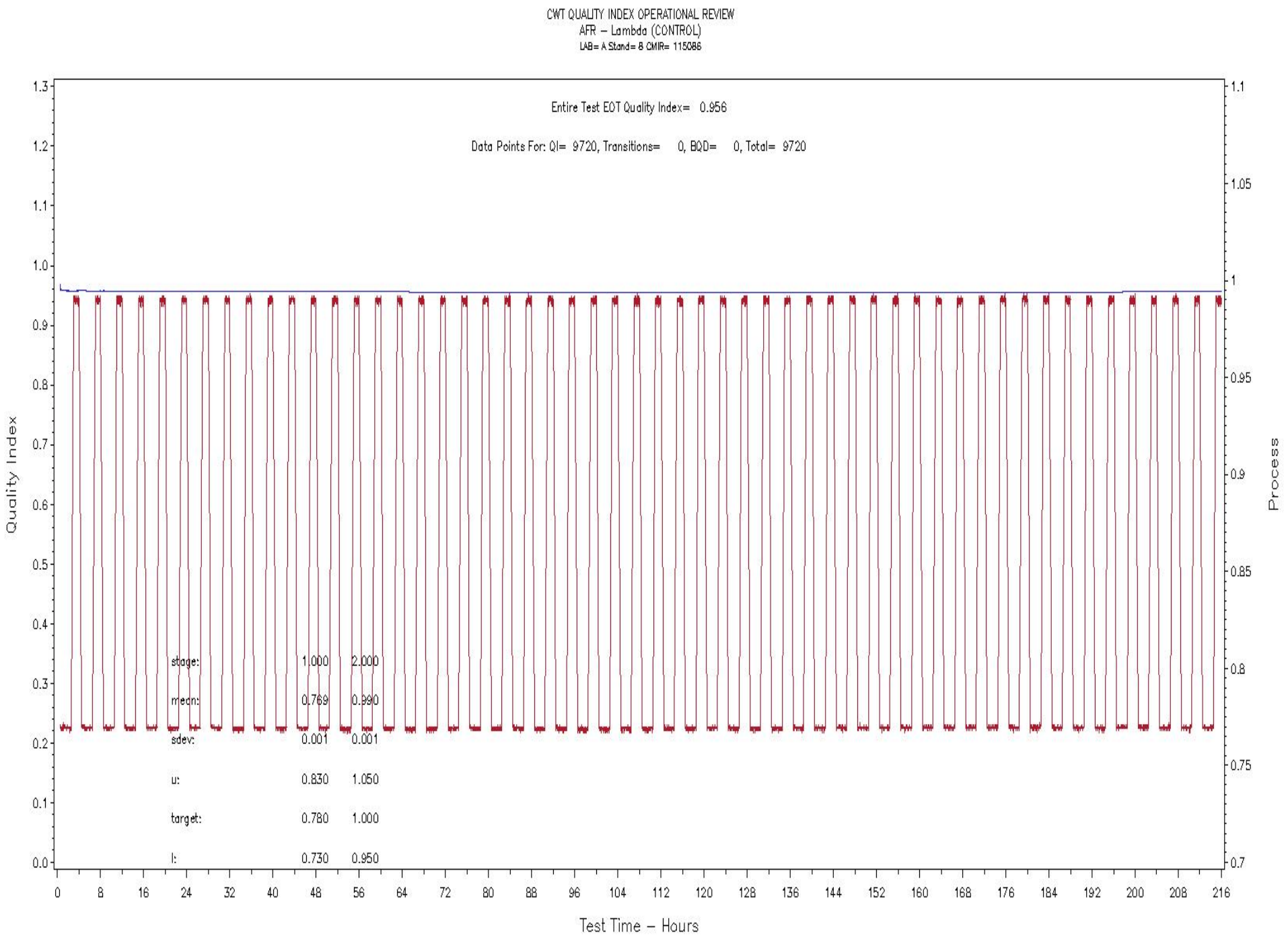

CWT QUALITY INDEX OPERATIONAL REVIEW
Intake Air Humidity – g/kg (CONTROL)
LAB= GStand= 93 CMR= 113421
Entire Test EOT Quality Index= 0.820
Data Points For: QI= 9612, Transitions= 106, BQD= 0, Total= 9718
stage: 1.000 2.000
mean: 11.483 11.536
sdev: 0.485 0.189
u: 12.400 12.400
target: 11.400 11.400
l: 10.400 10.400
Quality Index
Process
Test Time – Hours

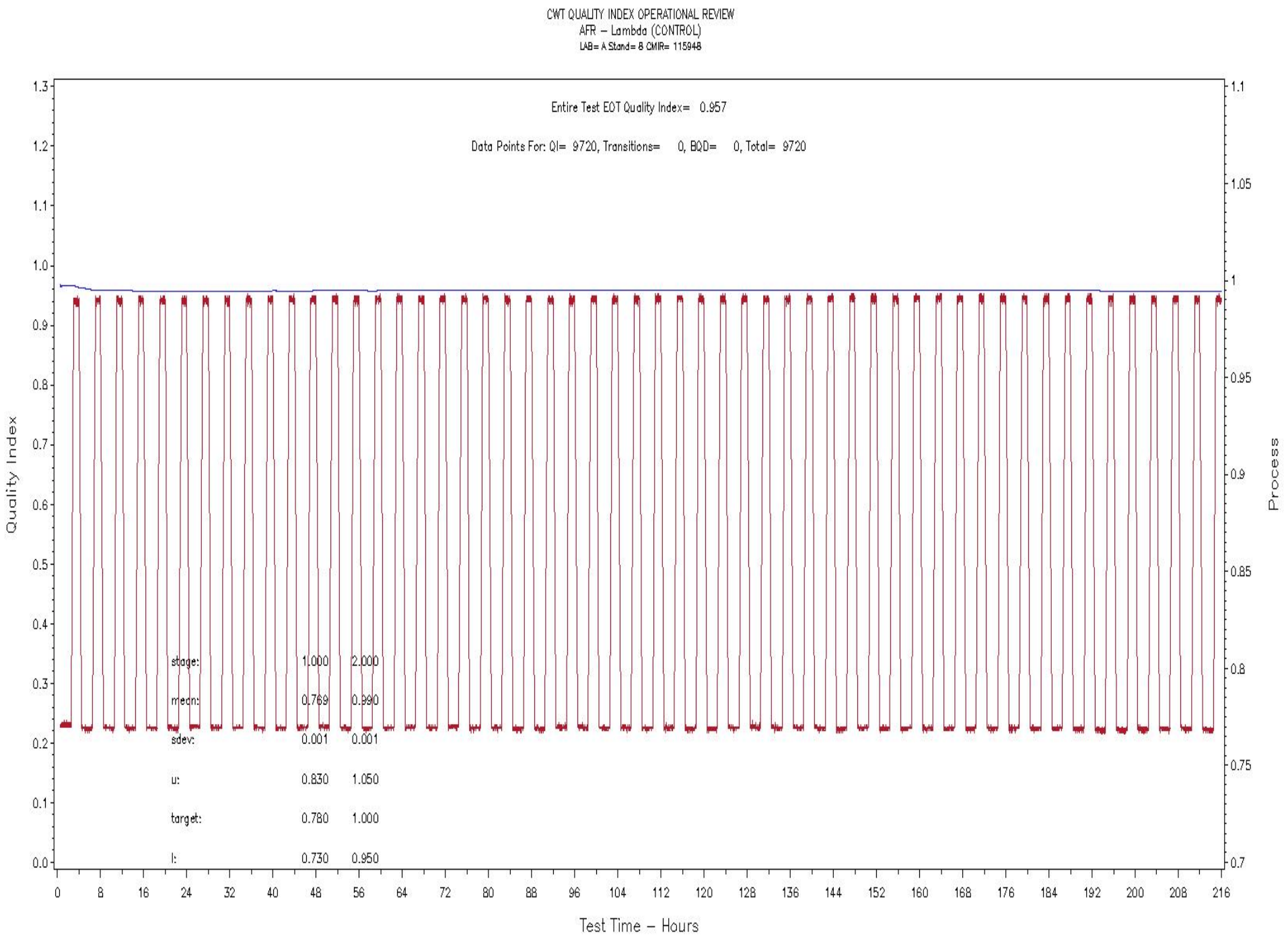

CWT QUALITY INDEX OPERATIONAL REVIEW
Intake Air Humidity – g/kg (CONTROL)
LAB= GStand= 95 CMIR= 113314
Entire Test EOT Quality Index= 0.943
Data Points For: QI= 9611, Transitions= 106, BQD= 0, Total= 9717
stage: 1.000 2.000
mean: 11.536 11.522
sdev: 0.222 0.139
u: 12.400 12.400
target: 11.400 11.400
l: 10.400 10.400
Quality Index
Process
Test Time – Hours

Lambda

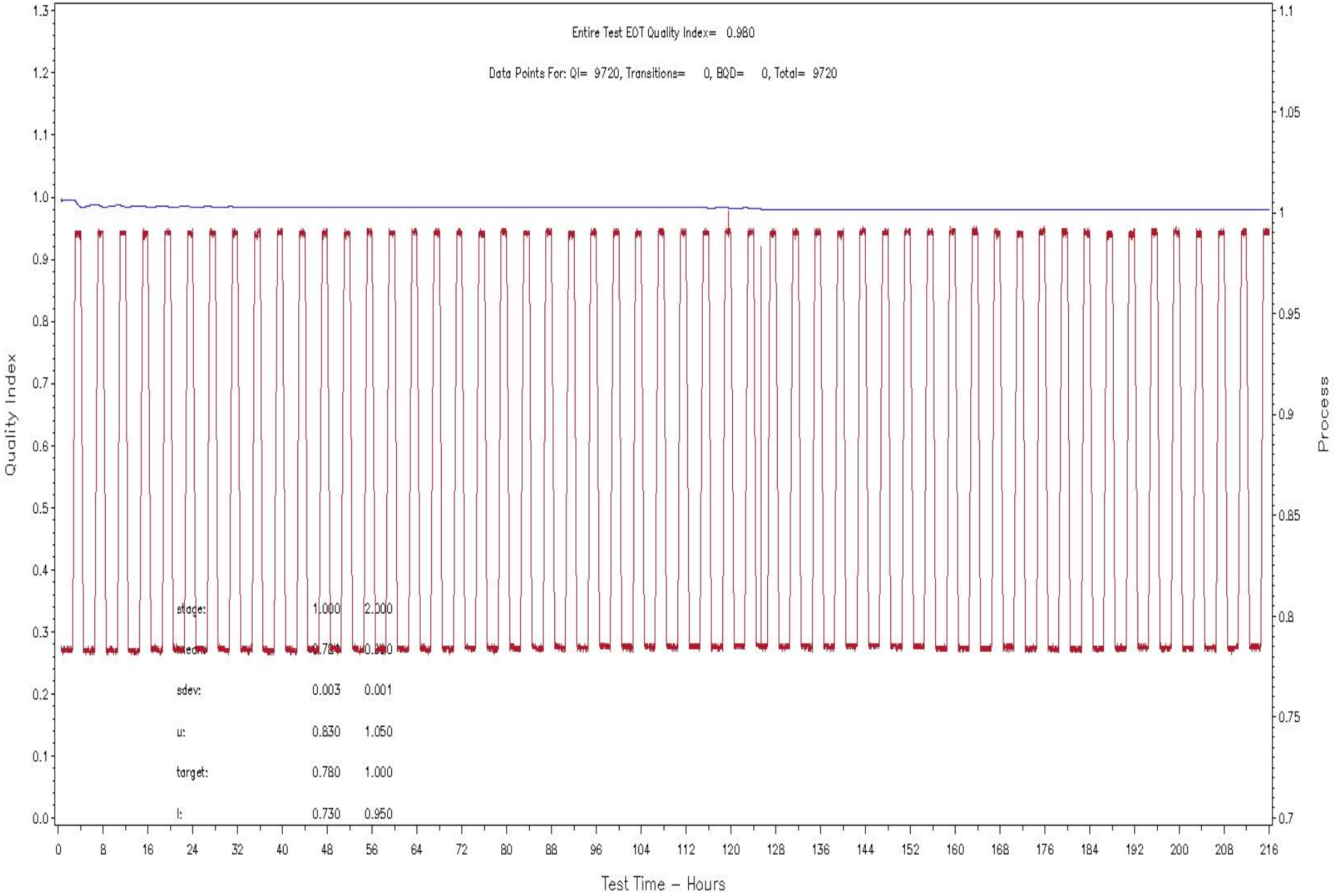
- All Values Positive

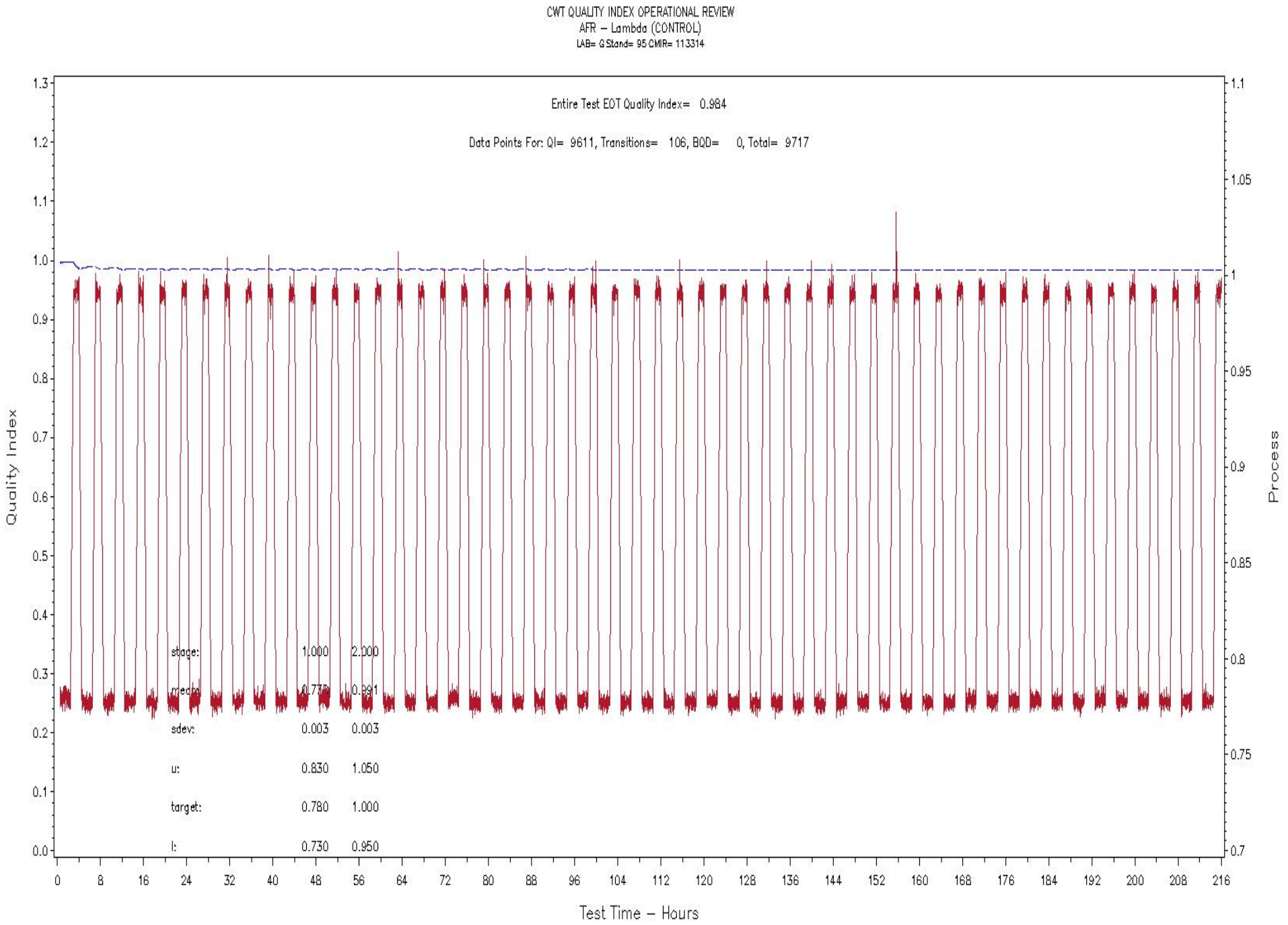

CWT QUALITY INDEX OPERATIONAL REVIEW
AFR – Lambda (CONTROL)
LAB= A Stand= 27 CMR= 113424
Entire Test EOT Quality Index= 0.983
Data Points For: QI= 9720, Transitions= 0, BQD= 0, Total= 9720
stage: 1.000 2.000
sdev: 0.001 0.001
u: 0.830 1.050
target: 0.780 1.000
l: 0.730 0.950
Quality Index
Process
Test Time – Hours

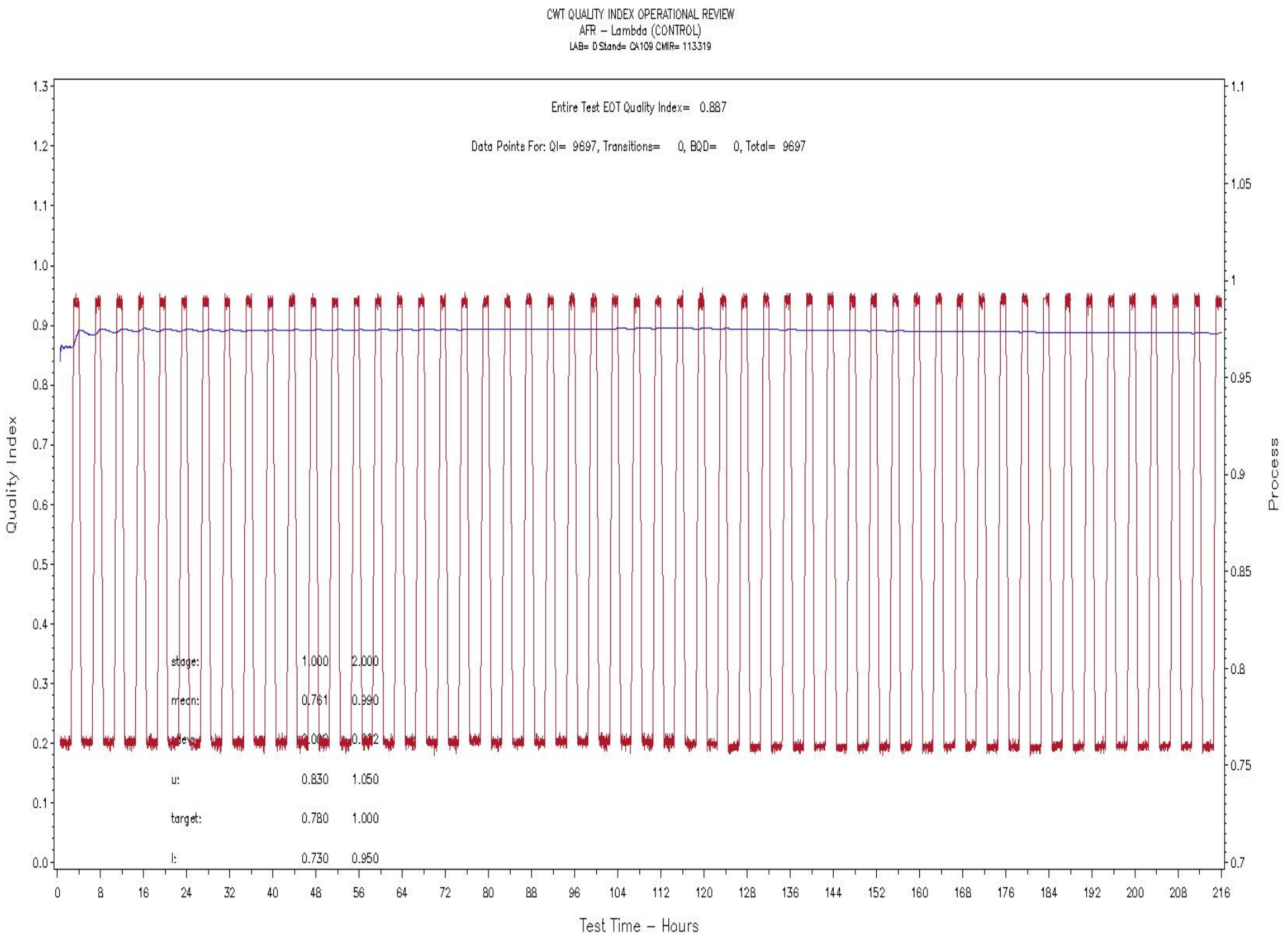

CWT QUALITY INDEX OPERATIONAL REVIEW
AFR – Lambda (CONTROL)
LAB= A Stand= 8 CMR= 115086
Entire Test EOT Quality Index= 0.956
Data Points For: QI= 9720, Transitions= 0, BQD= 0, Total= 9720
stage: 1.000 2.000
mean: 0.769 0.990
sdev: 0.001 0.001
u: 0.830 1.050
target: 0.780 1.000
l: 0.730 0.950
Quality Index
Process
Test Time – Hours

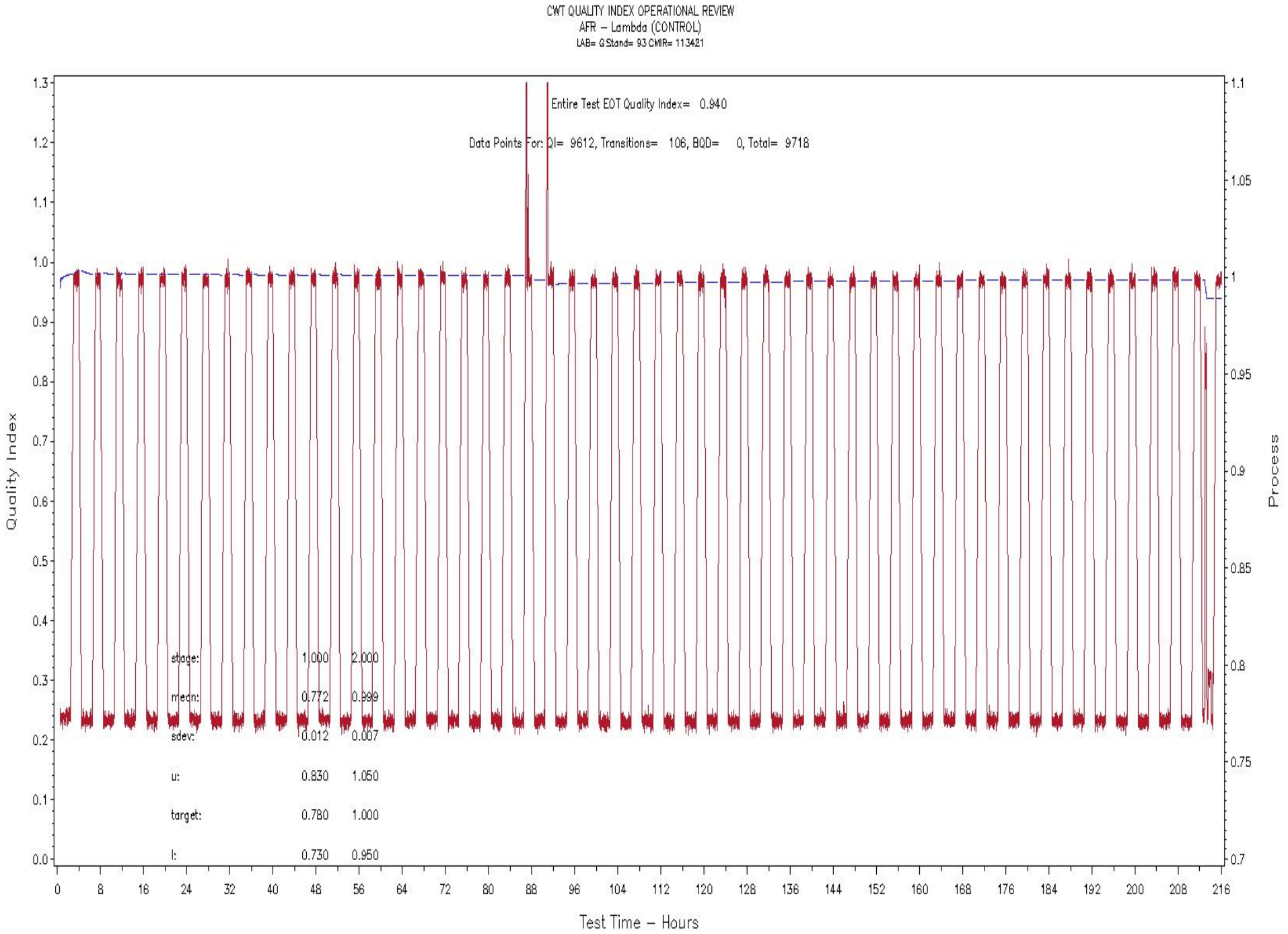

CWT QUALITY INDEX OPERATIONAL REVIEW
AFR – Lambda (CONTROL)
LAB= A Stand= 8 CMR= 115948
Entire Test EOT Quality Index= 0.957
Data Points For: QI= 9720, Transitions= 0, BQD= 0, Total= 9720
stage: 1.000 2.000
mean: 0.769 0.990
sdev: 0.001 0.001
u: 0.830 1.050
target: 0.780 1.000
l: 0.730 0.950
Quality Index
Process
Test Time – Hours

CWT QUALITY INDEX OPERATIONAL REVIEW
AFR – Lambda (CONTROL)
LAB= A Stand= 27 CMR= 116588



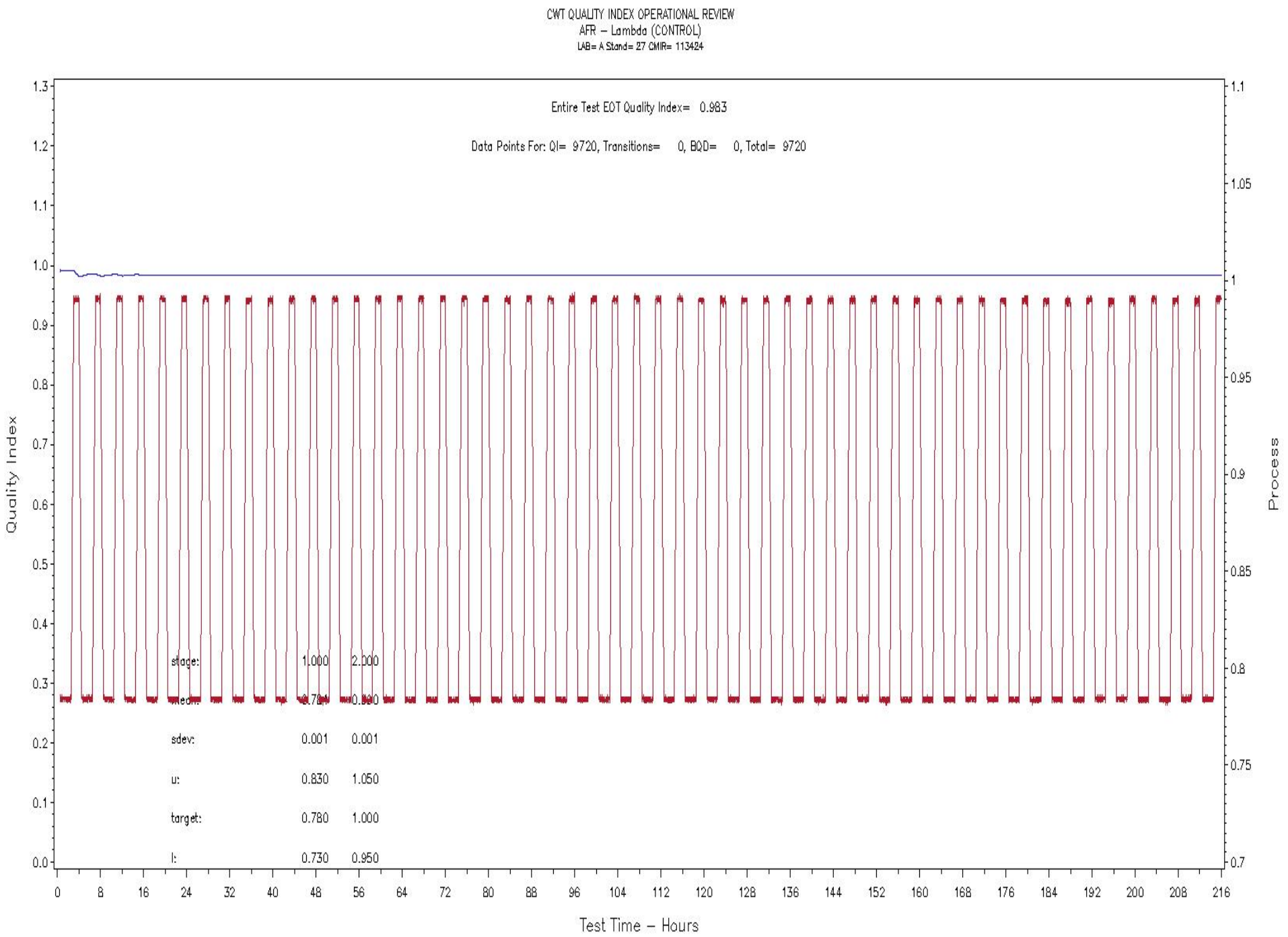

CWT QUALITY INDEX OPERATIONAL REVIEW
AFR – Lambda (CONTROL)
LAB= GStand= 95 CMR= 113314
Entire Test EOT Quality Index= 0.984
Data Points For: QI= 9611, Transitions= 106, BQD= 0, Total= 9717
stage: 1.000 2.000
sdev: 0.003 0.003
u: 0.830 1.050
target: 0.780 1.000
l: 0.730 0.950
Quality Index
Process
Test Time – Hours


CWT QUALITY INDEX OPERATIONAL REVIEW
AFR – Lambda (CONTROL)
LAB= D Stand= CA109 CMR= 113319
Entire Test EOT Quality Index= 0.887
Data Points For: QI= 9697, Transitions= 0, BQD= 0, Total= 9697
stage: 1.000 2.000
mean: 0.761 0.990
u: 0.830 1.050
target: 0.780 1.000
l: 0.730 0.950
Quality Index
Process
Test Time – Hours

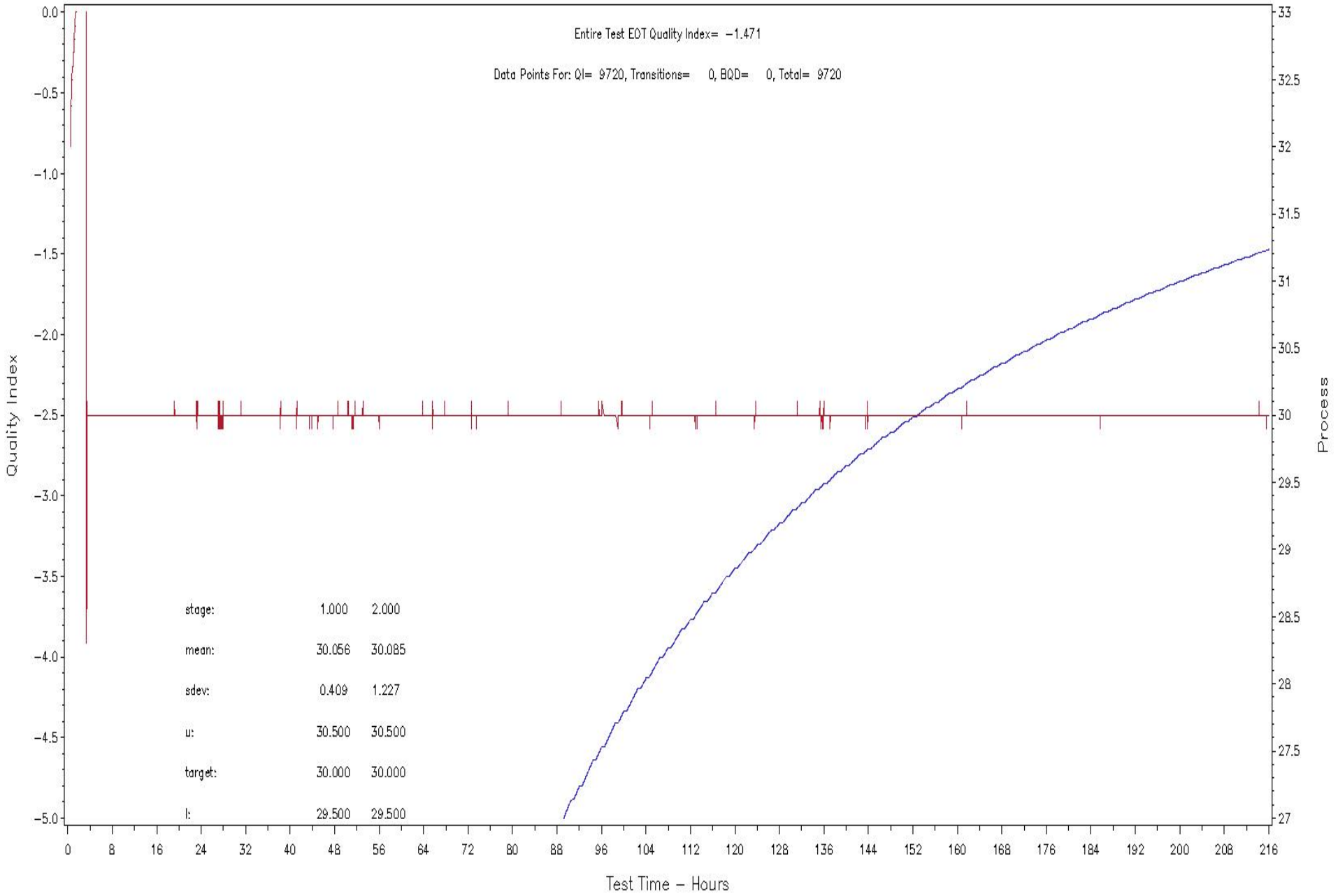

CWT QUALITY INDEX OPERATIONAL REVIEW
AFR – Lambda (CONTROL)
LAB= GStand= 93 CMR= 113421
Entire Test EOT Quality Index= 0.940
Data Points For: QI= 9612, Transitions= 106, BQD= 0, Total= 9718
stage: 1.000 2.000
mean: 0.772 0.999
sdev: 0.012 0.007
u: 0.830 1.050
target: 0.780 1.000
l: 0.730 0.950
Quality Index
Process
Test Time – Hours

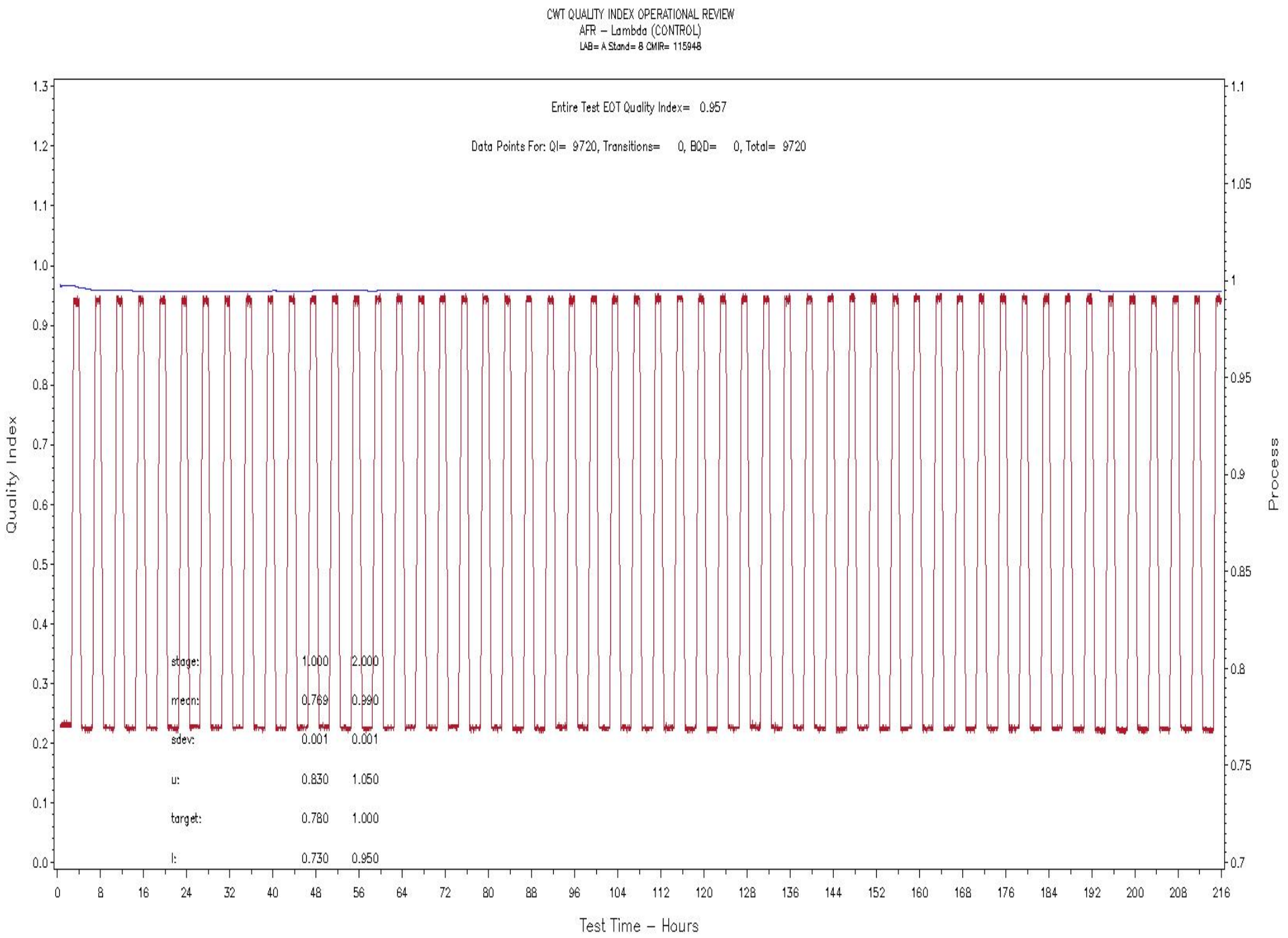
Air Charge Temperature

- Testkey 115086 was negative for ACT
- All Other Values Positive

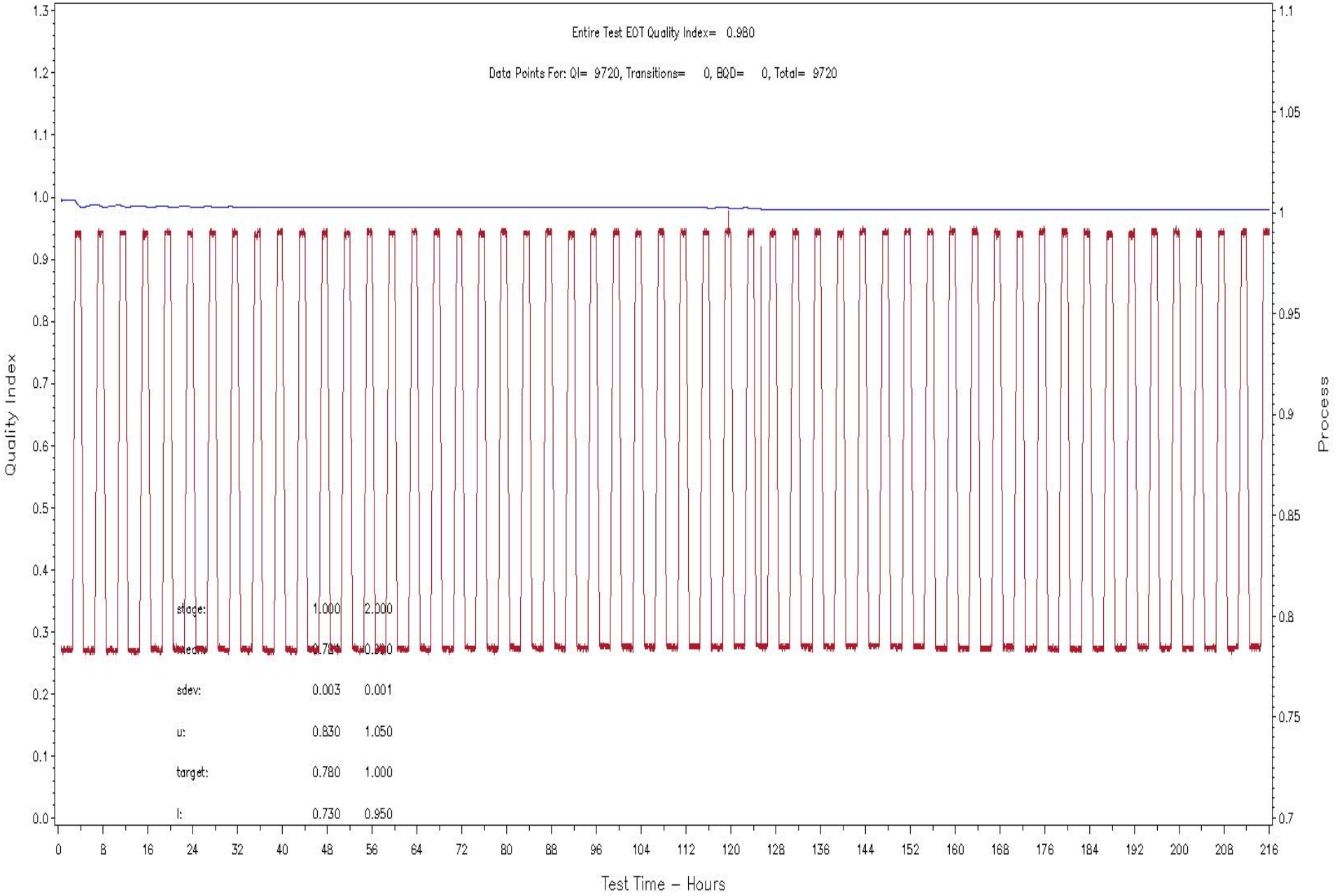

CWT QUALITY INDEX OPERATIONAL REVIEW
AFR – Lambda (CONTROL)
LAB= A Stand= 27 CMR= 113424
Entire Test EOT Quality Index= 0.983
Data Points For: QI= 9720, Transitions= 0, BQD= 0, Total= 9720
stage: 1.000 2.000
sdev: 0.001 0.001
u: 0.830 1.050
target: 0.780 1.000
l: 0.730 0.950
Quality Index
Process
Test Time – Hours

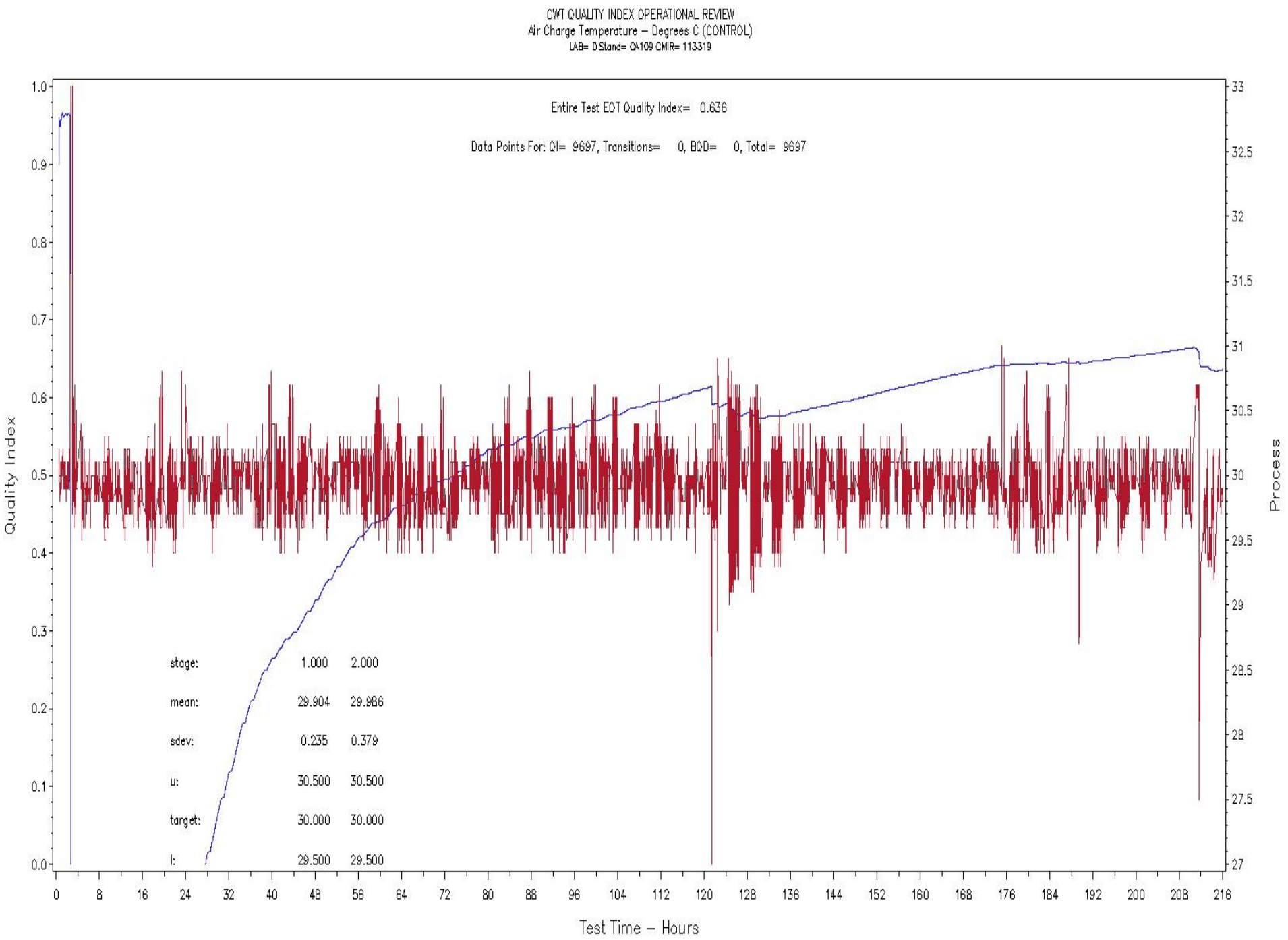
CWT QUALITY INDEX OPERATIONAL REVIEW
Air Charge Temperature – Degrees C (CONTROL)
LAB= A Stand= 8 CMIR= 115086

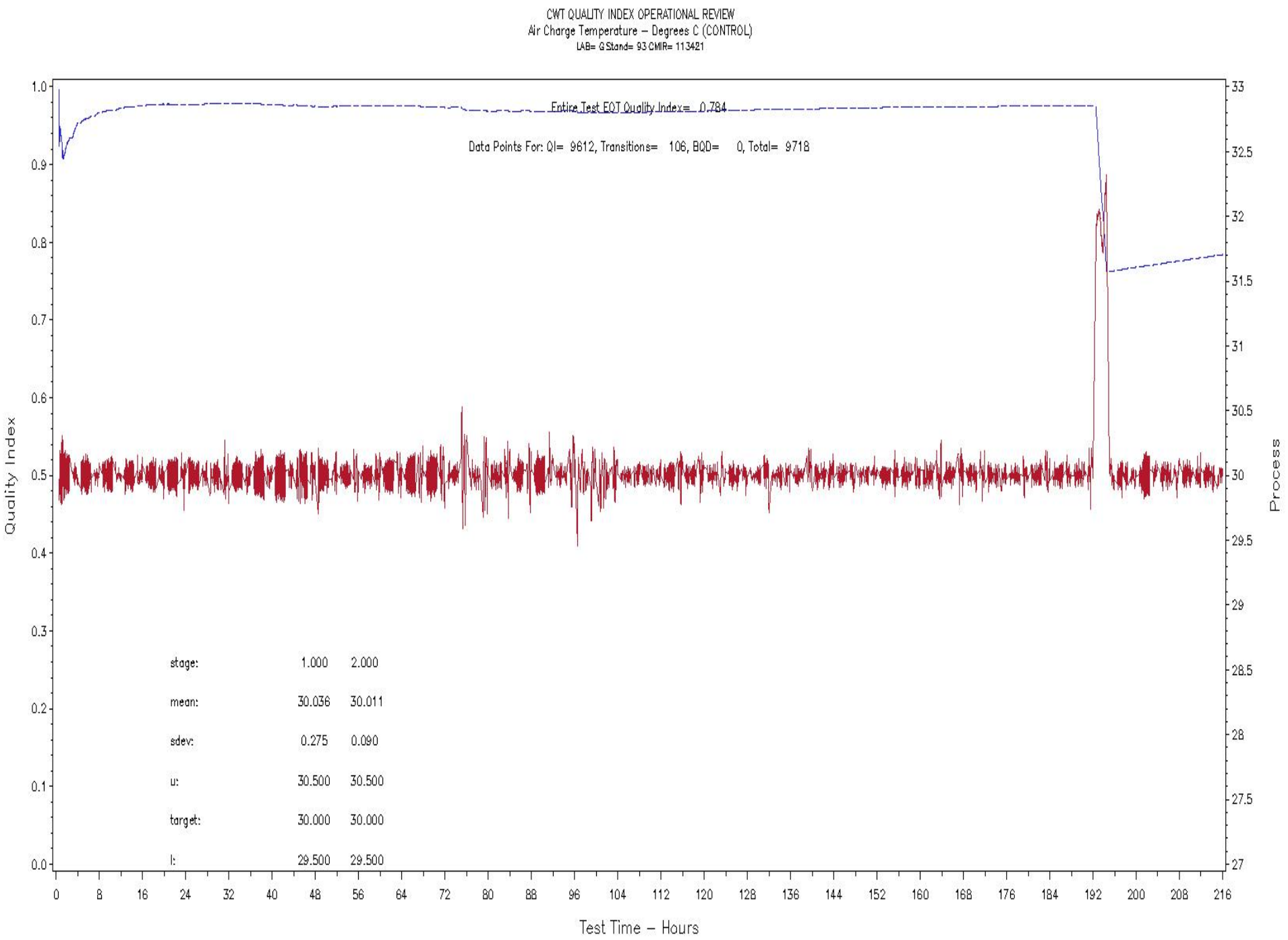



CWT QUALITY INDEX OPERATIONAL REVIEW
AFR – Lambda (CONTROL)
LAB= A Stand= 8 CMR= 115948
Entire Test EOT Quality Index= 0.957
Data Points For: QI= 9720, Transitions= 0, BQD= 0, Total= 9720
stage: 1.000 2.000
mean: 0.769 0.990
sdev: 0.001 0.001
u: 0.830 1.050
target: 0.780 1.000
l: 0.730 0.950
Quality Index
Process
Test Time – Hours

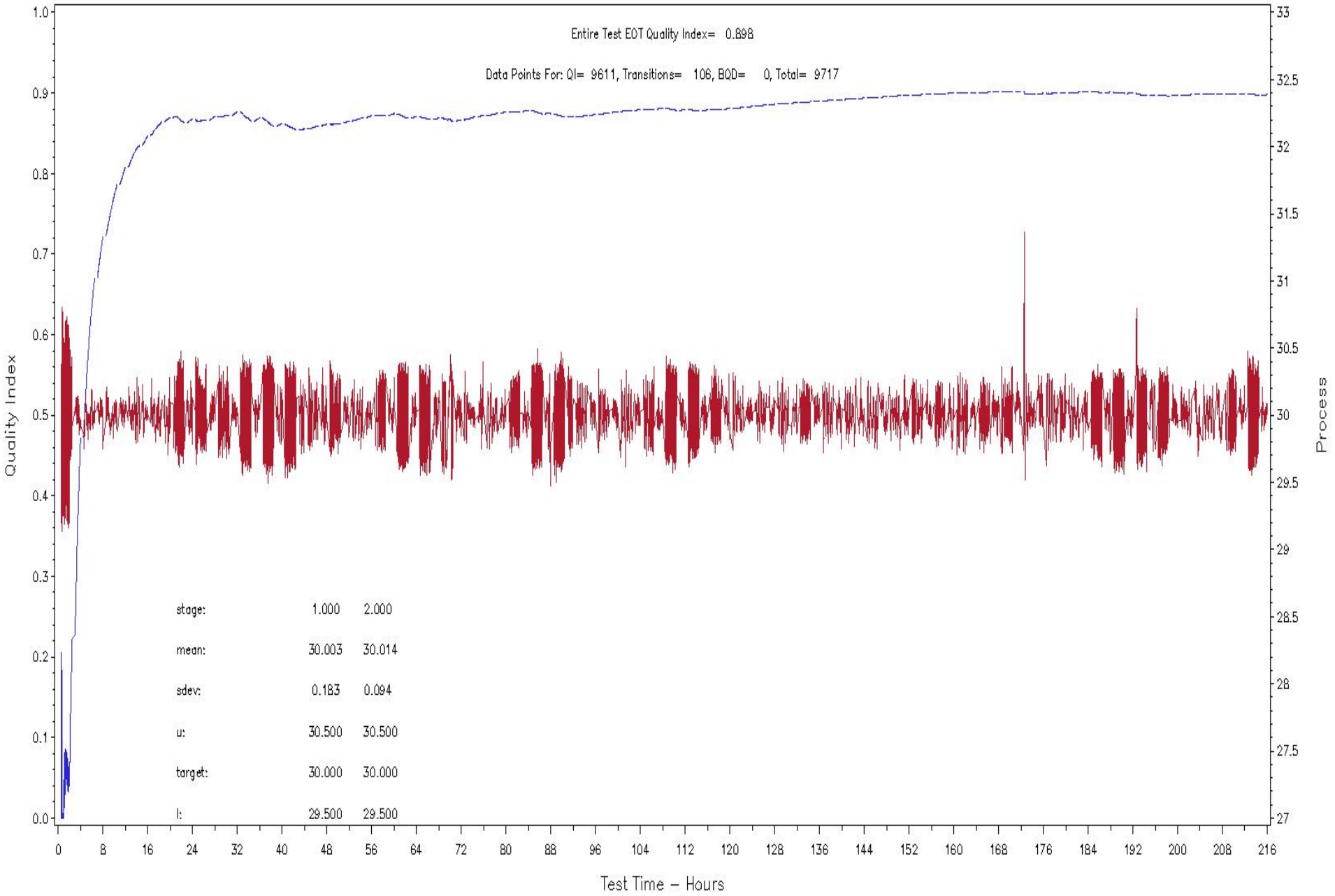
CWT QUALITY INDEX OPERATIONAL REVIEW
AFR – Lambda (CONTROL)
LAB= A Stand= 27 CMR= 116588




CWT QUALITY INDEX OPERATIONAL REVIEW
Air Charge Temperature – Degrees C (CONTROL)
LAB= D Stand= CA109 CMR= 113319
Entire Test EOT Quality Index= 0.636
Data Points For: QI= 9697, Transitions= 0, BQD= 0, Total= 9697
stage: 1.000 2.000
mean: 29.904 29.986
sdev: 0.235 0.379
u: 30.500 30.500
target: 30.000 30.000
l: 29.500 29.500
Quality Index
Process
Test Time – Hours

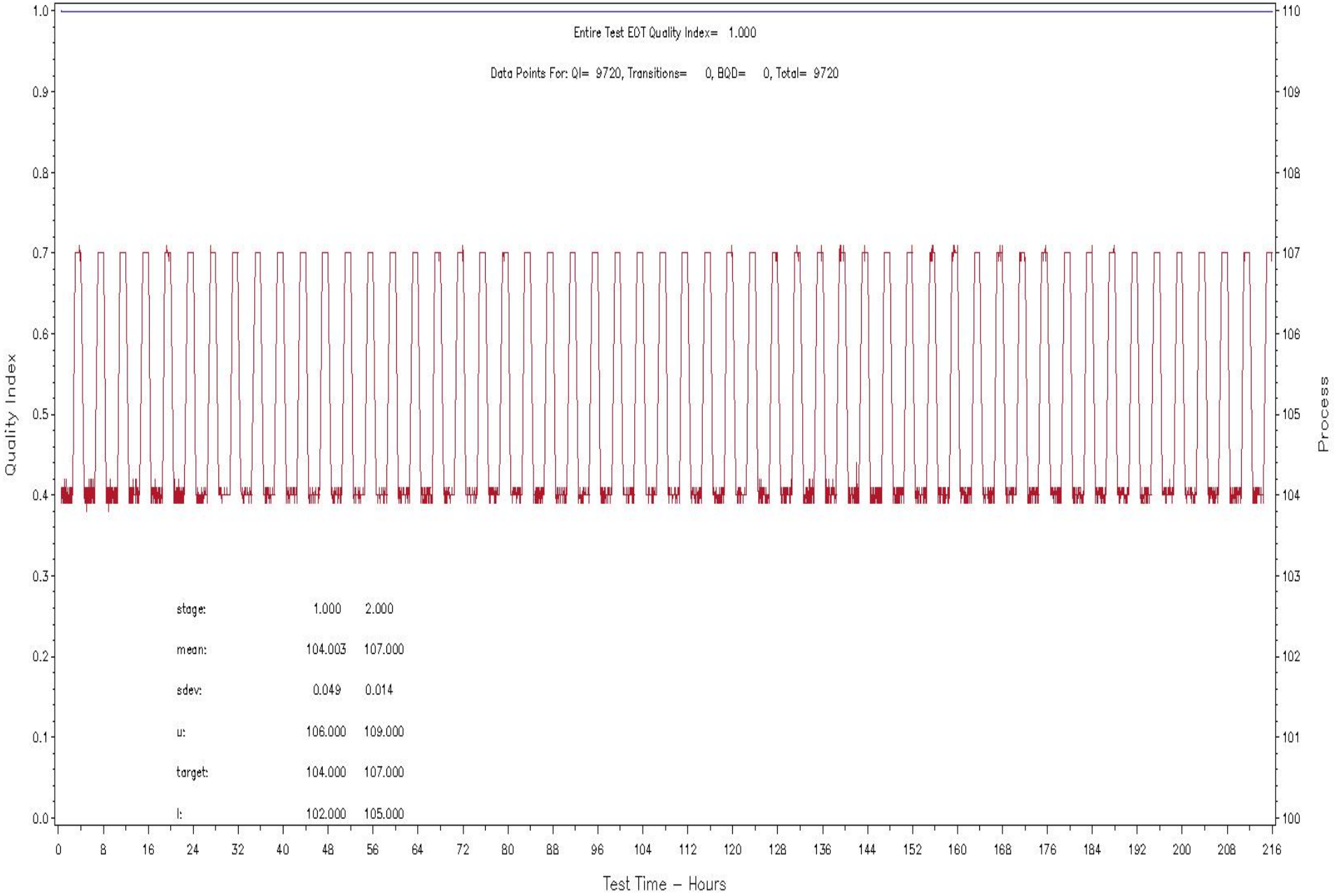

CWT QUALITY INDEX OPERATIONAL REVIEW
Air Charge Temperature – Degrees C (CONTROL)
LAB= GStand= 93 CMR= 113421
Entire Test EOT Quality Index= 0.784
Data Points For: QI= 9612, Transitions= 106, BQD= 0, Total= 9718
stage: 1.000 2.000
mean: 30.036 30.011
sdev: 0.275 0.090
u: 30.500 30.500
target: 30.000 30.000
l: 29.500 29.500
Quality Index
Process
Test Time – Hours

CWT QUALITY INDEX OPERATIONAL REVIEW
Air Charge Temperature – Degrees C (CONTROL)
LAB= GStand= 95 CMIR= 113314

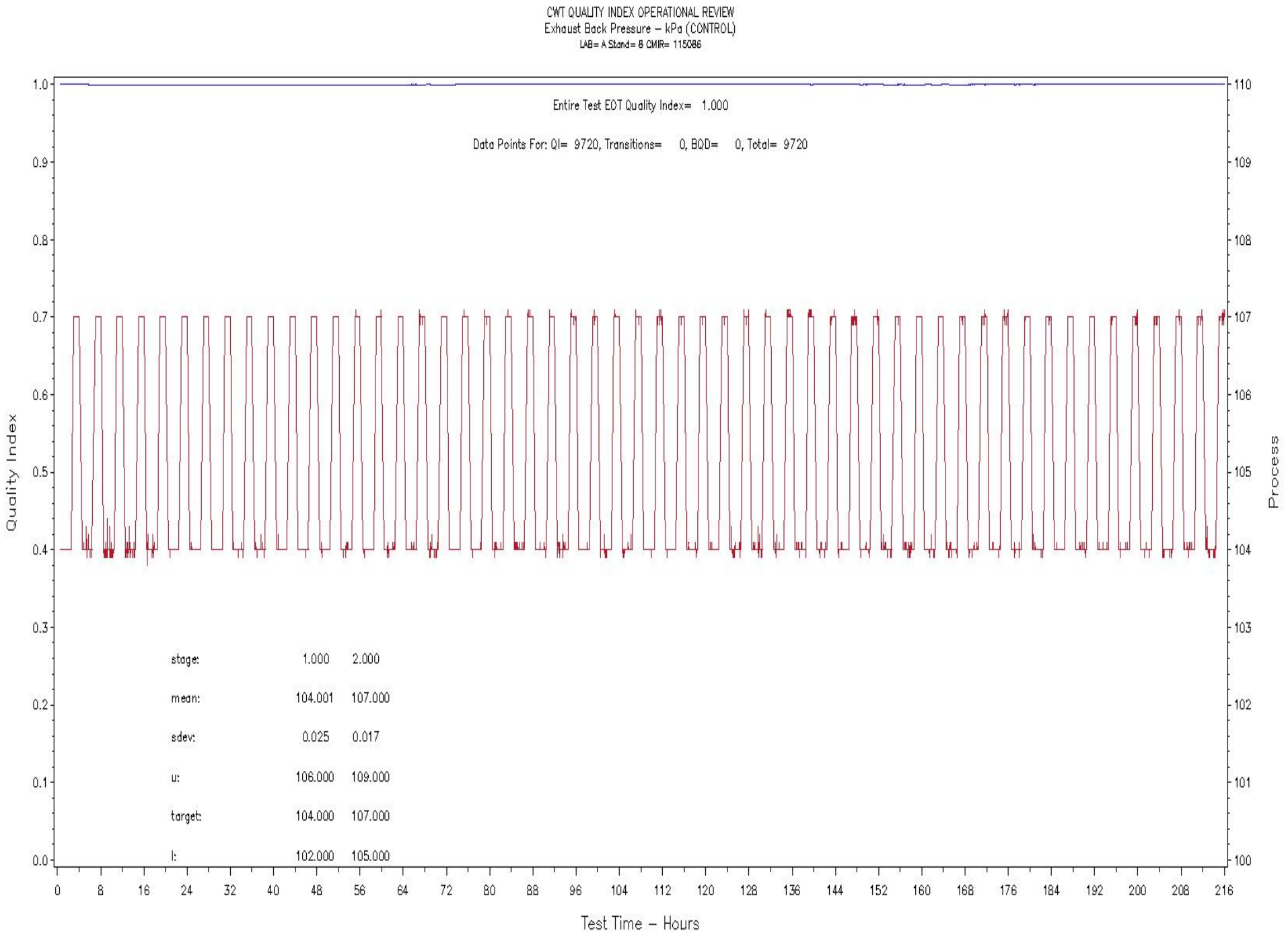


Exhaust Back Pressure

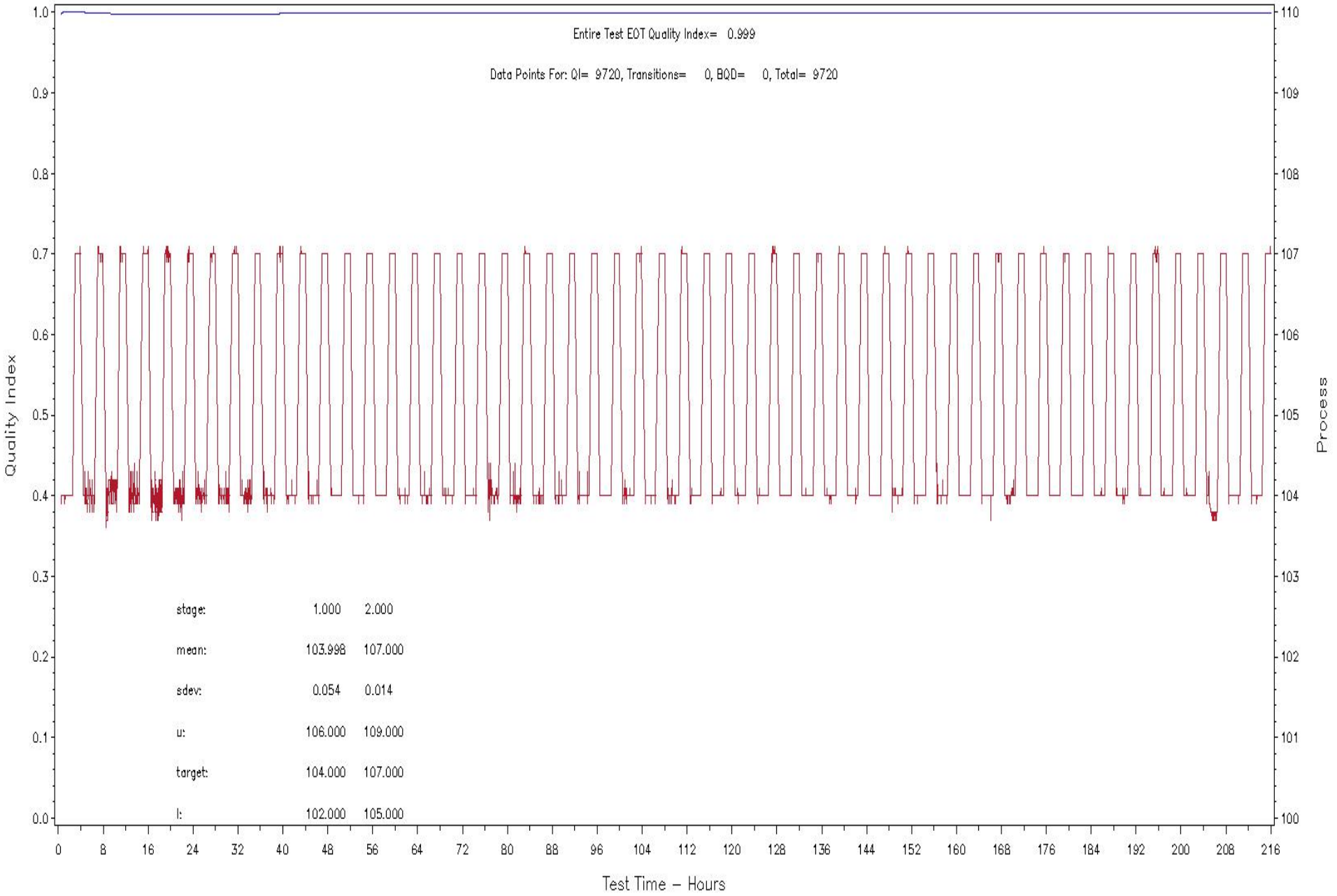
CWT QUALITY INDEX OPERATIONAL REVIEW
Exhaust Back Pressure – kPa (CONTROL)
LAB= A Stand= 27 CMR= 113424



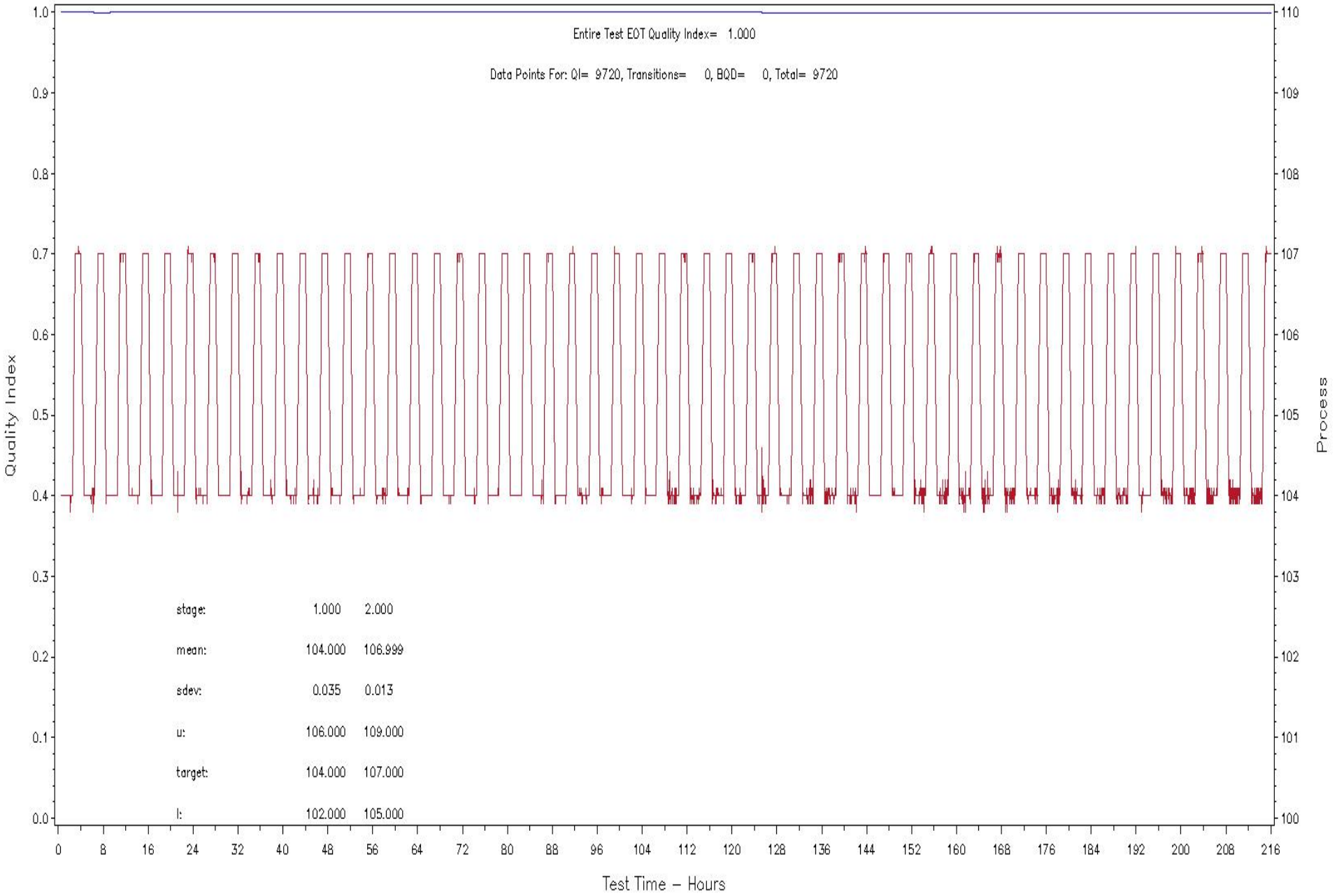
stage:	1.000	2.000
mean:	104.003	107.000
sdev:	0.049	0.014
u:	106.000	109.000
target:	104.000	107.000
l:	102.000	105.000

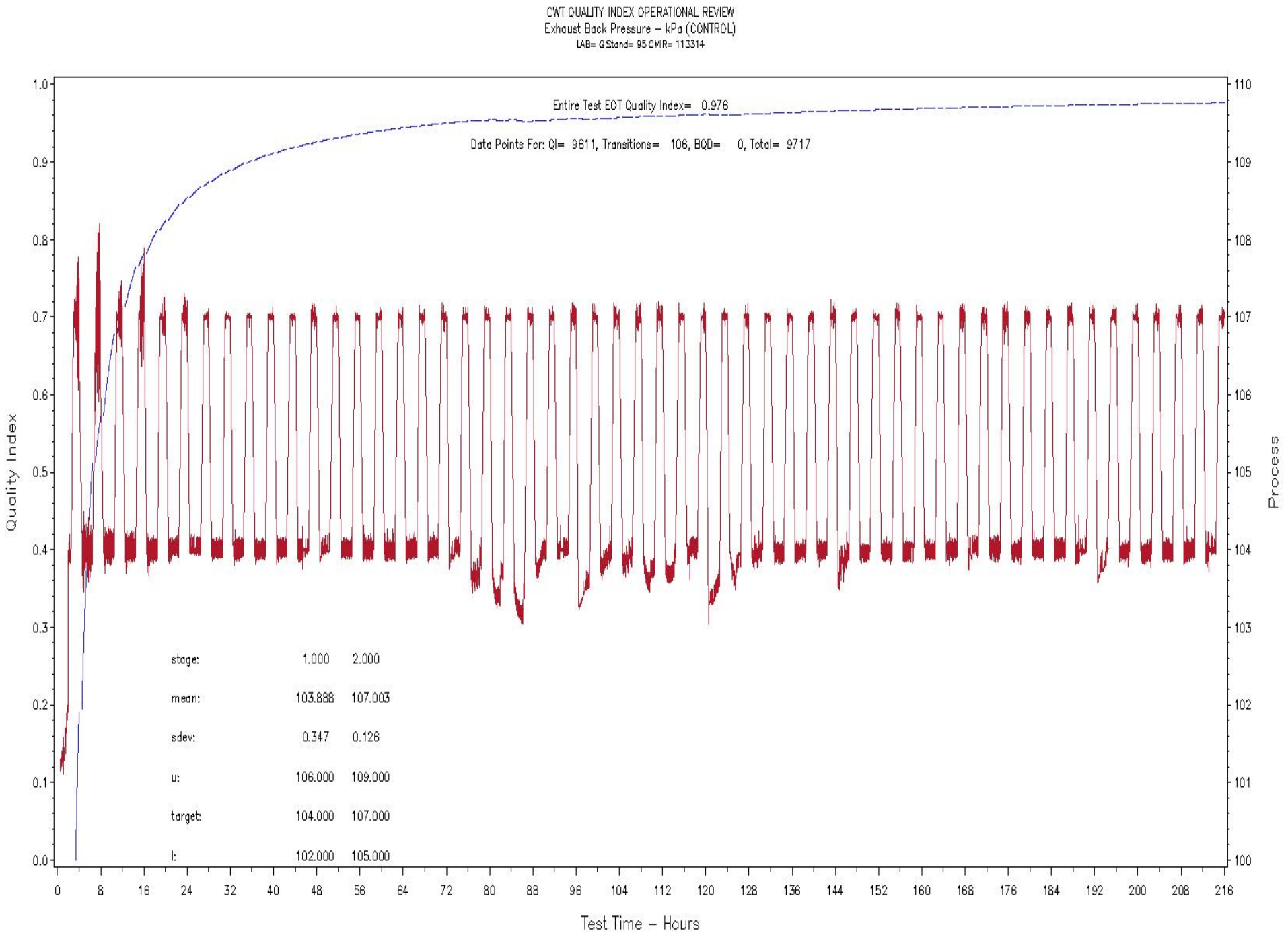

CWT QUALITY INDEX OPERATIONAL REVIEW
Exhaust Back Pressure – kPa (CONTROL)
LAB= A Stand= 8 CMR= 115086
Entire Test EOT Quality Index= 1.000
Data Points For: QI= 9720, Transitions= 0, BQD= 0, Total= 9720
stage: 1.000 2.000
mean: 104.001 107.000
sdev: 0.025 0.017
u: 106.000 109.000
target: 104.000 107.000
l: 102.000 105.000
Quality Index
Process
Test Time – Hours

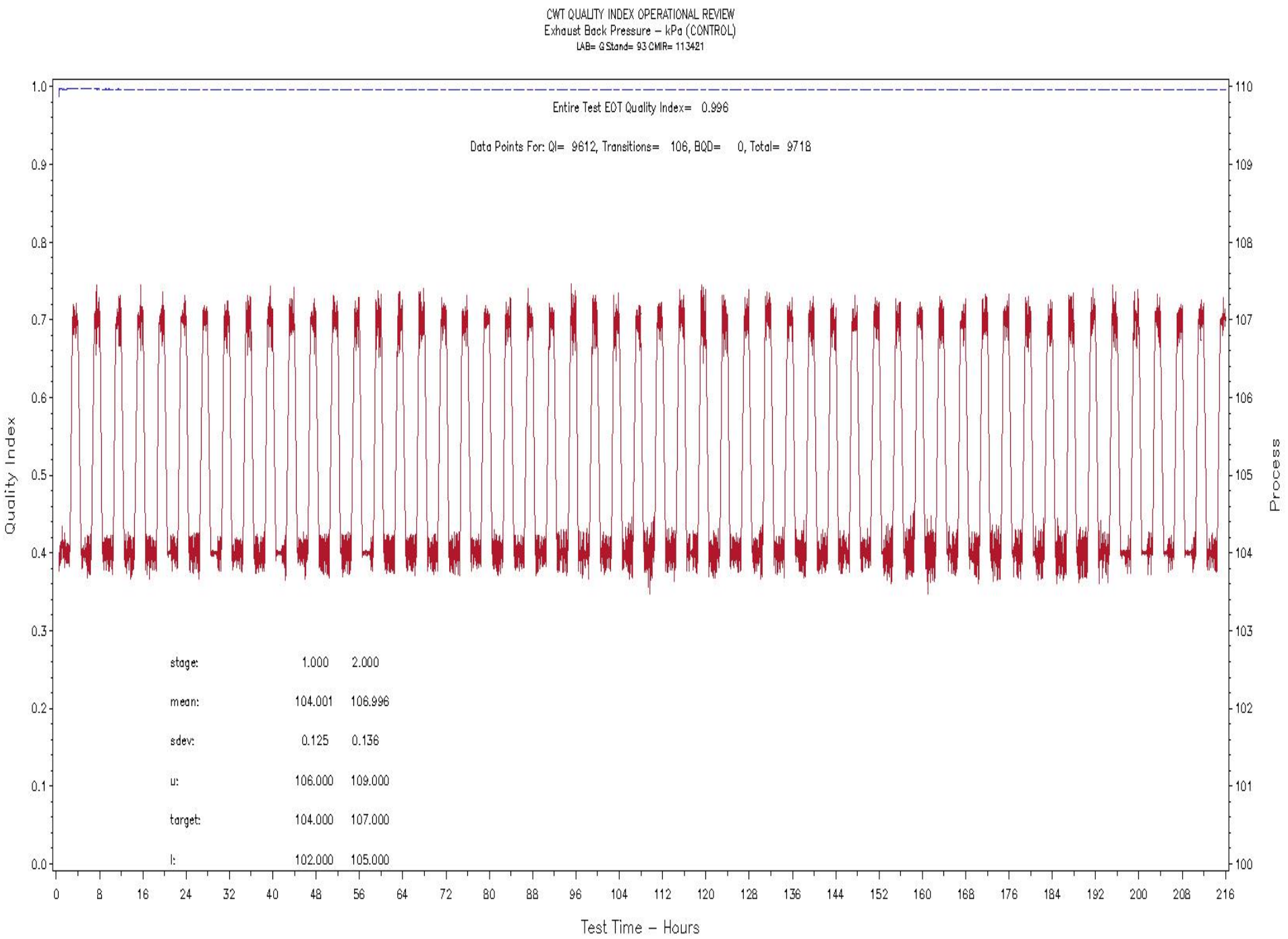
CWT QUALITY INDEX OPERATIONAL REVIEW
Exhaust Back Pressure – kPa (CONTROL)
LAB= A Stand= 8 CMR= 115948

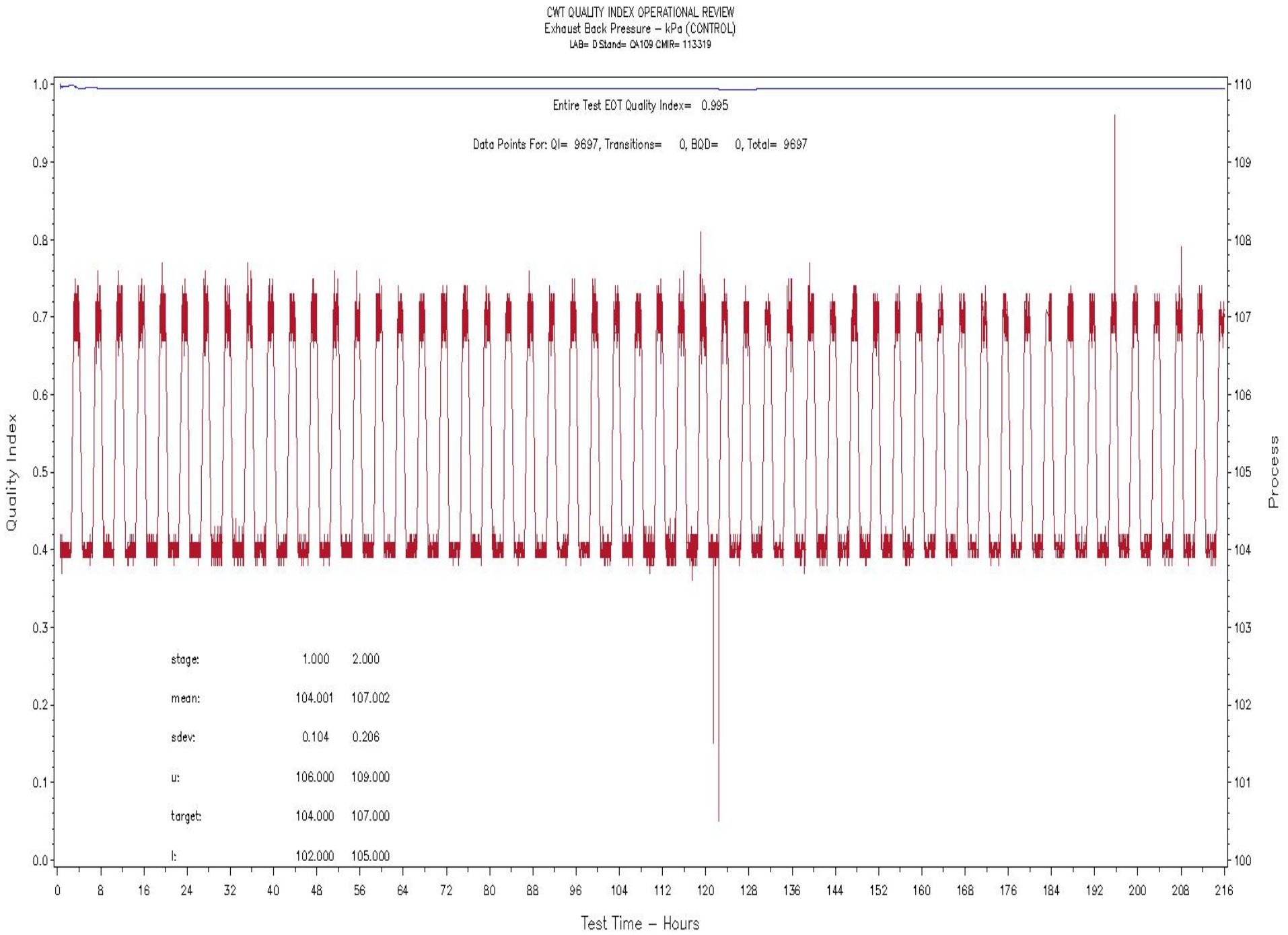


CWT QUALITY INDEX OPERATIONAL REVIEW
Exhaust Back Pressure – kPa (CONTROL)
LAB= A Stand= 27 CMR= 116588



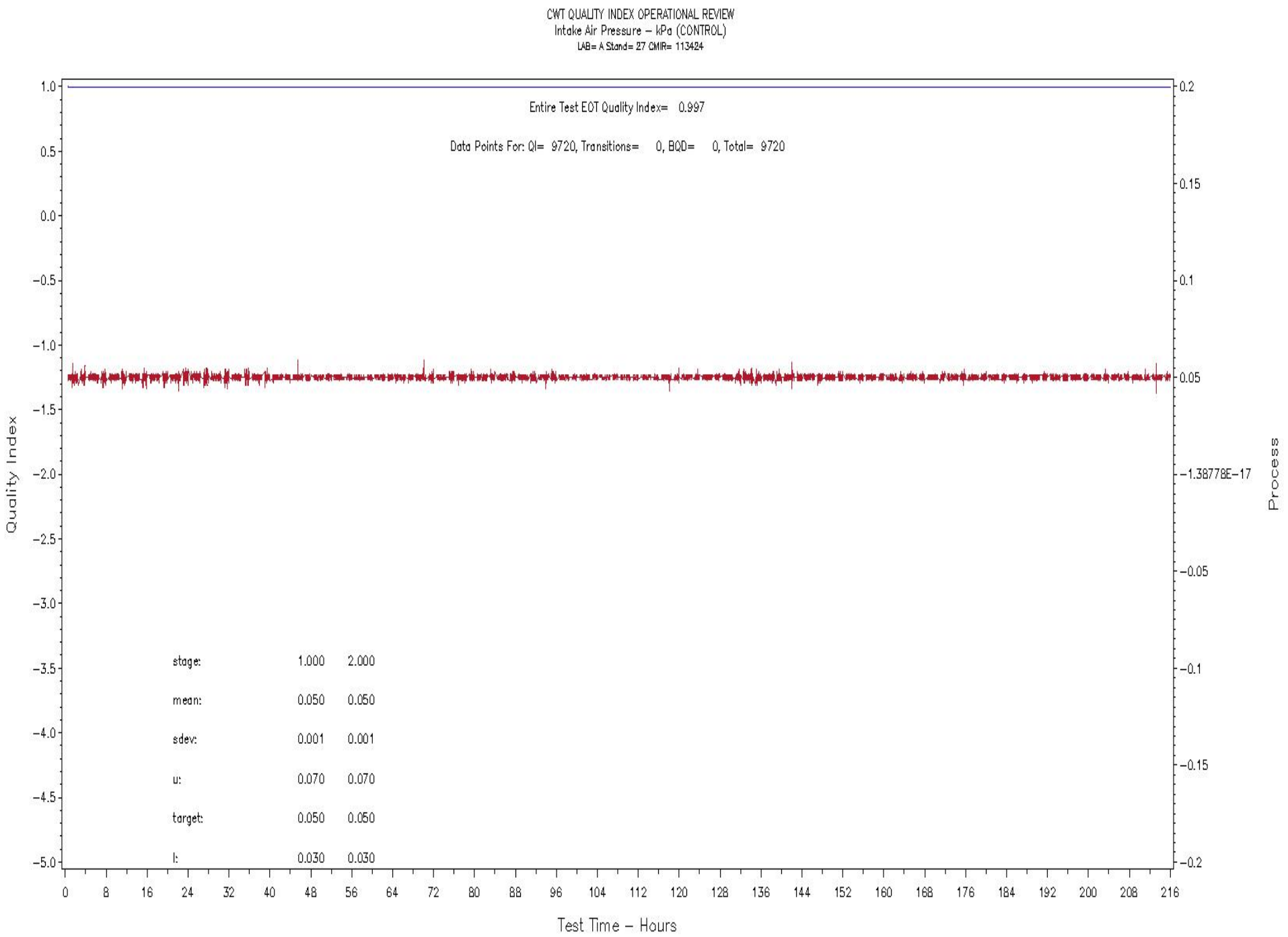

CWT QUALITY INDEX OPERATIONAL REVIEW
Exhaust Back Pressure – kPa (CONTROL)
LAB= GStand= 95 CMR= 113314
Entire Test EOT Quality Index= 0.976
Data Points For: QI= 9611, Transitions= 106, BQD= 0, Total= 9717
stage: 1.000 2.000
mean: 103.888 107.003
sdev: 0.347 0.126
u: 106.000 109.000
target: 104.000 107.000
l: 102.000 105.000
Quality Index
Process
Test Time – Hours


CWT QUALITY INDEX OPERATIONAL REVIEW
Exhaust Back Pressure – kPa (CONTROL)
LAB= GStand= 93 CMR= 113421
Entire Test EOT Quality Index= 0.996
Data Points For: QI= 9612, Transitions= 106, BQD= 0, Total= 9718
stage: 1.000 2.000
mean: 104.001 106.996
sdev: 0.125 0.136
u: 106.000 109.000
target: 104.000 107.000
l: 102.000 105.000
Quality Index
Process
Test Time – Hours
0.0 0.1 0.2 0.3 0.4 0.5 0.6 0.7 0.8 0.9 1.0
100 101 102 103 104 105 106 107 108 109 110
0 8 16 24 32 40 48 56 64 72 80 88 96 104 112 120 128 136 144 152 160 168 176 184 192 200 208 216


CWT QUALITY INDEX OPERATIONAL REVIEW
Exhaust Back Pressure – kPa (CONTROL)
LAB= D Stand= CA109 CMR= 113319
Entire Test EOT Quality Index= 0.995
Data Points For: QI= 9697, Transitions= 0, BQD= 0, Total= 9697
stage: 1.000 2.000
mean: 104.001 107.002
sdev: 0.104 0.206
u: 106.000 109.000
target: 104.000 107.000
l: 102.000 105.000
Quality Index
Process
Test Time – Hours

Inlet Air Pressure

- No negative QI values


CWT QUALITY INDEX OPERATIONAL REVIEW
Intake Air Pressure – kPa (CONTROL)
LAB= A Stand= 27 CMR= 113424
Entire Test EOT Quality Index= 0.997
Data Points For: QI= 9720, Transitions= 0, BQD= 0, Total= 9720
stage: 1.000 2.000
mean: 0.050 0.050
sdev: 0.001 0.001
u: 0.070 0.070
target: 0.050 0.050
l: 0.030 0.030
Quality Index
Process
Test Time – Hours
1.0
0.5
0.0
-0.5
-1.0
-1.5
-2.0
-2.5
-3.0
-3.5
-4.0
-4.5
-5.0
0.2
0.15
0.1
0.05
-1.38778E-17
-0.05
-0.1
-0.15
-0.2
0
8
16
24
32
40
48
56
64
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120
128
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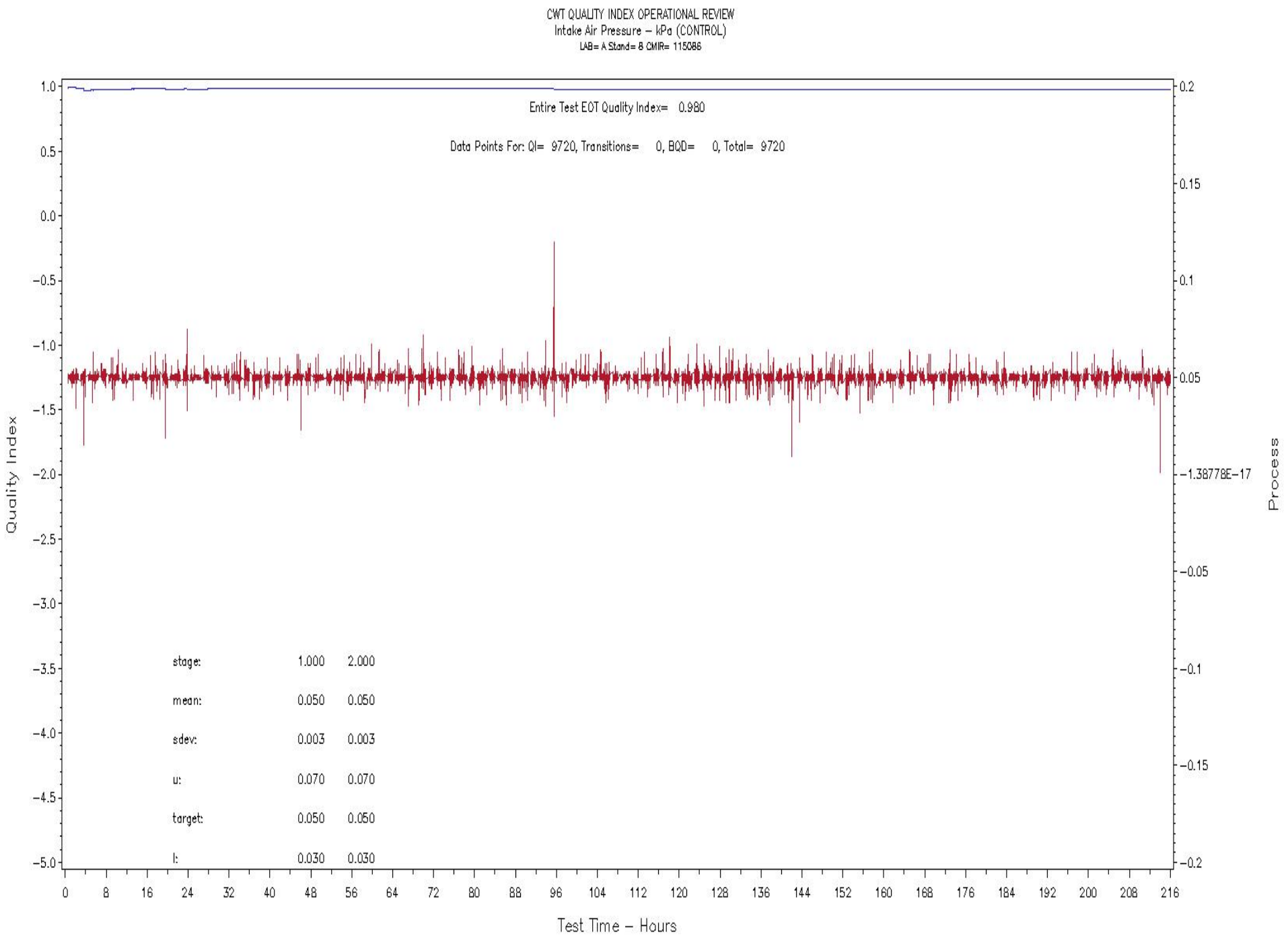
192
200
208
216


CWT QUALITY INDEX OPERATIONAL REVIEW
Intake Air Pressure – kPa (CONTROL)
LAB= A Stand= 8 CMR= 115086
Entire Test EOT Quality Index= 0.980
Data Points For: QI= 9720, Transitions= 0, BQD= 0, Total= 9720
stage: 1.000 2.000
mean: 0.050 0.050
sdev: 0.003 0.003
u: 0.070 0.070
target: 0.050 0.050
l: 0.030 0.030
Quality Index
Process
Test Time – Hours
1.0
0.5
0.0
-0.5
-1.0
-1.5
-2.0
-2.5
-3.0
-3.5
-4.0
-4.5
-5.0
0.2
0.15
0.1
0.05
-1.38778E-17
-0.05
-0.1
-0.15
-0.2
0
8
16
24
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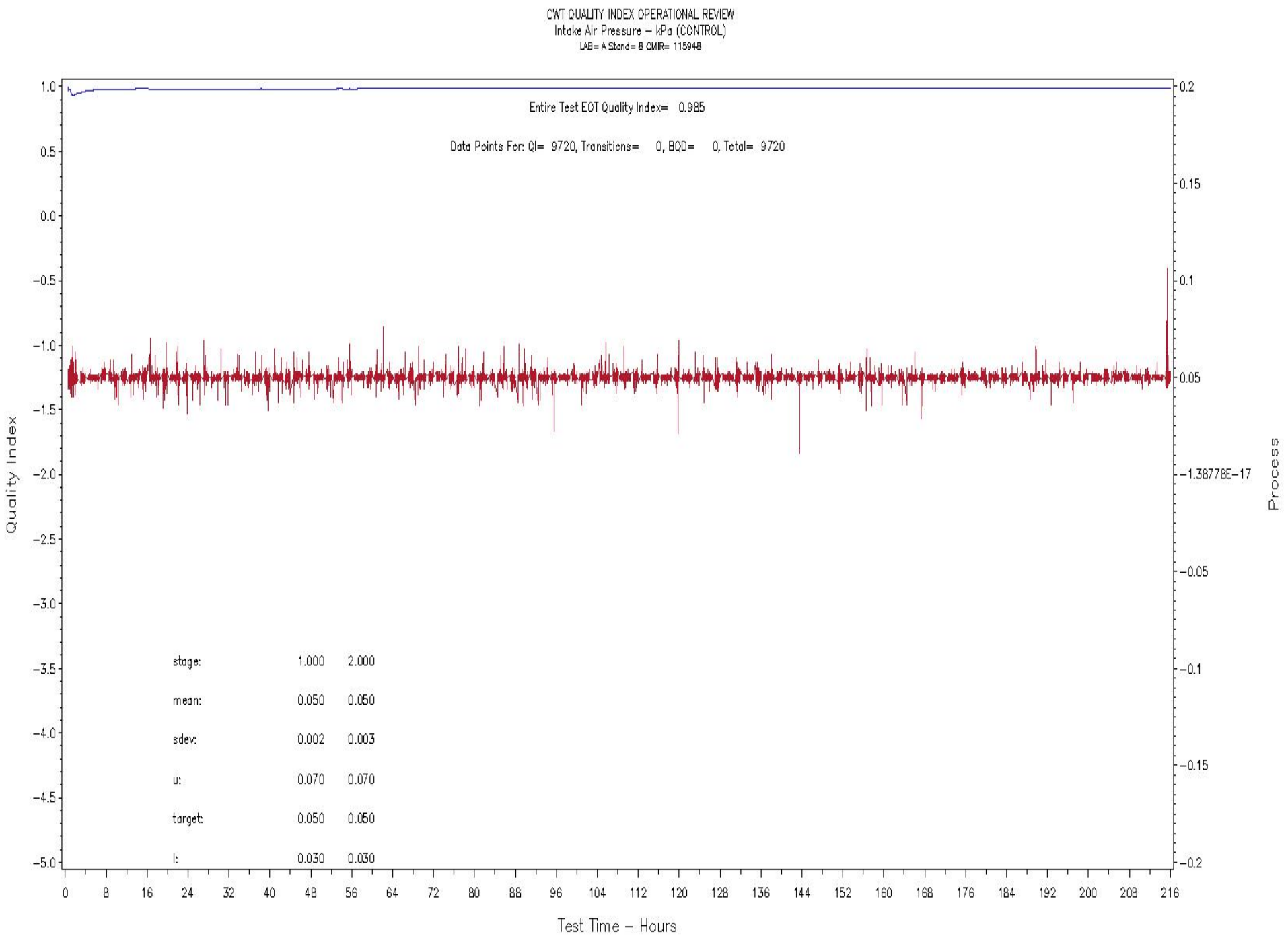
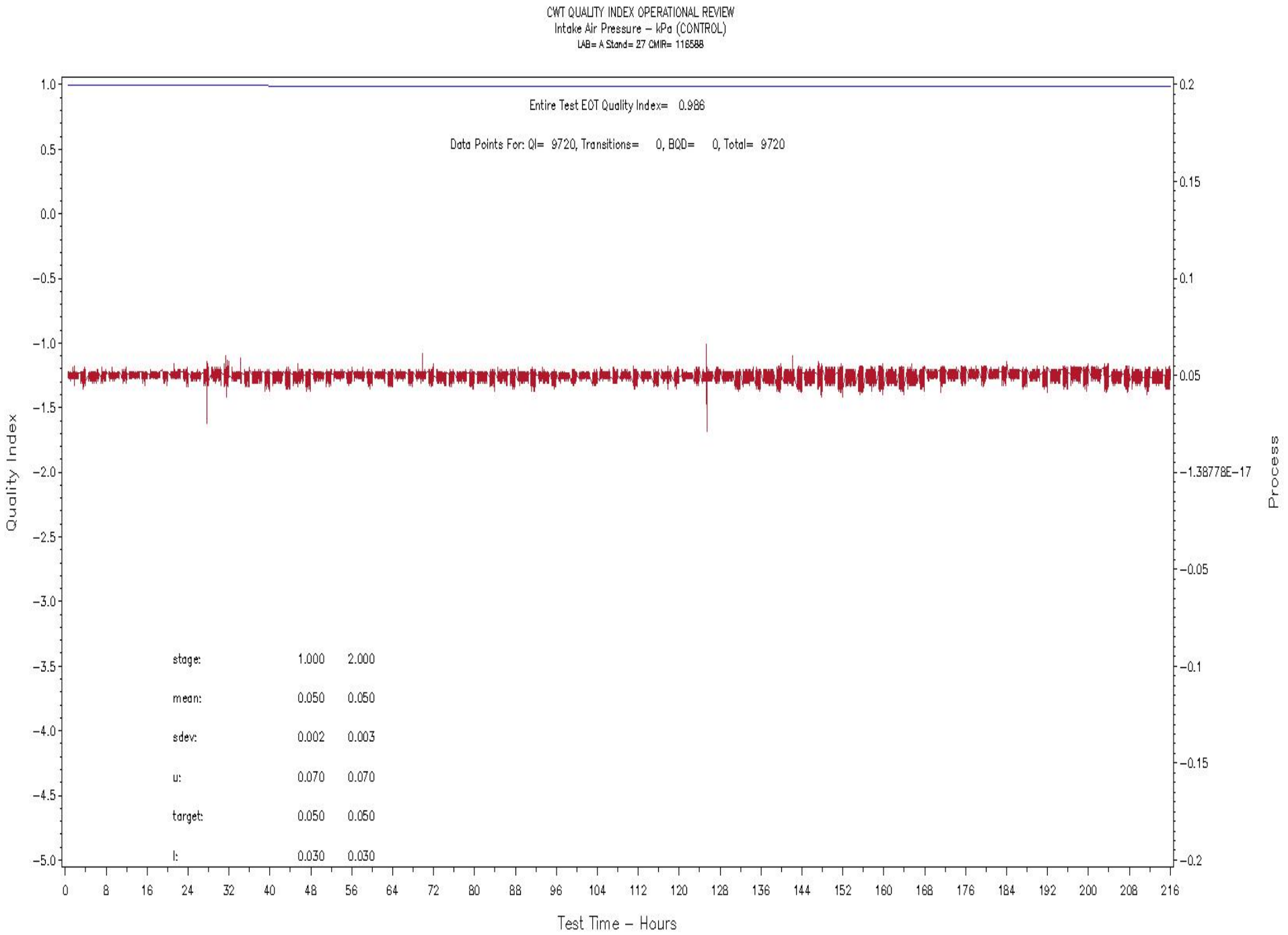
40
48
56
64
72
80
88
96
104
112
120
128
136
144
152
160
168
176
184
192
200
208
216


CWT QUALITY INDEX OPERATIONAL REVIEW
Intake Air Pressure – kPa (CONTROL)
LAB= A Stand= 8 CMR= 115948
Entire Test EOT Quality Index= 0.985
Data Points For: QI= 9720, Transitions= 0, BQD= 0, Total= 9720
stage: 1.000 2.000
mean: 0.050 0.050
sdev: 0.002 0.003
u: 0.070 0.070
target: 0.050 0.050
l: 0.030 0.030
Quality Index
Process
Test Time – Hours
1.0
0.5
0.0
-0.5
-1.0
-1.5
-2.0
-2.5
-3.0
-3.5
-4.0
-4.5
-5.0
0.2
0.15
0.1
0.05
-1.38778E-17
-0.05
-0.1
-0.15
-0.2
0
8
16
24
32
40
48
56
64
72
80
88
96
104
112
120
128
136
144
152
160
168
176
184
192
200
208
216


CWT QUALITY INDEX OPERATIONAL REVIEW
Intake Air Pressure – kPa (CONTROL)
LAB= A Stand= 27 CMR= 116588
Entire Test EOT Quality Index= 0.986
Data Points For: QI= 9720, Transitions= 0, BQD= 0, Total= 9720
stage: 1.000 2.000
mean: 0.050 0.050
sdev: 0.002 0.003
u: 0.070 0.070
target: 0.050 0.050
l: 0.030 0.030
Quality Index
Process
Test Time – Hours
1.0
0.5
0.0
-0.5
-1.0
-1.5
-2.0
-2.5
-3.0
-3.5
-4.0
-4.5
-5.0
0.2
0.15
0.1
0.05
-1.38778E-17
-0.05
-0.1
-0.15
-0.2
0
8
16
24
32
40
48
56
64
72
80
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96
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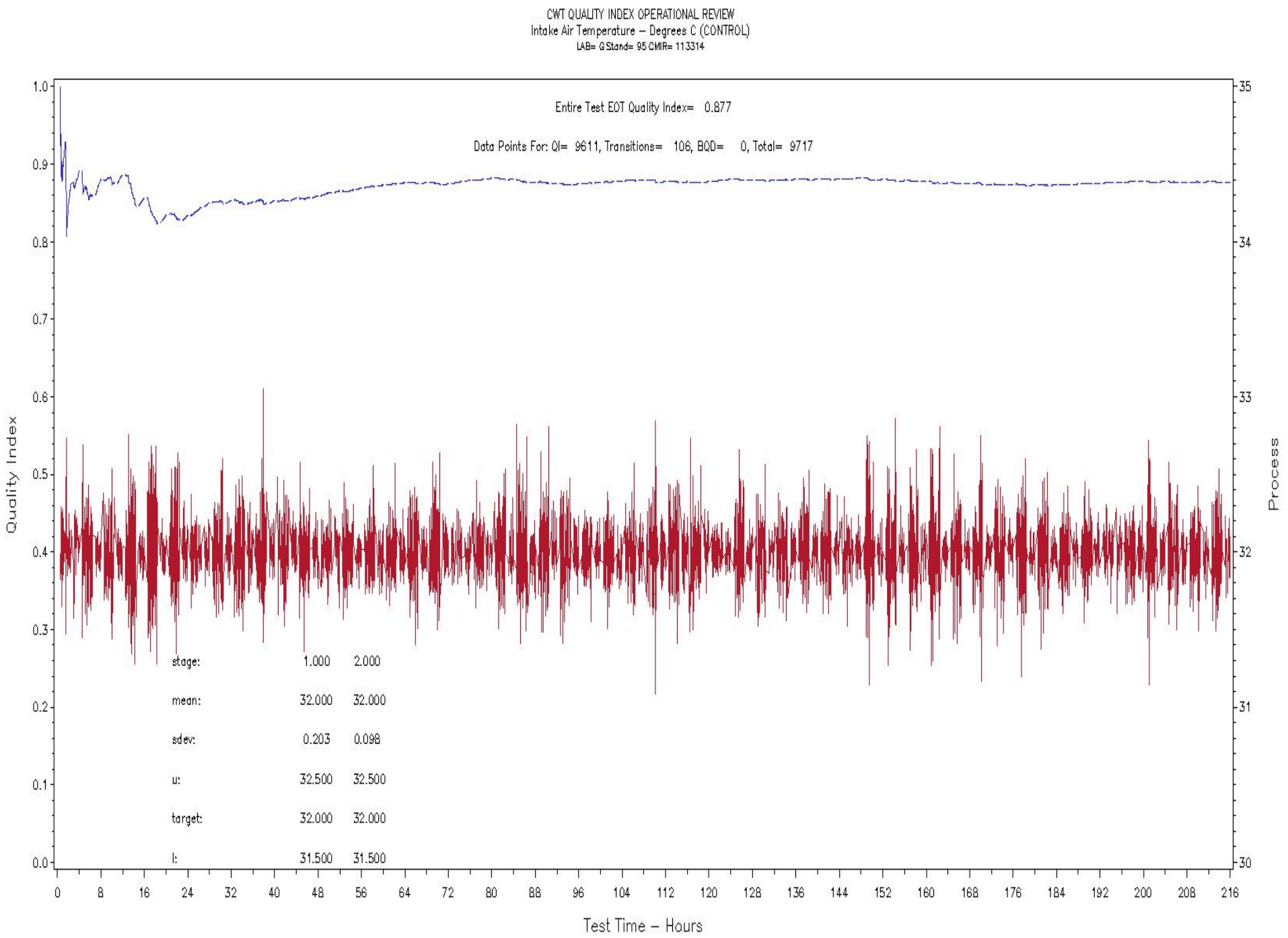
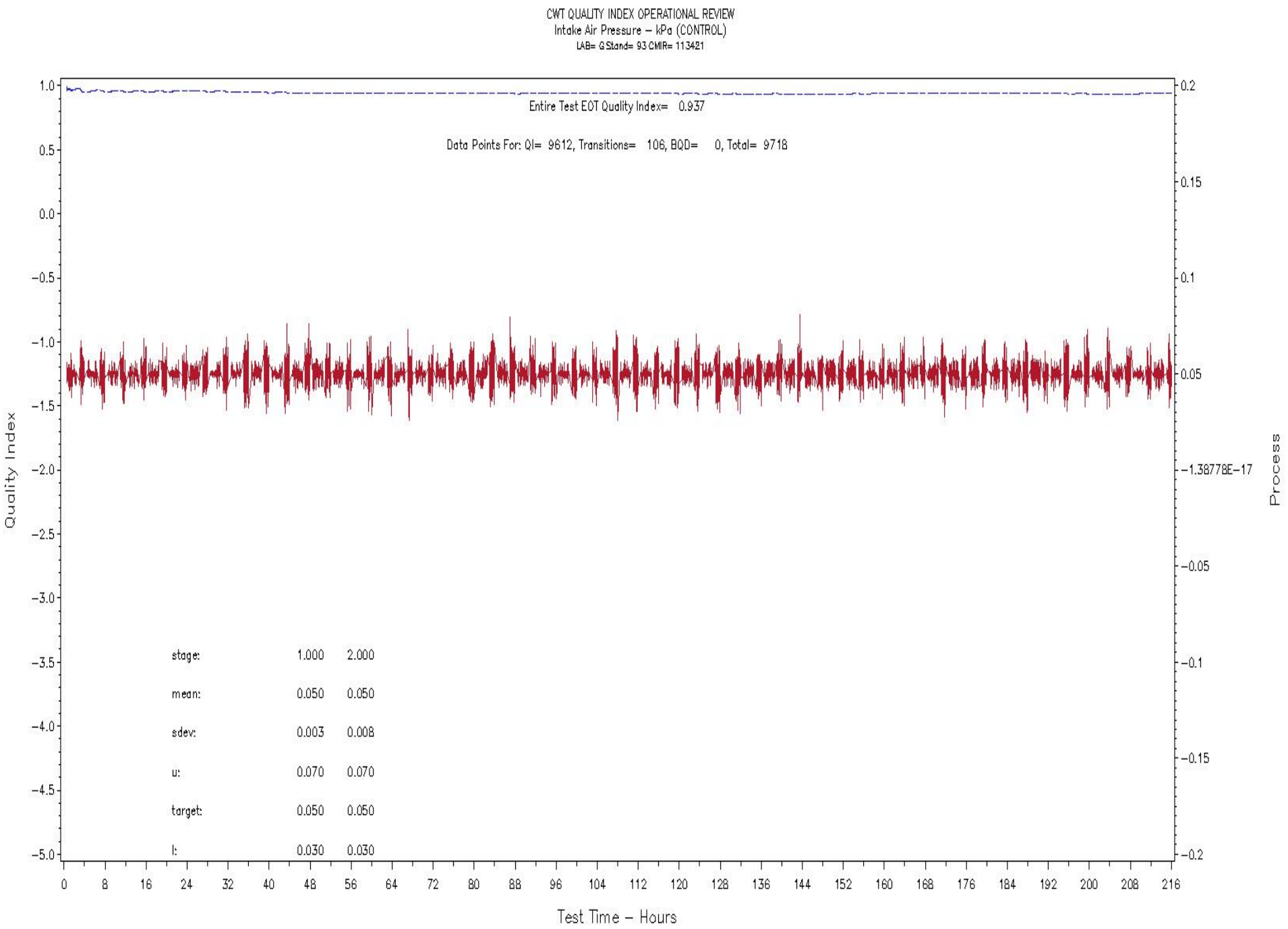
112
120
128
136
144
152
160
168
176
184
192
200
208
216


CWT QUALITY INDEX OPERATIONAL REVIEW
Intake Air Temperature – Degrees C (CONTROL)
LAB= G Stand= 95 CMR= 113314
Entire Test EOT Quality Index= 0.877
Data Points For: QI= 9611, Transitions= 106, BQD= 0, Total= 9717
Quality Index
Process
Test Time – Hours
stage: 1.000 2.000
mean: 32.000 32.000
sdev: 0.203 0.098
u: 32.500 32.500
target: 32.000 32.000
l: 31.500 31.500


CWT QUALITY INDEX OPERATIONAL REVIEW
Intake Air Pressure – kPa (CONTROL)
LAB= GStand= 93 CMR= 113421
Entire Test EOT Quality Index= 0.937
Data Points For: QI= 9612, Transitions= 106, BQD= 0, Total= 9718
stage: 1.000 2.000
mean: 0.050 0.050
sdev: 0.003 0.008
u: 0.070 0.070
target: 0.050 0.050
l: 0.030 0.030
Quality Index
Process
Test Time – Hours
1.0
0.5
0.0
-0.5
-1.0
-1.5
-2.0
-2.5
-3.0
-3.5
-4.0
-4.5
-5.0
0.2
0.15
0.1
0.05
-1.38778E-17
-0.05
-0.1
-0.15
-0.2
0
8
16
24
32
40
48
56
64
72
80
88
96
104
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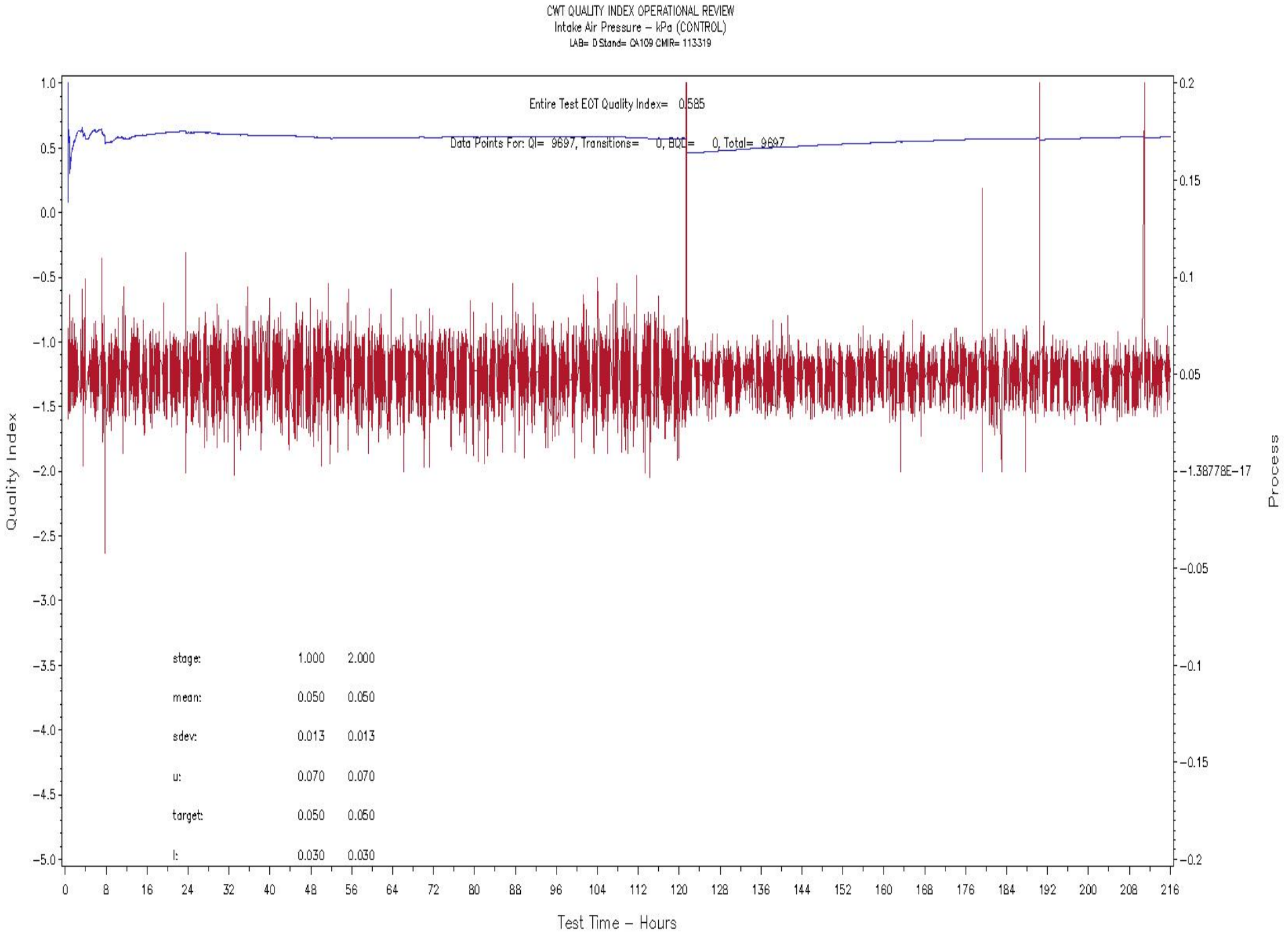
120
128
136
144
152
160
168
176
184
192
200
208
216


CWT QUALITY INDEX OPERATIONAL REVIEW
Intake Air Pressure – kPa (CONTROL)
LAB= 0 Stand= CA109 CMR= 113319
Entire Test EOT Quality Index= 0.585
Data Points For: QI= 9697, Transitions= 0, BQC= 0, Total= 9697
stage: 1.000 2.000
mean: 0.050 0.050
sdev: 0.013 0.013
u: 0.070 0.070
target: 0.050 0.050
l: 0.030 0.030
Quality Index
Process
Test Time – Hours
1.0
0.5
0.0
-0.5
-1.0
-1.5
-2.0
-2.5
-3.0
-3.5
-4.0
-4.5
-5.0
0.2
0.15
0.1
0.05
-1.38778E-17
-0.05
-0.1
-0.15
-0.2
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8
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192
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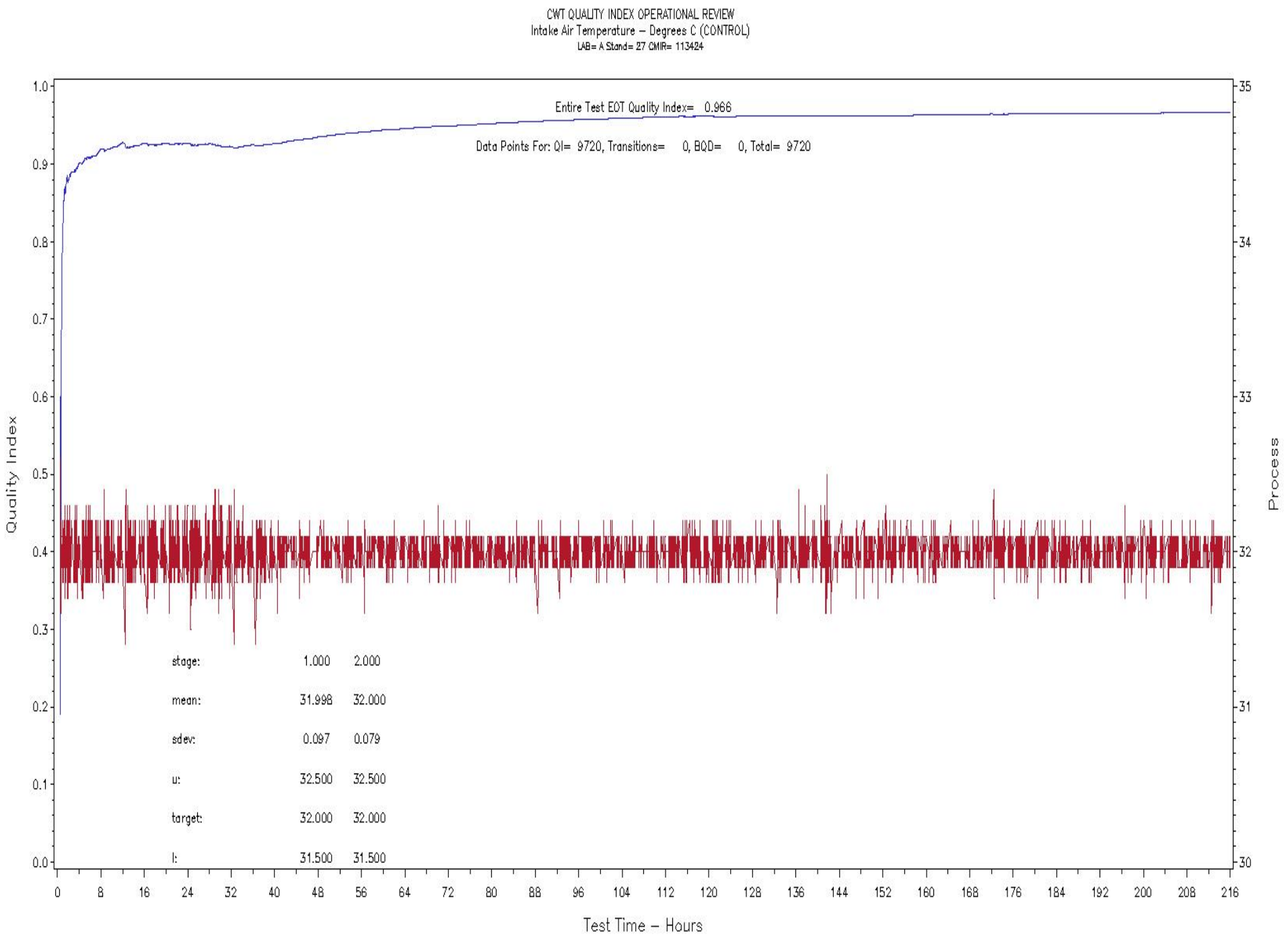
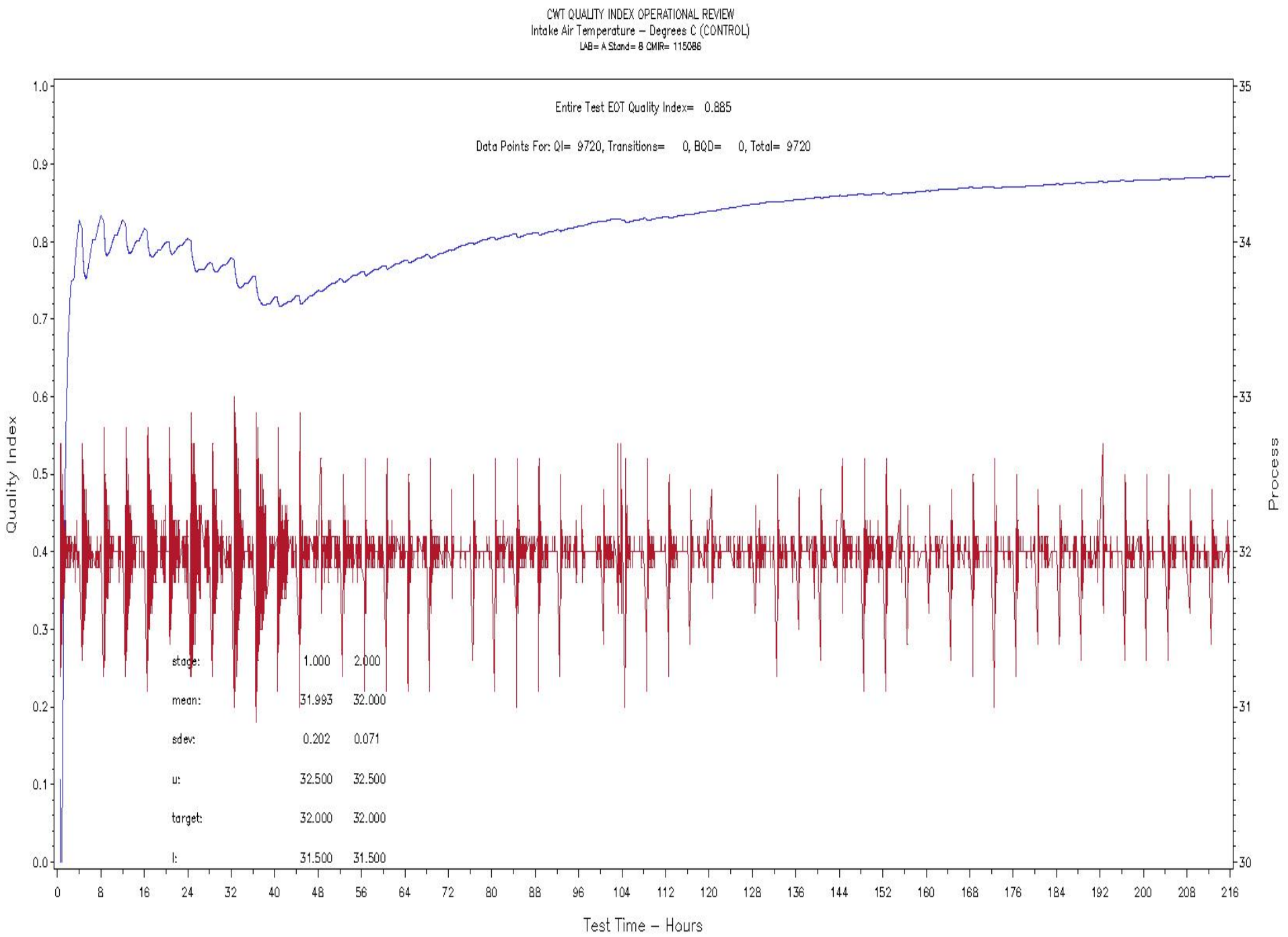
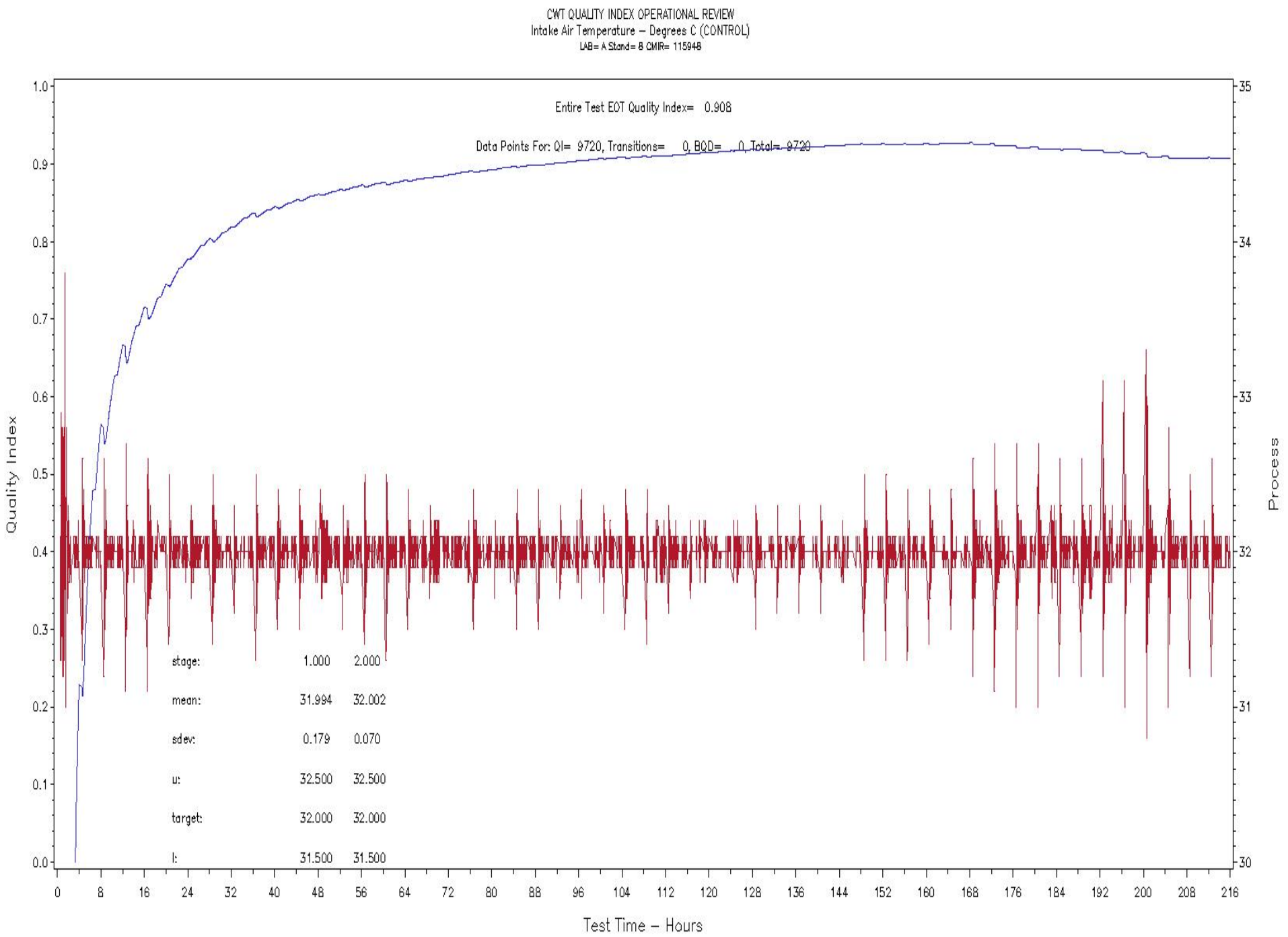
208
216

Inlet Air Temperatureure

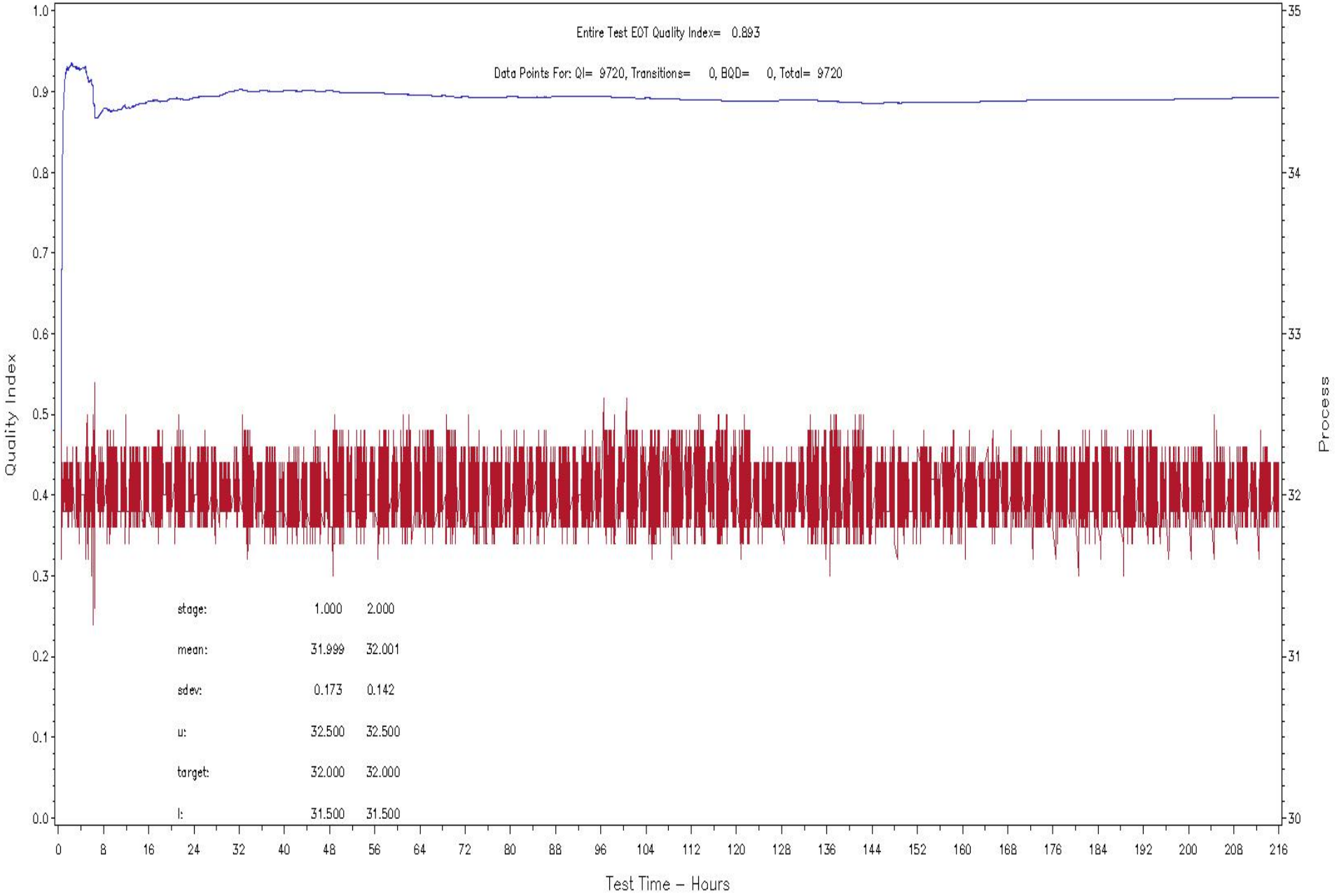
- All tests positive

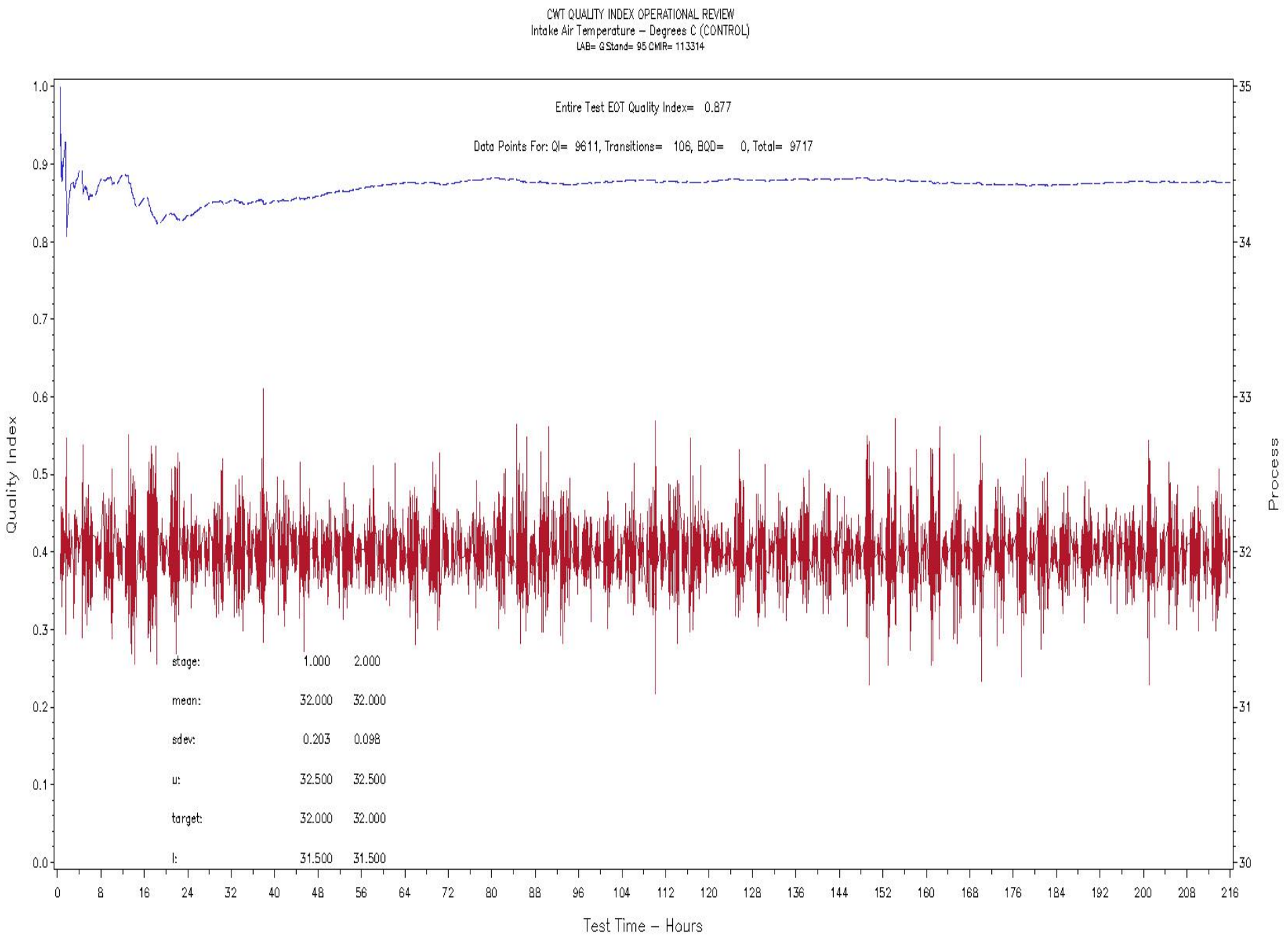

CWT QUALITY INDEX OPERATIONAL REVIEW
Intake Air Temperature – Degrees C (CONTROL)
LAB= A Stand= 27 CMR= 113424
Entire Test EOT Quality Index= 0.966
Data Points For: QI= 9720, Transitions= 0, BQD= 0, Total= 9720
Quality Index
Process
Test Time – Hours
stage: 1.000 2.000
mean: 31.998 32.000
sdev: 0.097 0.079
u: 32.500 32.500
target: 32.000 32.000
l: 31.500 31.500


CWT QUALITY INDEX OPERATIONAL REVIEW
Intake Air Temperature – Degrees C (CONTROL)
LAB= A Stand= 8 CMR= 115086
Entire Test EOT Quality Index= 0.885
Data Points For: QI= 9720, Transitions= 0, BQD= 0, Total= 9720
stage: 1.000 2.000
mean: 31.993 32.000
sdev: 0.202 0.071
u: 32.500 32.500
target: 32.000 32.000
l: 31.500 31.500
Quality Index
Process
Test Time – Hours

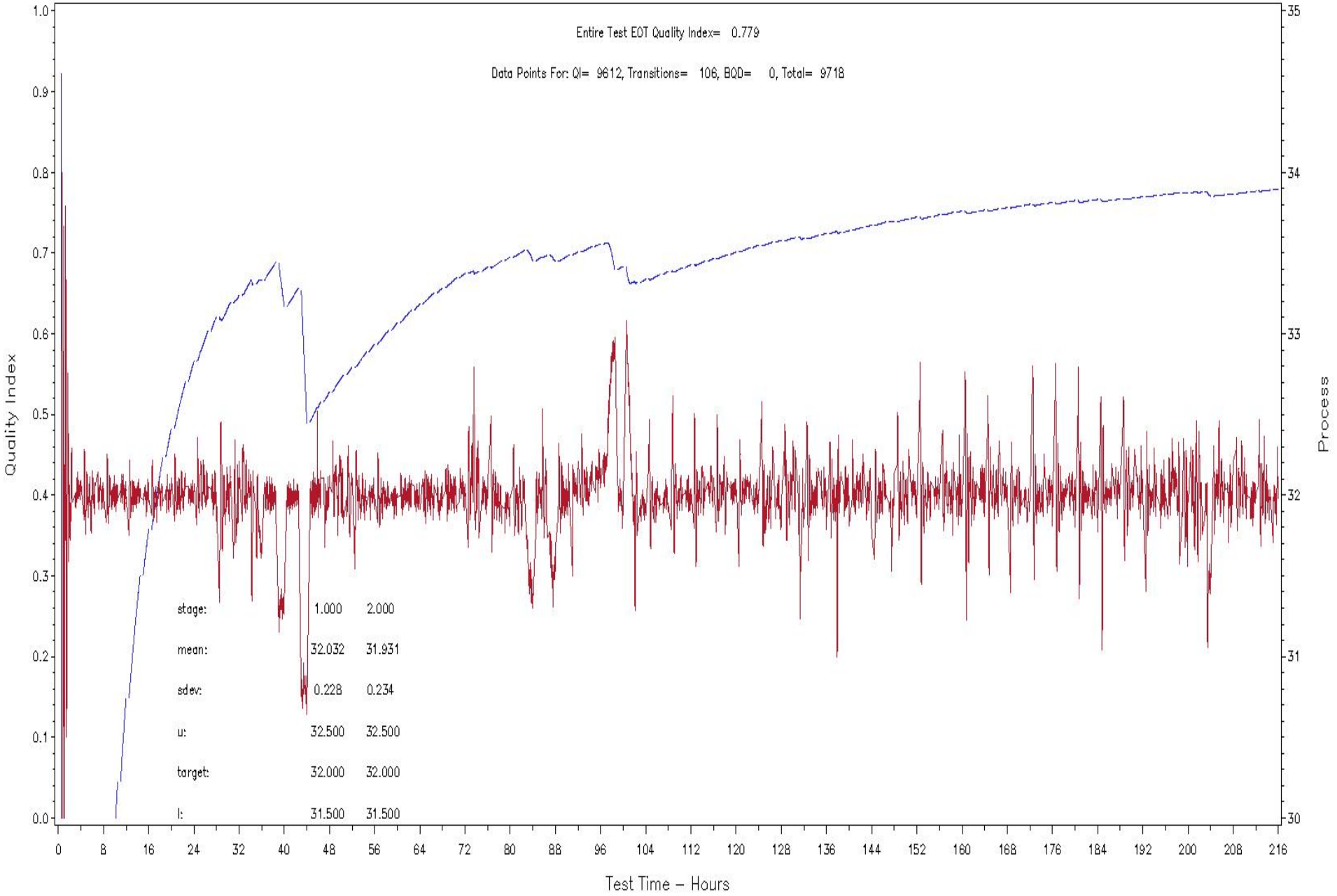

CWT QUALITY INDEX OPERATIONAL REVIEW
Intake Air Temperature – Degrees C (CONTROL)
LAB= A Stand= 8 CMR= 115948
Entire Test EOT Quality Index= 0.908
Data Points For: QI= 9720, Transitions= 0, BQD= 0, Total= 9720
stage: 1.000 2.000
mean: 31.994 32.002
sdev: 0.179 0.070
u: 32.500 32.500
target: 32.000 32.000
l: 31.500 31.500
Quality Index
Process
Test Time – Hours

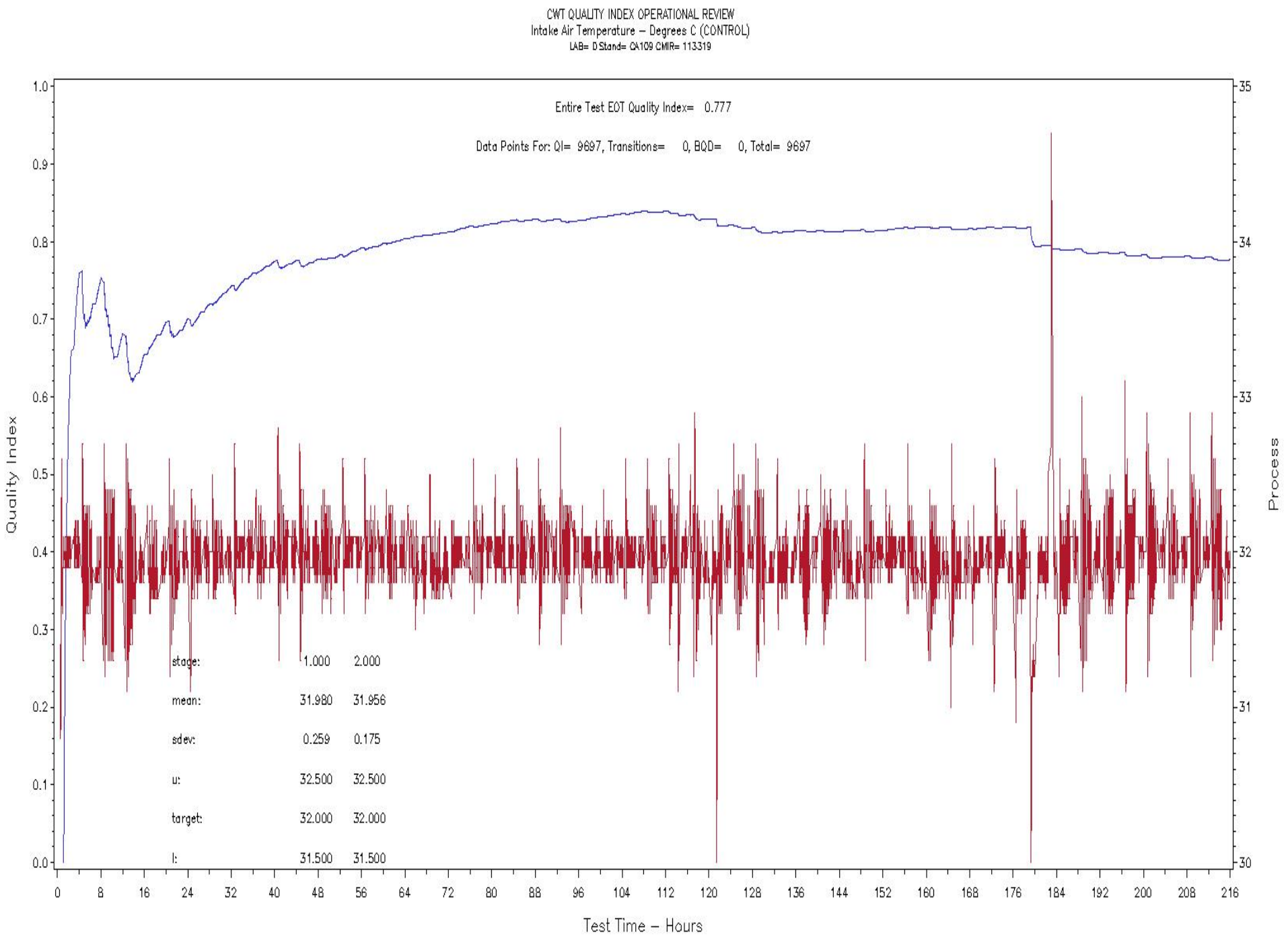
CWT QUALITY INDEX OPERATIONAL REVIEW
Intake Air Temperature – Degrees C (CONTROL)
LAB= A Stand= 27 CMR= 116588




CWT QUALITY INDEX OPERATIONAL REVIEW
Intake Air Temperature – Degrees C (CONTROL)
LAB= G Stand= 95 CMR= 113314
Entire Test EOT Quality Index= 0.877
Data Points For: QI= 9611, Transitions= 106, BQD= 0, Total= 9717
Quality Index
Process
Test Time – Hours
stage: 1.000 2.000
mean: 32.000 32.000
sdev: 0.203 0.098
u: 32.500 32.500
target: 32.000 32.000
l: 31.500 31.500

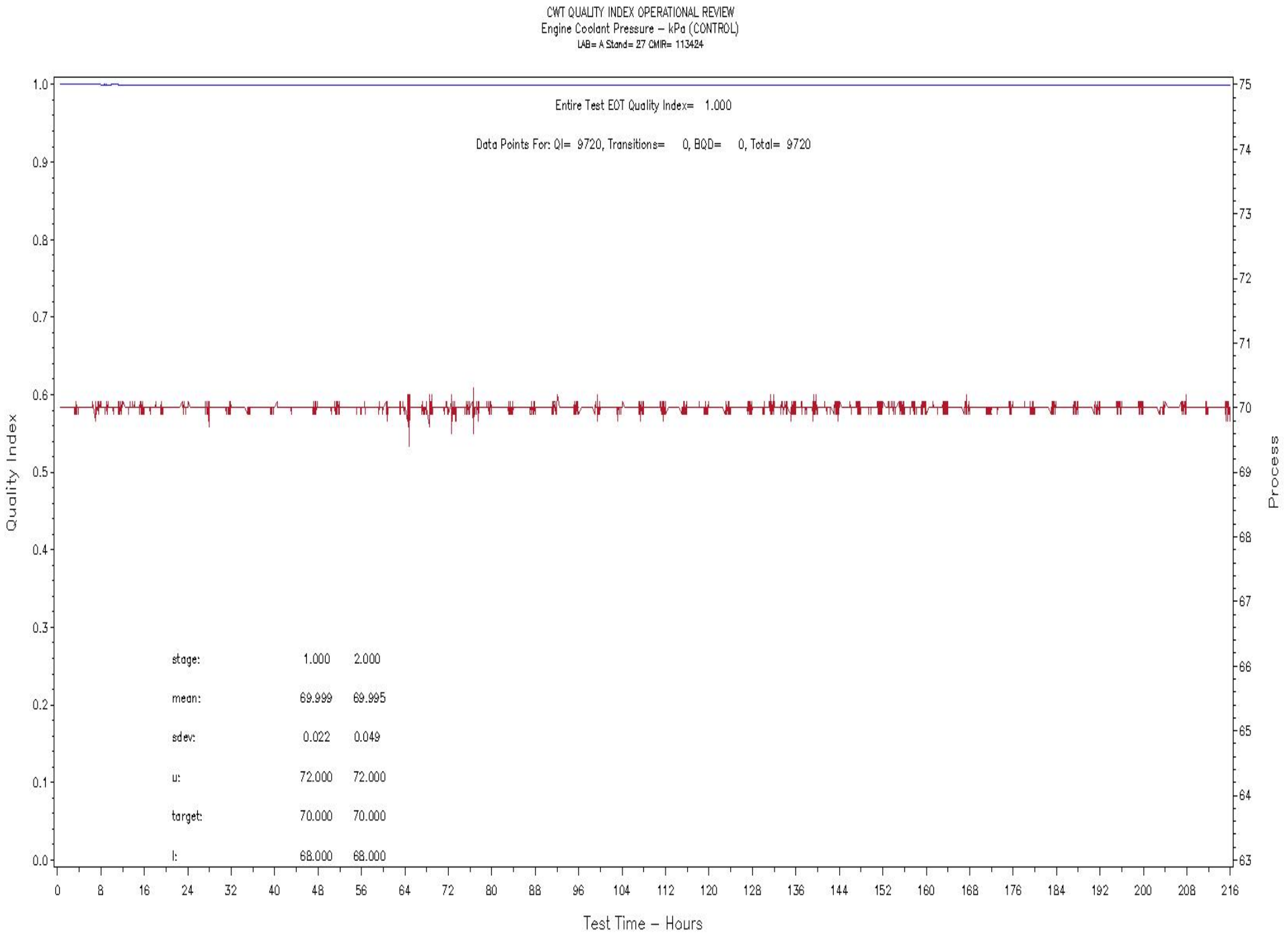
CWT QUALITY INDEX OPERATIONAL REVIEW
Intake Air Temperature – Degrees C (CONTROL)
LAB= GStand= 93 CMR= 113421

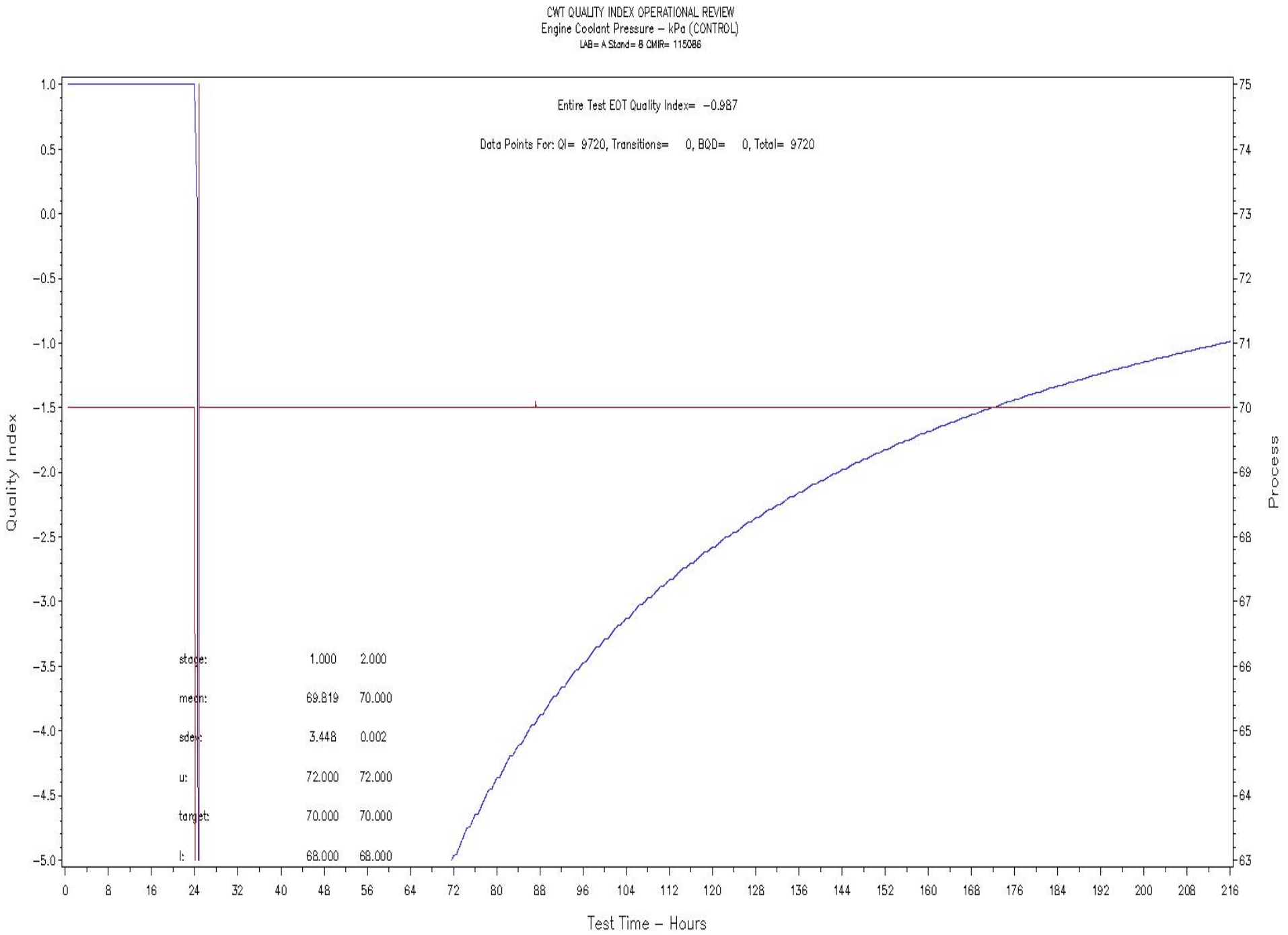



CWT QUALITY INDEX OPERATIONAL REVIEW
Intake Air Temperature – Degrees C (CONTROL)
LAB= D Stand= CA109 CMR= 113319
Entire Test EOT Quality Index= 0.777
Data Points For: QI= 9697, Transitions= 0, BQD= 0, Total= 9697
stage: 1.000 2.000
mean: 31.980 31.956
sdev: 0.259 0.175
u: 32.500 32.500
target: 32.000 32.000
l: 31.500 31.500
Quality Index
Process
Test Time – Hours

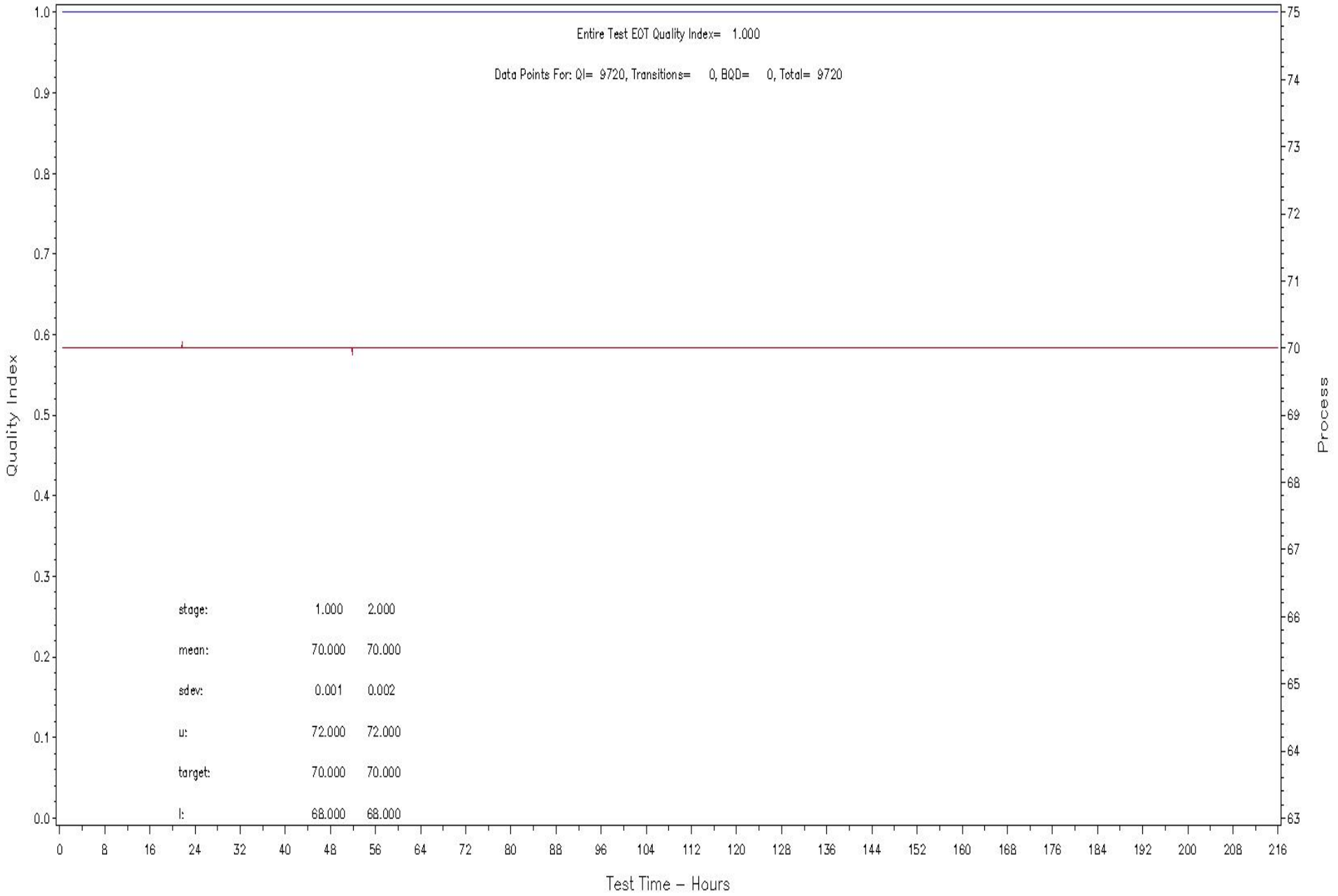
Coolant Pressure

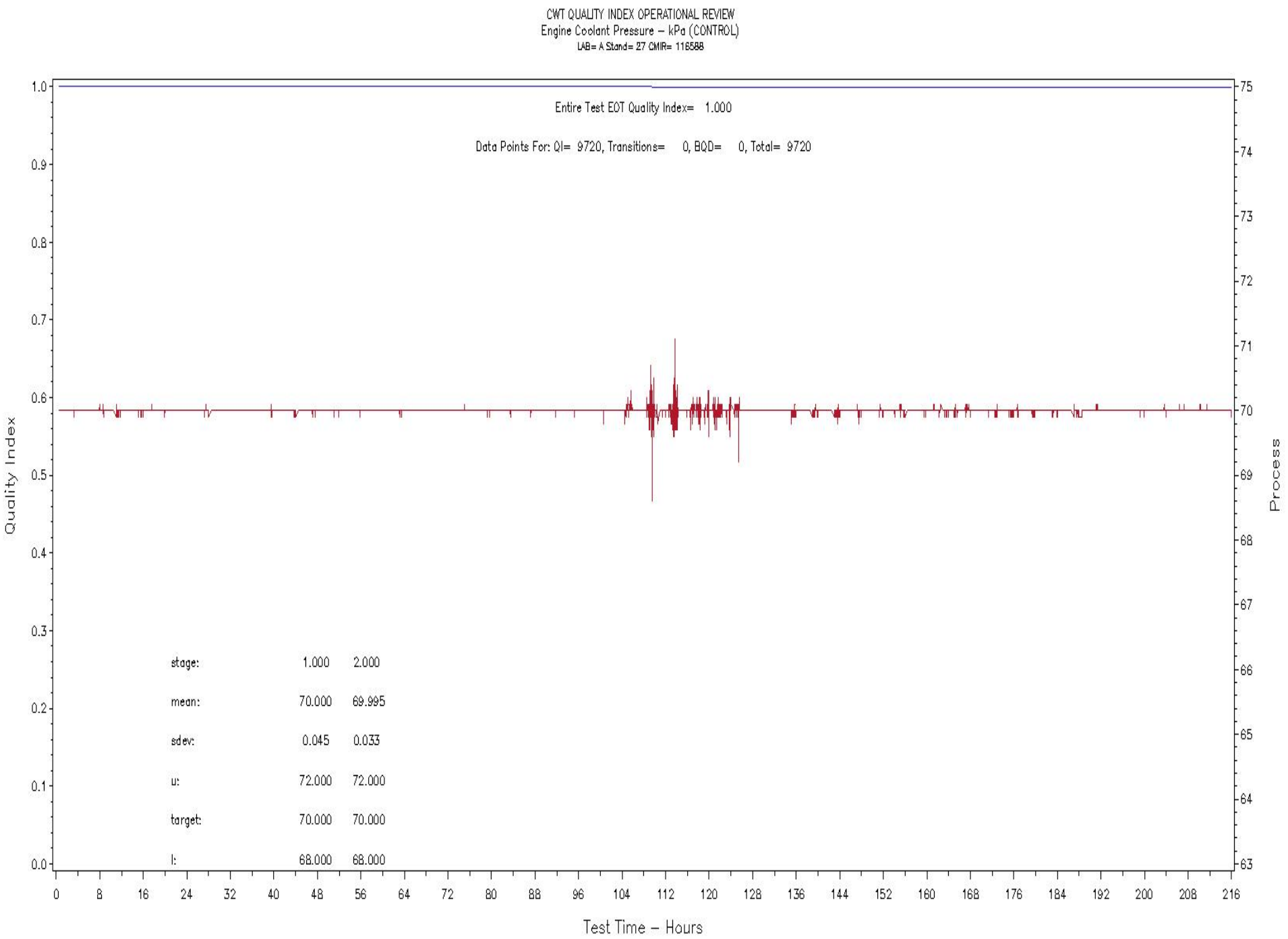
- Testkey 115086 had negative QI (-0.927), appears to be caused by low values at 24 hour
- All others positive

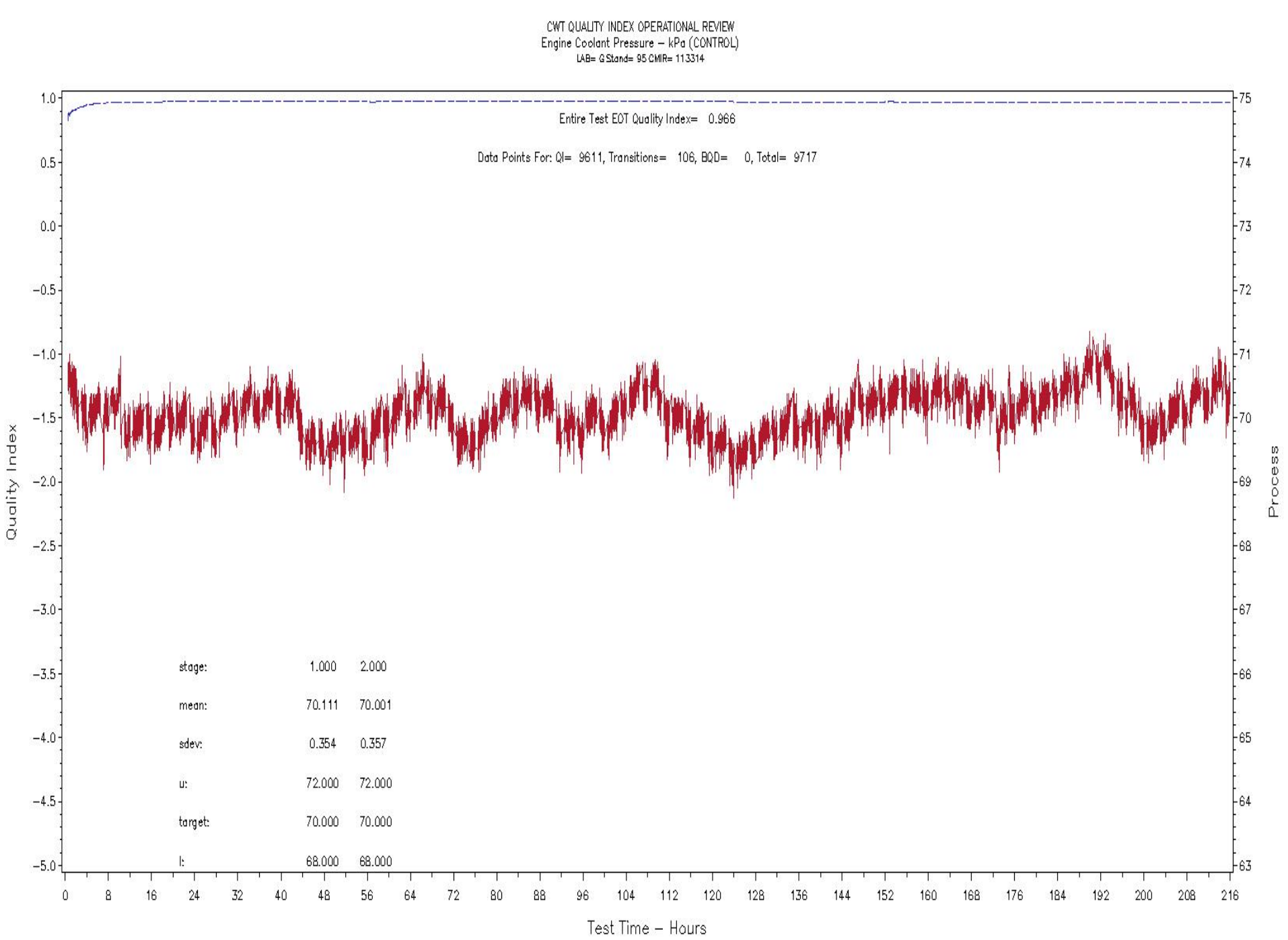

CWT QUALITY INDEX OPERATIONAL REVIEW
Engine Coolant Pressure – kPa (CONTROL)
LAB= A Stand= 27 CMR= 113424
Entire Test EOT Quality Index= 1.000
Data Points For: QI= 9720, Transitions= 0, BQD= 0, Total= 9720
stage: 1.000 2.000
mean: 69.999 69.995
sdev: 0.022 0.049
u: 72.000 72.000
target: 70.000 70.000
l: 68.000 68.000
Quality Index
Process
Test Time – Hours


CWT QUALITY INDEX OPERATIONAL REVIEW
Engine Coolant Pressure – kPa (CONTROL)
LAB= A Stand= 8 CMR= 115086
Entire Test EOT Quality Index= -0.987
Data Points For: QI= 9720, Transitions= 0, BQD= 0, Total= 9720
stage: 1.000 2.000
mean: 69.819 70.000
sdev: 3.448 0.002
u: 72.000 72.000
target: 70.000 70.000
l: 68.000 68.000
Quality Index
Process
Test Time – Hours

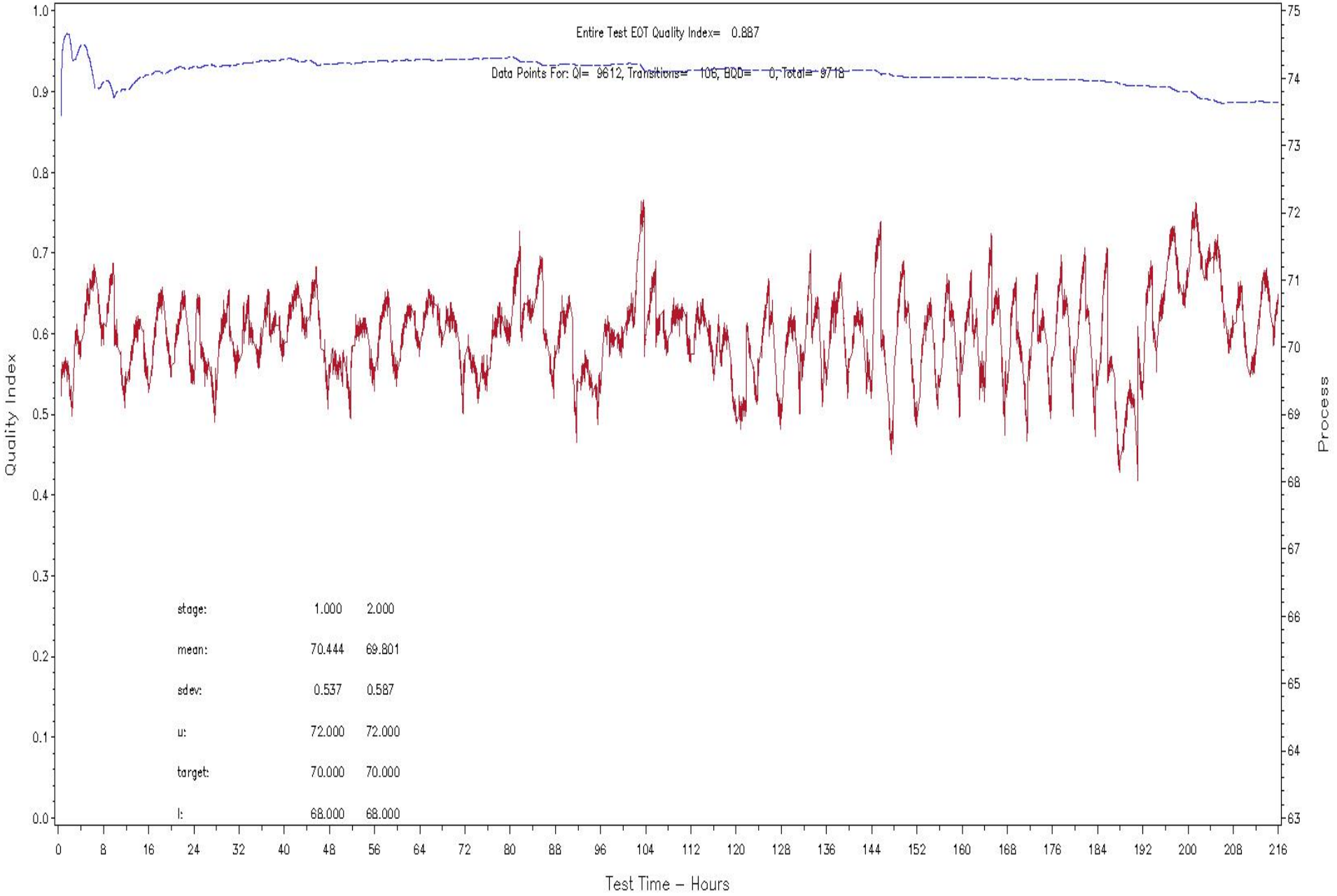
CWT QUALITY INDEX OPERATIONAL REVIEW
Engine Coolant Pressure – kPa (CONTROL)
LAB= A Stand= 8 CMR= 115948



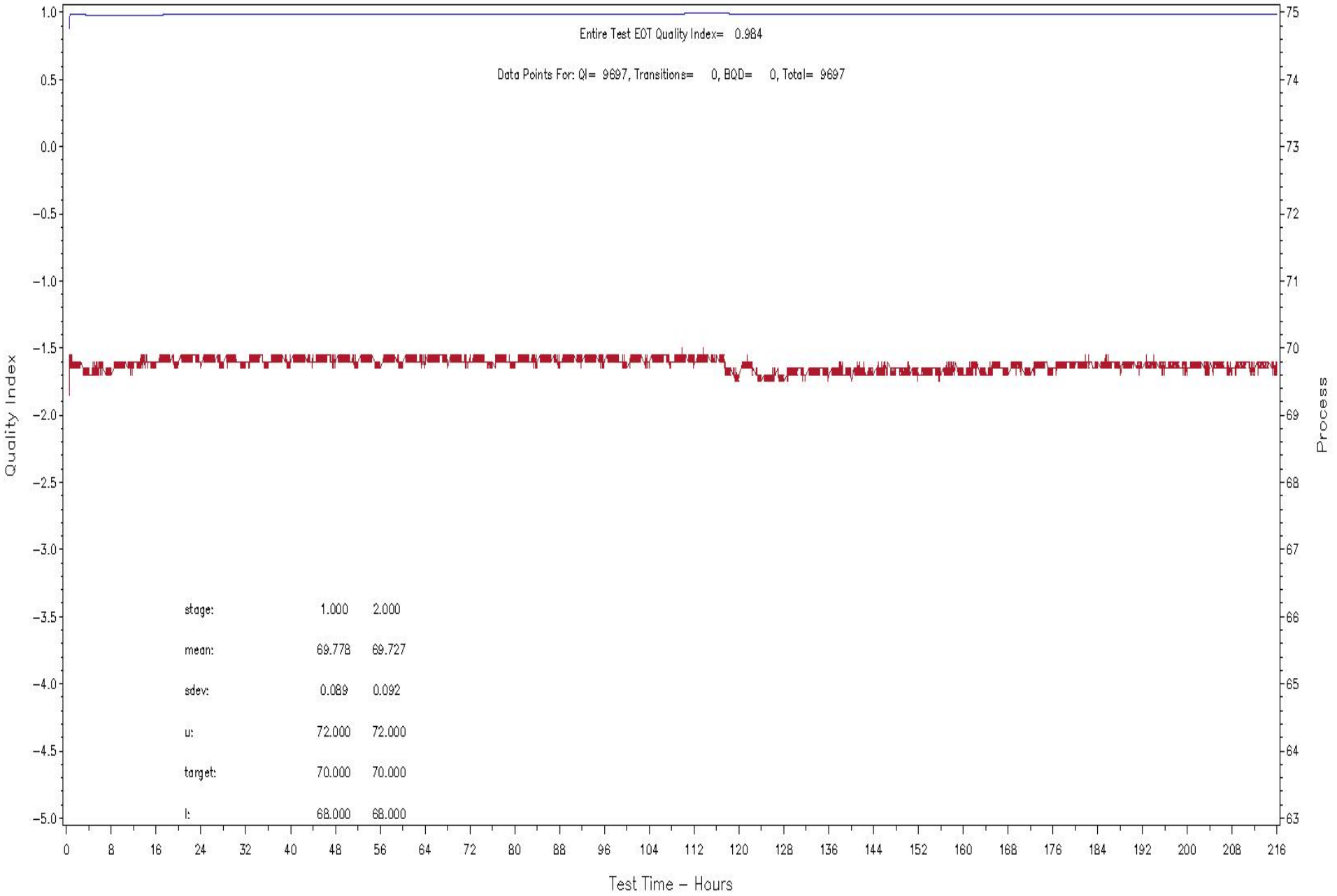

CWT QUALITY INDEX OPERATIONAL REVIEW
Engine Coolant Pressure – kPa (CONTROL)
LAB= A Stand= 27 CMR= 116588
Entire Test EOT Quality Index= 1.000
Data Points For: QI= 9720, Transitions= 0, BQD= 0, Total= 9720
stage: 1.000 2.000
mean: 70.000 69.995
sdev: 0.045 0.033
u: 72.000 72.000
target: 70.000 70.000
l: 68.000 68.000
Quality Index
Process
Test Time – Hours


CWT QUALITY INDEX OPERATIONAL REVIEW
Engine Coolant Pressure – kPa (CONTROL)
LAB= GStand= 95 CMIR= 113314
Entire Test EOT Quality Index= 0.966
Data Points For: QI= 9611, Transitions= 106, BQD= 0, Total= 9717
stage: 1.000 2.000
mean: 70.111 70.001
sdev: 0.354 0.357
u: 72.000 72.000
target: 70.000 70.000
l: 68.000 68.000
Quality Index
Process
Test Time – Hours

CWT QUALITY INDEX OPERATIONAL REVIEW
Engine Coolant Pressure – kPa (CONTROL)
LAB= GStand= 93 CMR= 113421

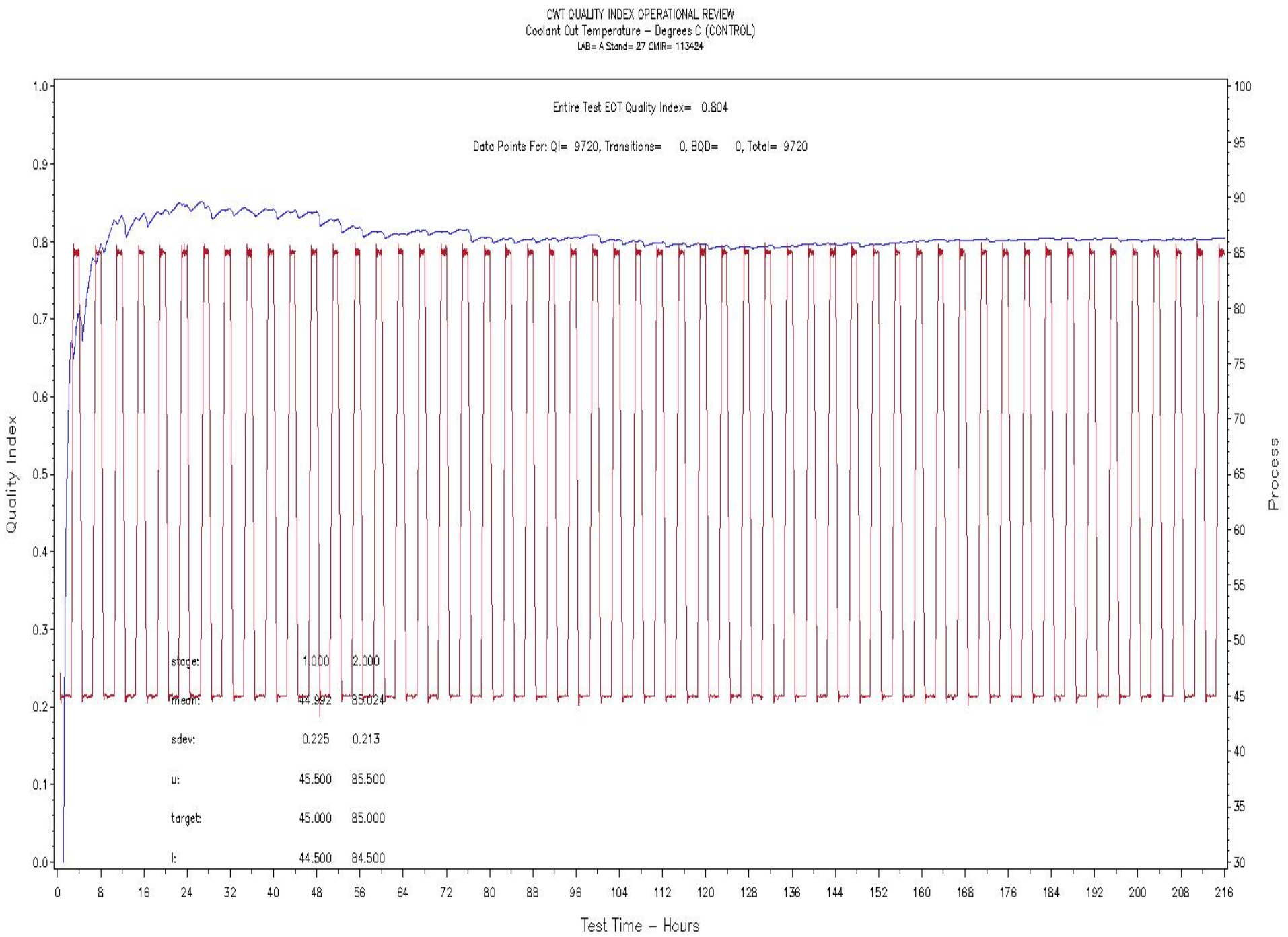


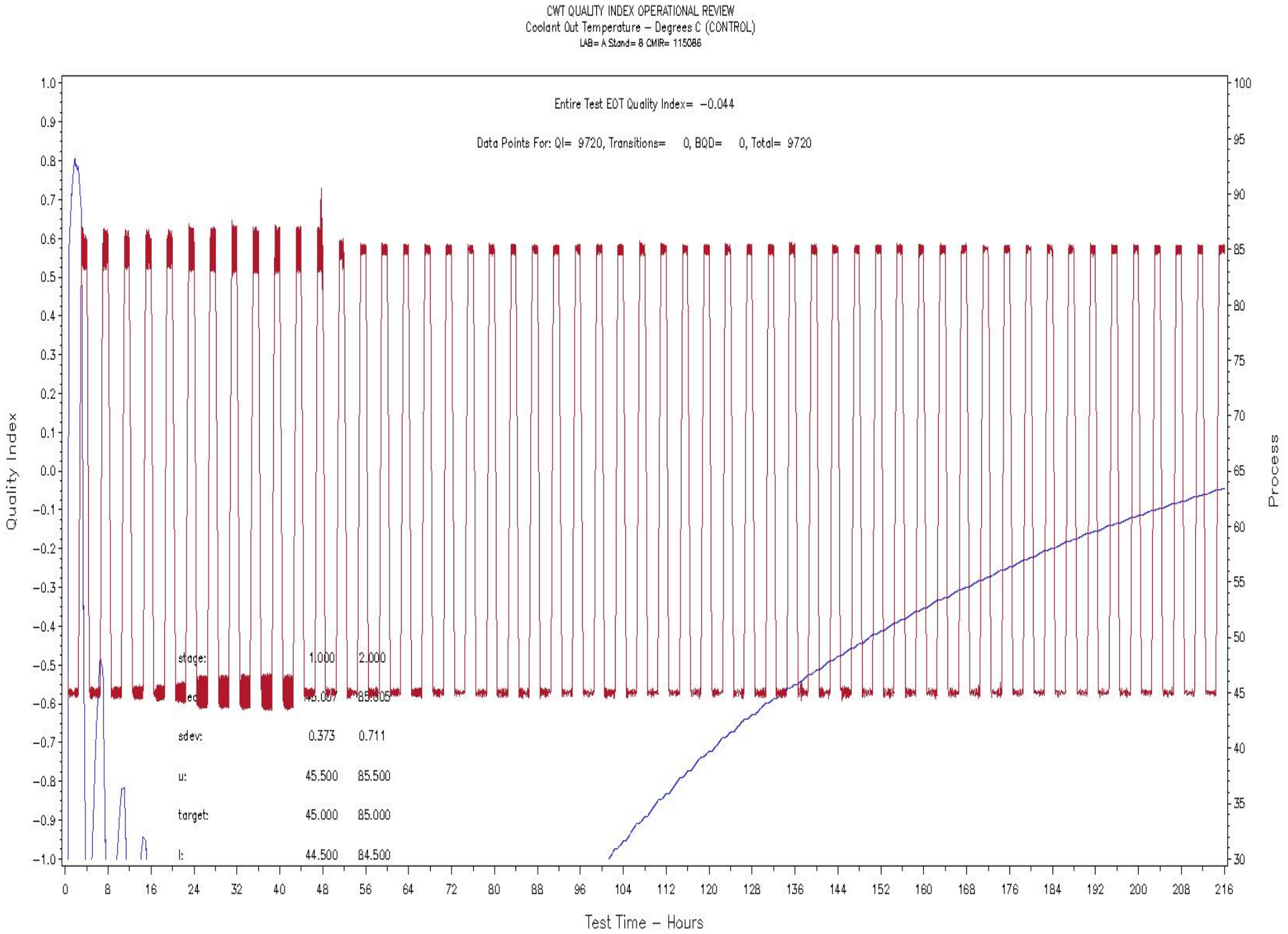
CWT QUALITY INDEX OPERATIONAL REVIEW
Engine Coolant Pressure – kPa (CONTROL)
LAB= D Stand= CA109 CMR= 113319

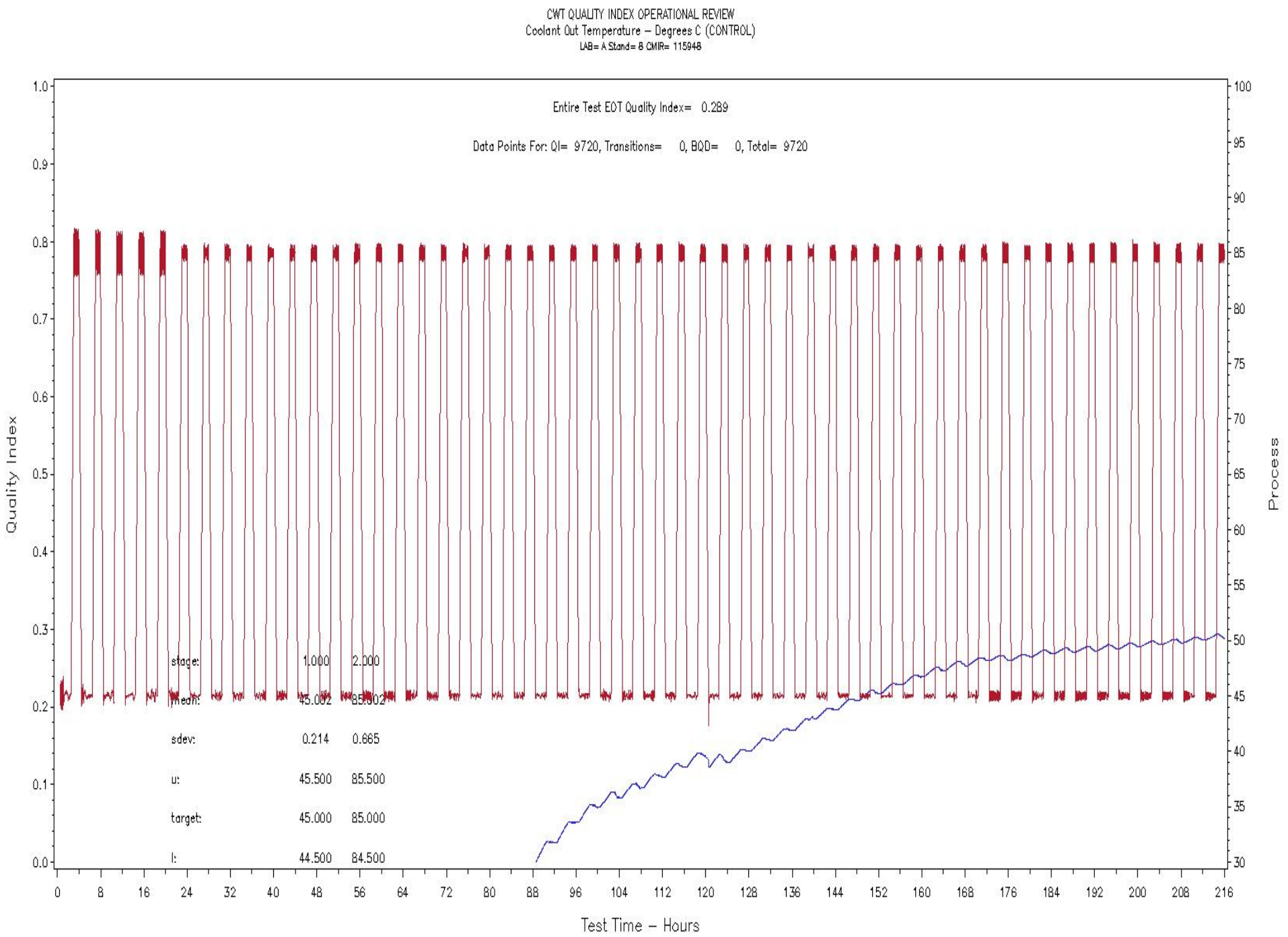


Coolant Temperature

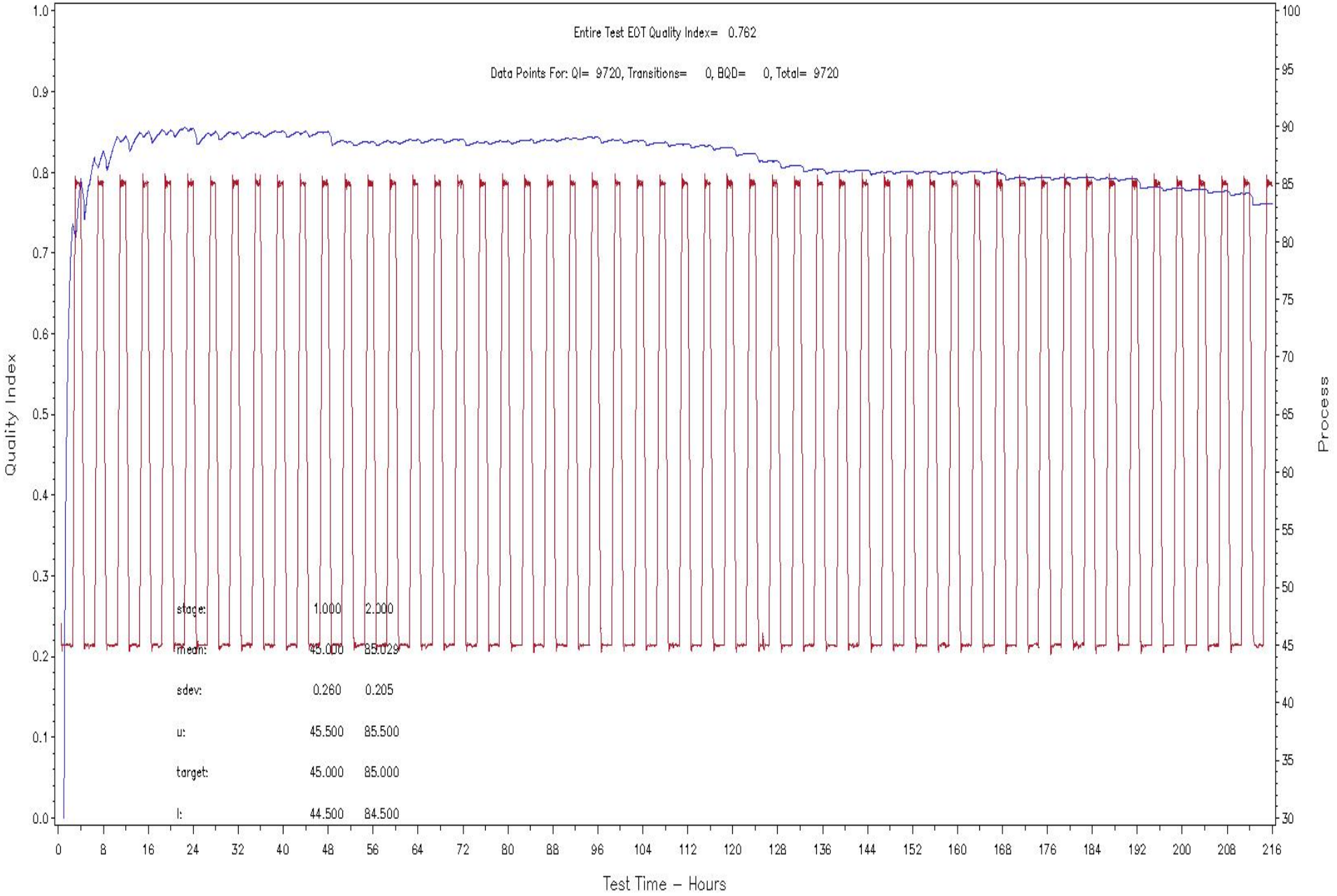
- Testkey 115086 had negative QI (-0.044)
- All others positive

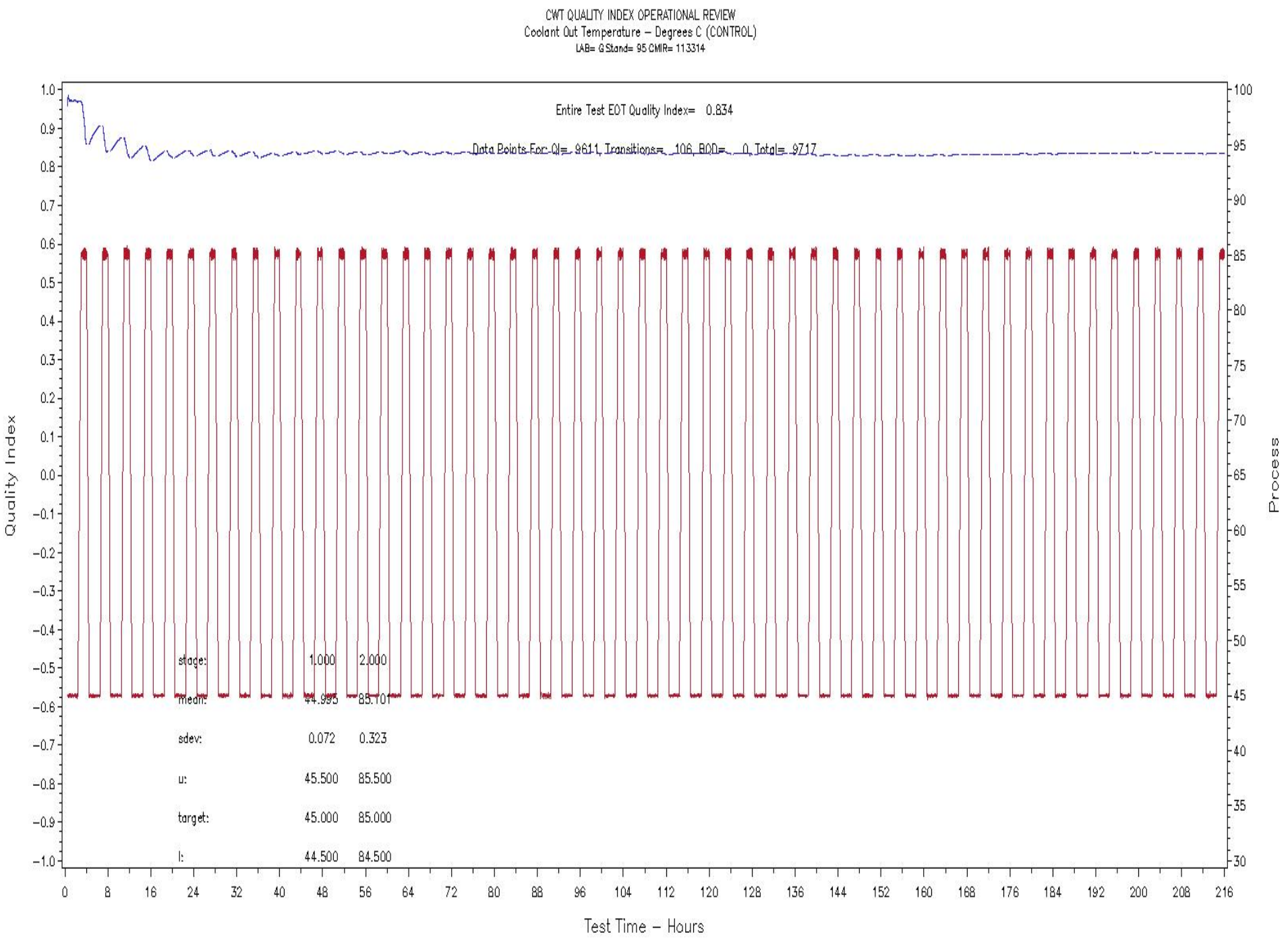

CWT QUALITY INDEX OPERATIONAL REVIEW
Coolant Out Temperature – Degrees C (CONTROL)
LAB= A Stand= 27 CMR= 113424
Entire Test EOT Quality Index= 0.804
Data Points For: QI= 9720, Transitions= 0, BQD= 0, Total= 9720
stage: 1.000 2.000
mean: 44.992 85.024
sdev: 0.225 0.213
u: 45.500 85.500
target: 45.000 85.000
l: 44.500 84.500
Quality Index
Process
Test Time – Hours
0 8 16 24 32 40 48 56 64 72 80 88 96 104 112 120 128 136 144 152 160 168 176 184 192 200 208 216
0.0 0.1 0.2 0.3 0.4 0.5 0.6 0.7 0.8 0.9 1.0
30 35 40 45 50 55 60 65 70 75 80 85 90 95 100

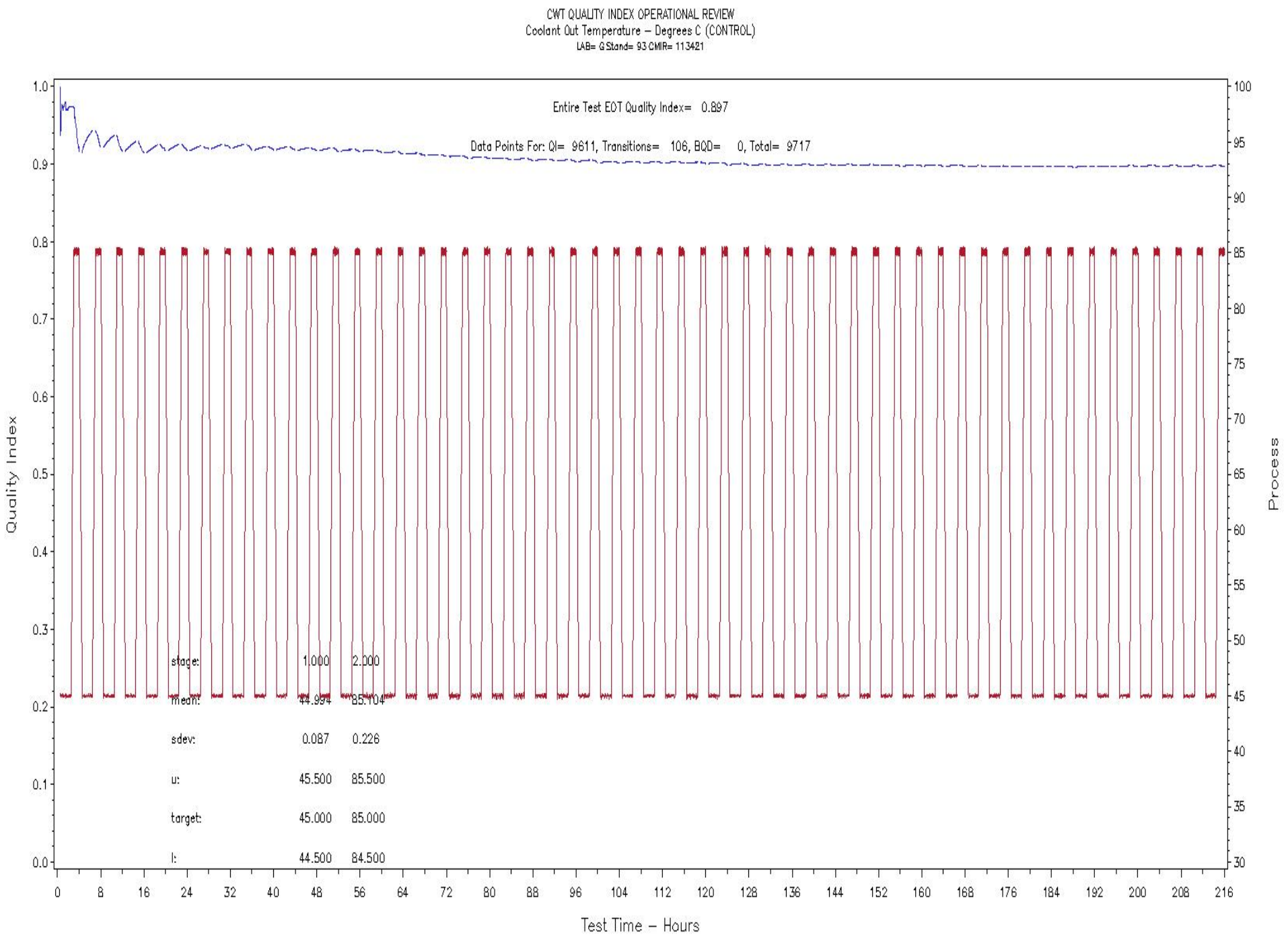

CWT QUALITY INDEX OPERATIONAL REVIEW
Coolant Out Temperature – Degrees C (CONTROL)
LAB= A Stand= 8 CMR= 115086
Entire Test EOT Quality Index= −0.044
Data Points For: QI= 9720, Transitions= 0, BQD= 0, Total= 9720
stage: 1.000 2.000
sdev: 0.373 0.711
u: 45.500 85.500
target: 45.000 85.000
l: 44.500 84.500
Quality Index
Process
Test Time – Hours

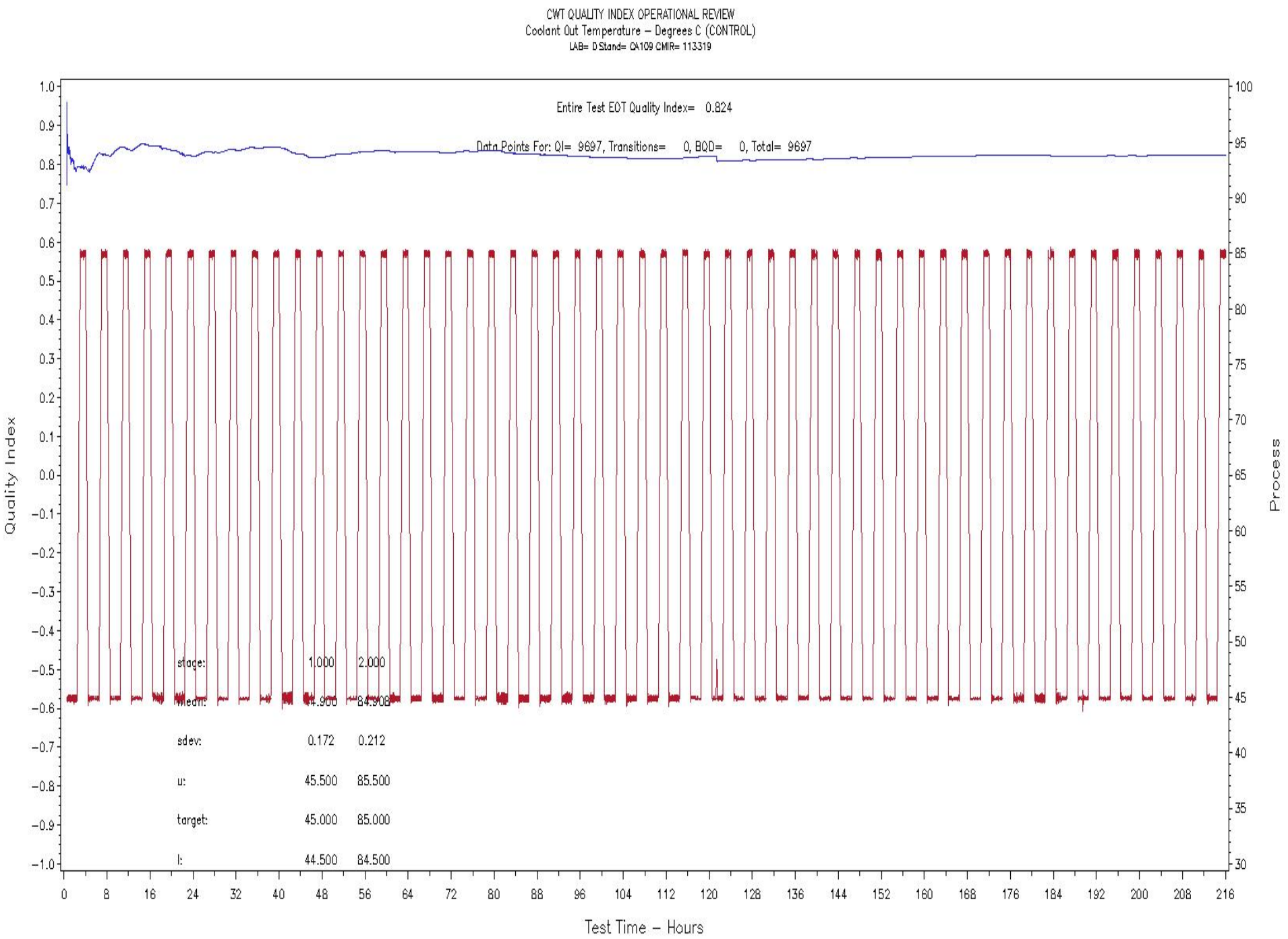

CWT QUALITY INDEX OPERATIONAL REVIEW
Coolant Out Temperature – Degrees C (CONTROL)
LAB= A Stand= 8 CMIR= 115948
Entire Test EOT Quality Index= 0.289
Data Points For: QI= 9720, Transitions= 0, BQD= 0, Total= 9720
stage: 1.000 2.000
mean: 45.002 85.002
sdev: 0.214 0.665
u: 45.500 85.500
target: 45.000 85.000
l: 44.500 84.500
Quality Index
Process
Test Time – Hours

CWT QUALITY INDEX OPERATIONAL REVIEW
Coolant Out Temperature – Degrees C (CONTROL)
LAB= A Stand= 27 CMR= 116588




CWT QUALITY INDEX OPERATIONAL REVIEW
Coolant Out Temperature – Degrees C (CONTROL)
LAB= GStand= 95 CMIR= 113314
Entire Test EOT Quality Index= 0.834
Data Points For QI= 9611, Transitions= 106, BOD= 0, Total= 9717
stage: 1.000 2.000
mean: 44.995 85.101
sdev: 0.072 0.323
u: 45.500 85.500
target: 45.000 85.000
l: 44.500 84.500
Quality Index
Process
Test Time – Hours

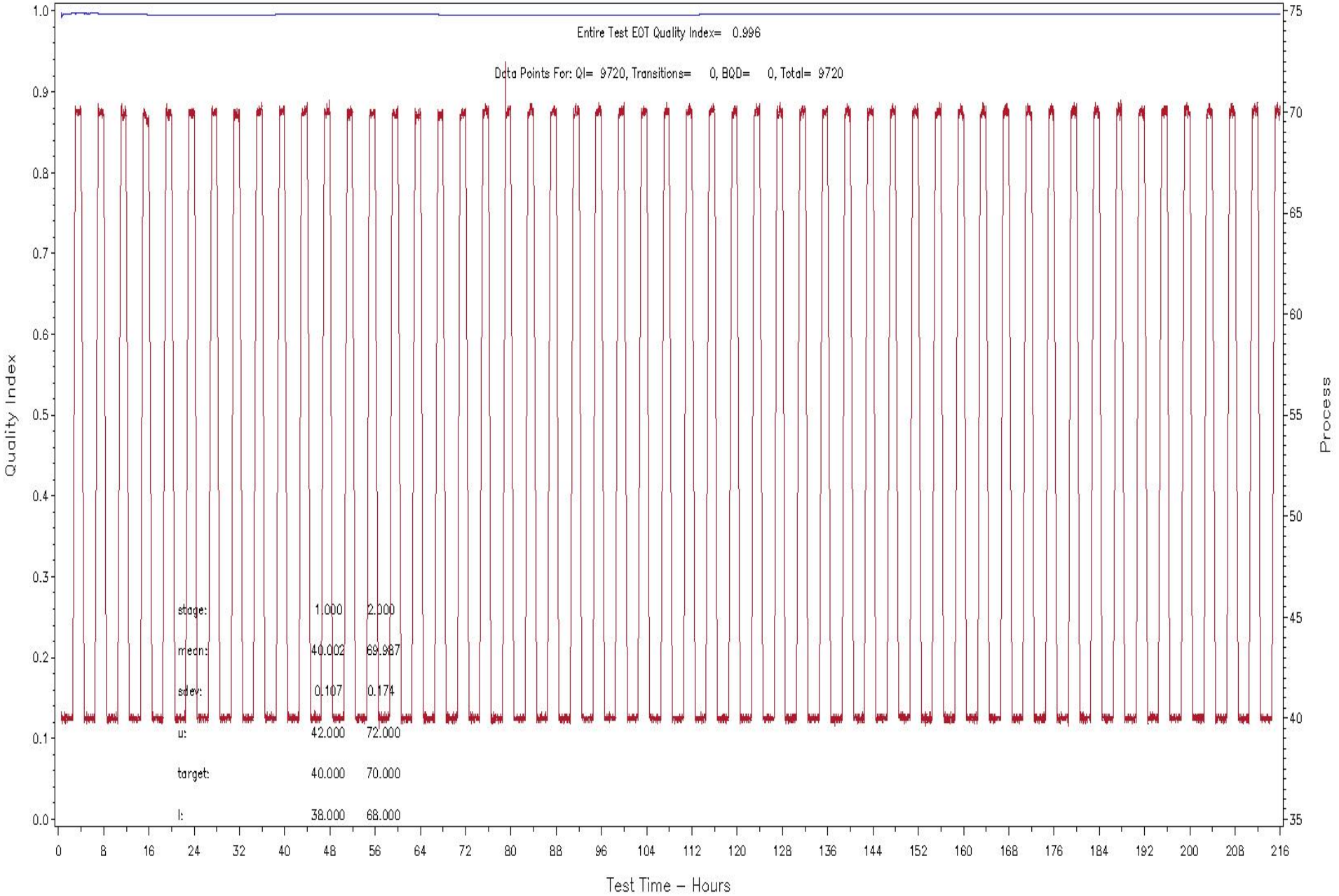

CWT QUALITY INDEX OPERATIONAL REVIEW
Coolant Out Temperature – Degrees C (CONTROL)
LAB= GStand= 93 CMR= 113421
Entire Test EOT Quality Index= 0.897
Data Points For: QI= 9611, Transitions= 106, BQD= 0, Total= 9717
stage: 1.000 2.000
mean: 44.994 85.104
sdev: 0.087 0.226
u: 45.500 85.500
target: 45.000 85.000
l: 44.500 84.500
Quality Index
Process
Test Time – Hours

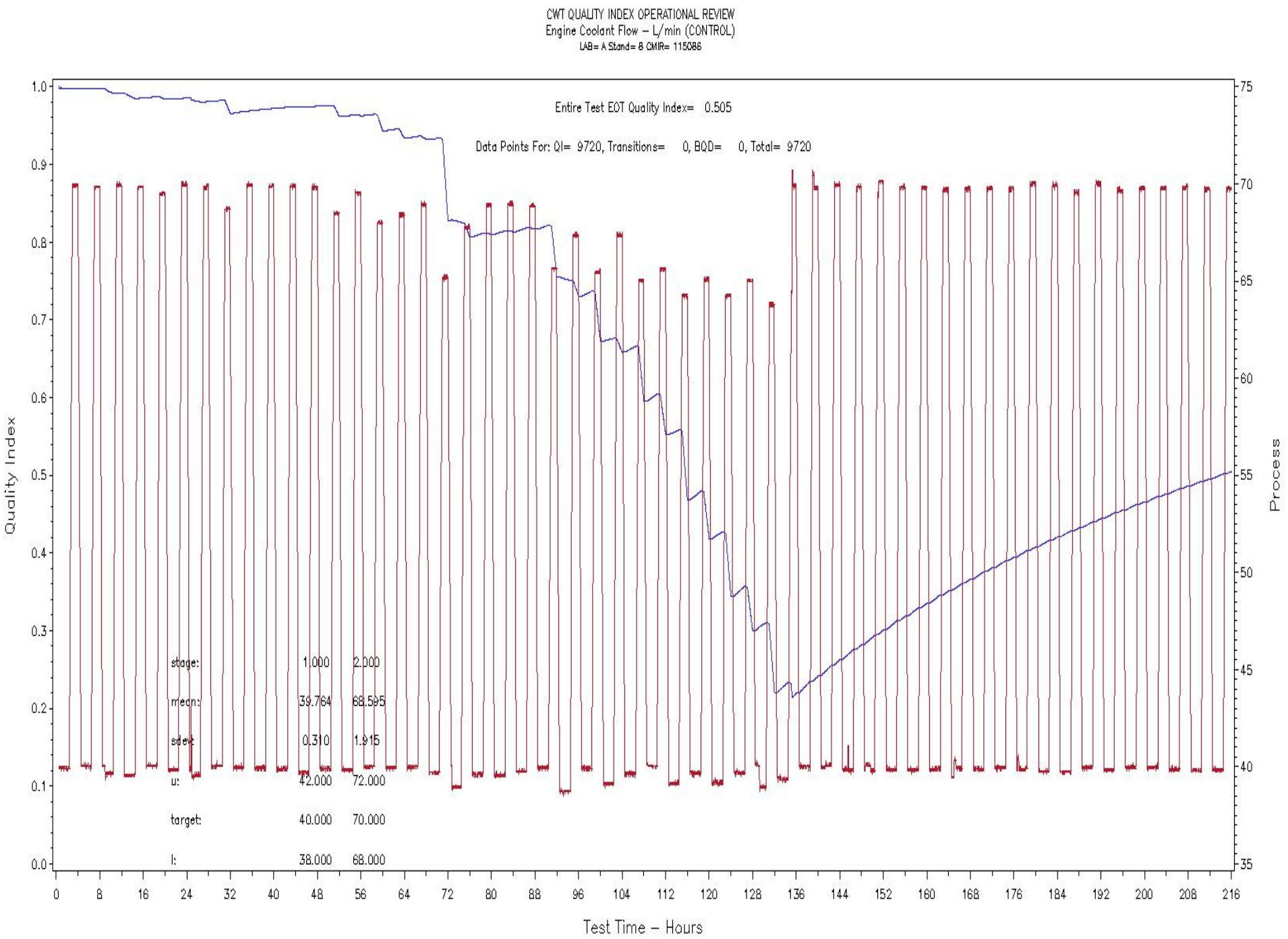

CWT QUALITY INDEX OPERATIONAL REVIEW
Coolant Out Temperature – Degrees C (CONTROL)
LAB= D Stand= CA109 CMR= 113319
Entire Test EOT Quality Index= 0.824
Data Points For: QI= 9697, Transitions= 0, BQD= 0, Total= 9697
stage: 1.000 2.000
mean: 44.908 84.908
sdev: 0.172 0.212
u: 45.500 85.500
target: 45.000 85.000
l: 44.500 84.500
Quality Index
Process
Test Time – Hours

Coolant Flow

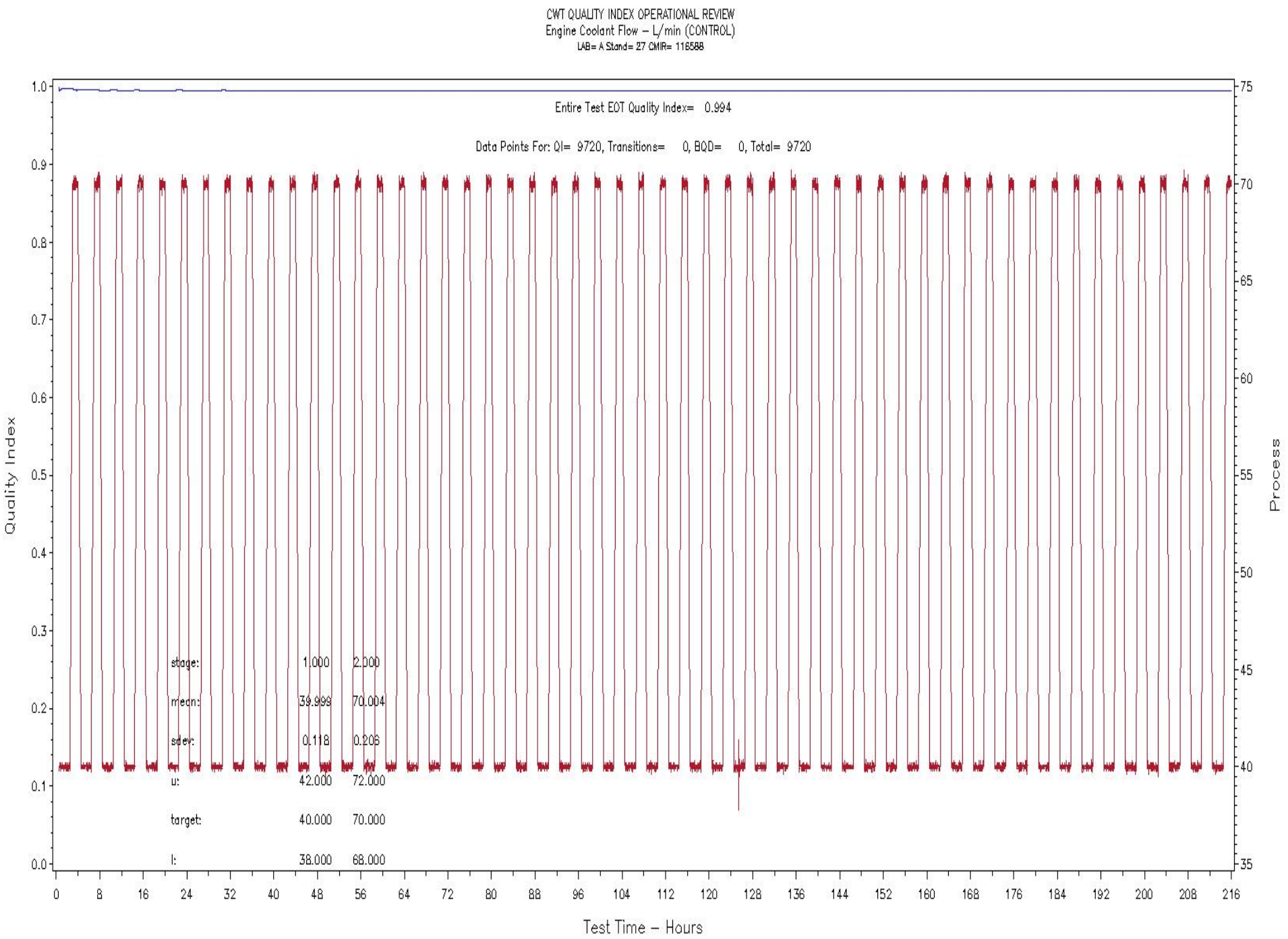
- All results were positive

CWT QUALITY INDEX OPERATIONAL REVIEW
Engine Coolant Flow – L/min (CONTROL)
LAB= A Stand= 27 CMR= 113424




CWT QUALITY INDEX OPERATIONAL REVIEW
Engine Coolant Flow – L/min (CONTROL)
LAB= A Stand= 8 CMR= 115086
Entire Test EOT Quality Index= 0.505
Data Points For: QI= 9720, Transitions= 0, BQD= 0, Total= 9720
stage: 1.000 2.000
mean: 39.764 68.595
sdev: 0.310 1.915
u: 42.000 72.000
target: 40.000 70.000
l: 38.000 68.000
Quality Index
Process
Test Time – Hours

CWT QUALITY INDEX OPERATIONAL REVIEW
Engine Coolant Flow – L/min (CONTROL)
LAB= A Stand= 8 CMR= 115948


CWT QUALITY INDEX OPERATIONAL REVIEW
Engine Coolant Flow – L/min (CONTROL)
LAB= A Stand= 27 CMR= 116588
Entire Test EOT Quality Index= 0.994
Data Points For: QI= 9720, Transitions= 0, BQD= 0, Total= 9720
stage: 1.000 2.000
mean: 39.999 70.004
sdev: 0.118 0.206
u: 42.000 72.000
target: 40.000 70.000
l: 38.000 68.000
Quality Index
Process
Test Time – Hours
0.0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1.0
35
40
45
50
55
60
65
70
75
0
8
16
24
32
40
48
56
64
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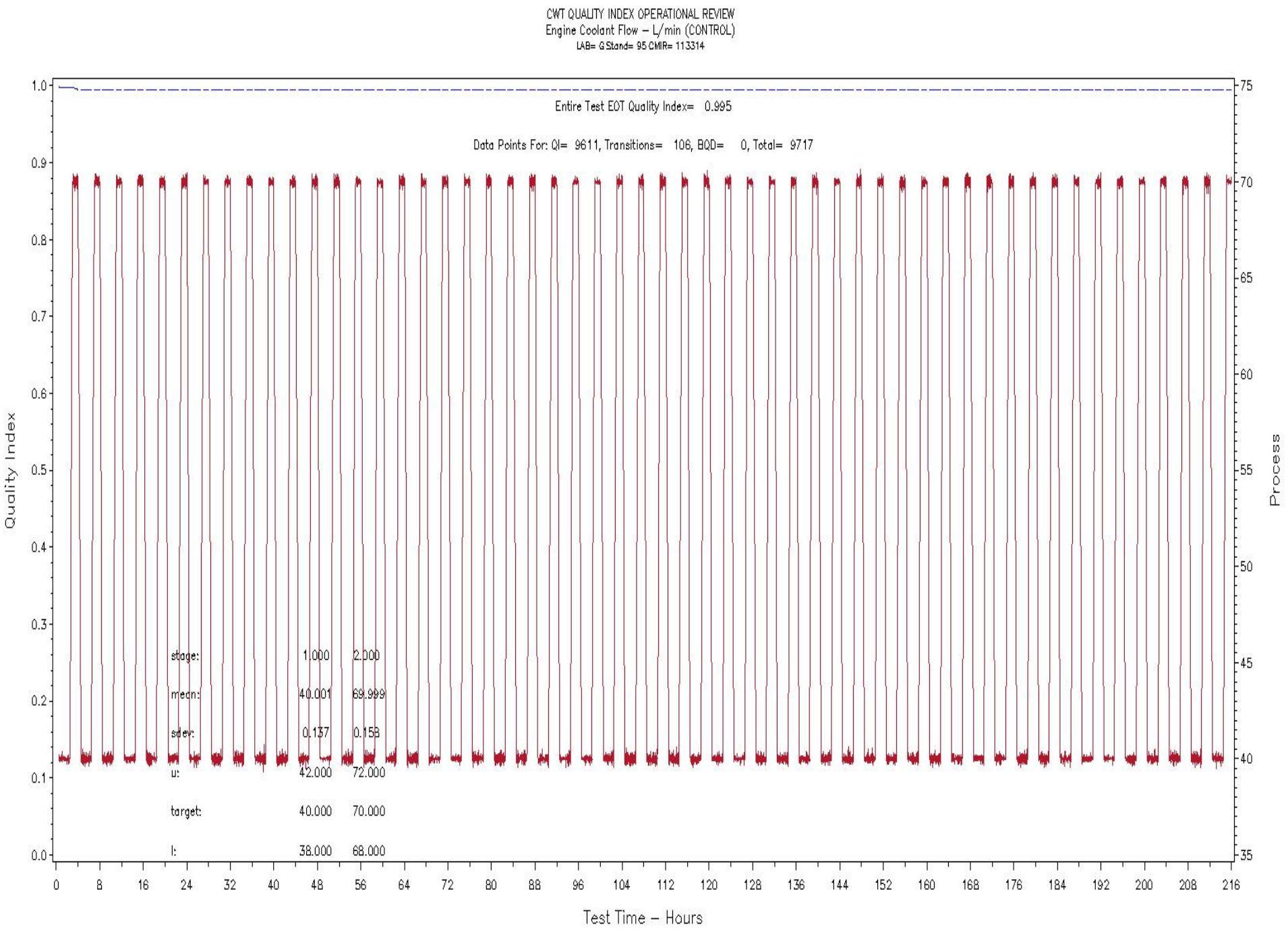
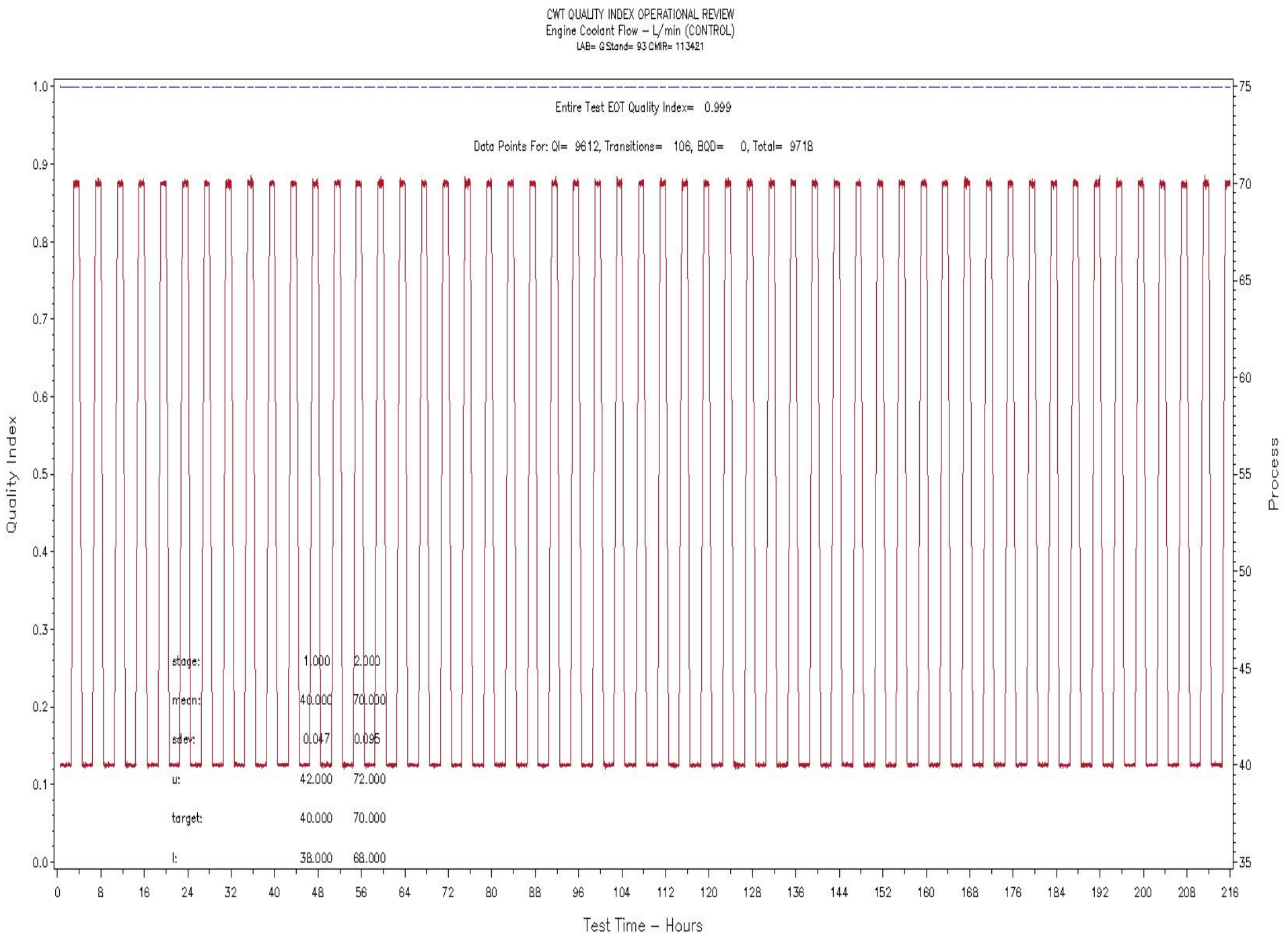
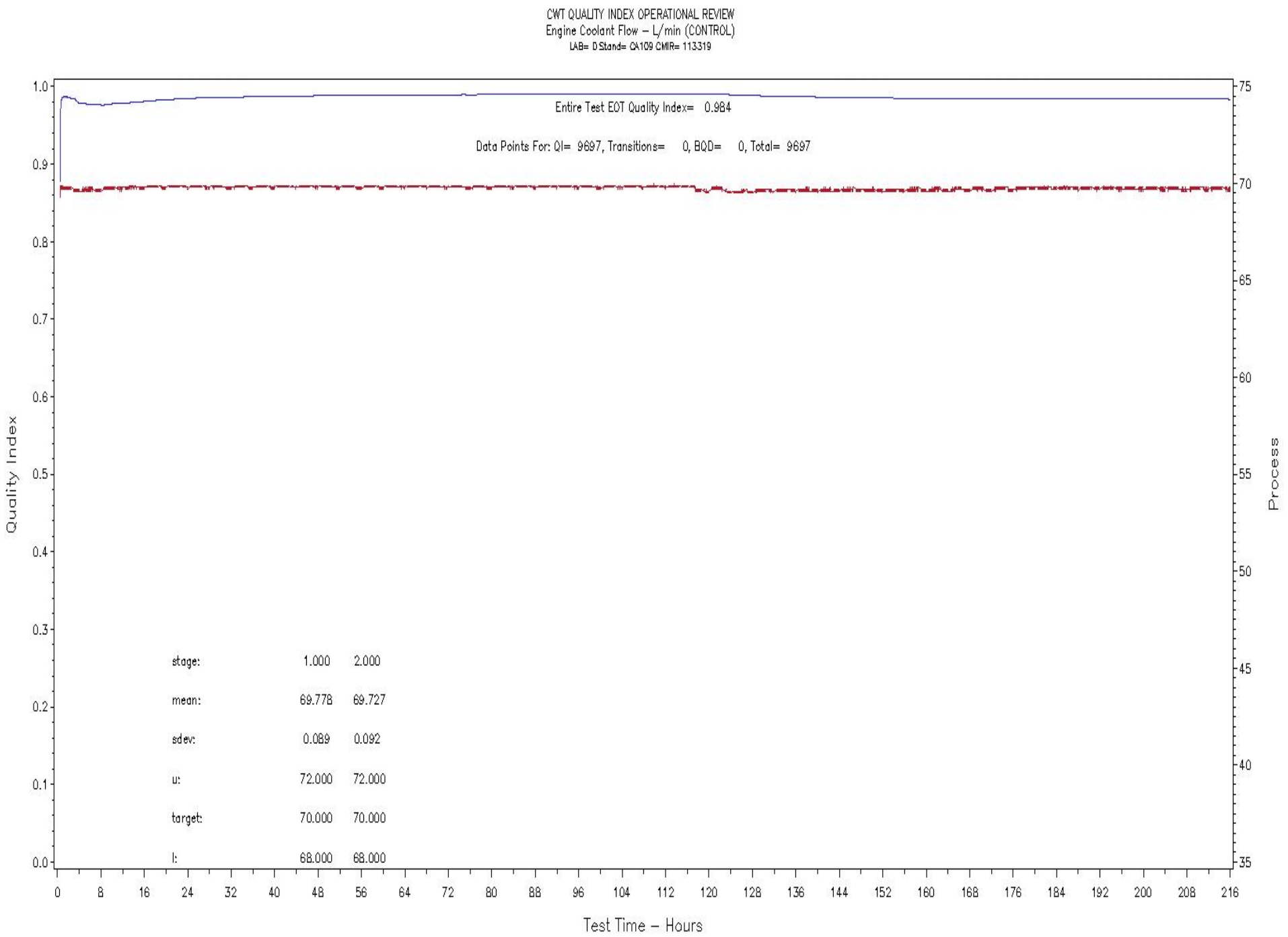
144
152
160
168
176
184
192
200
208
216

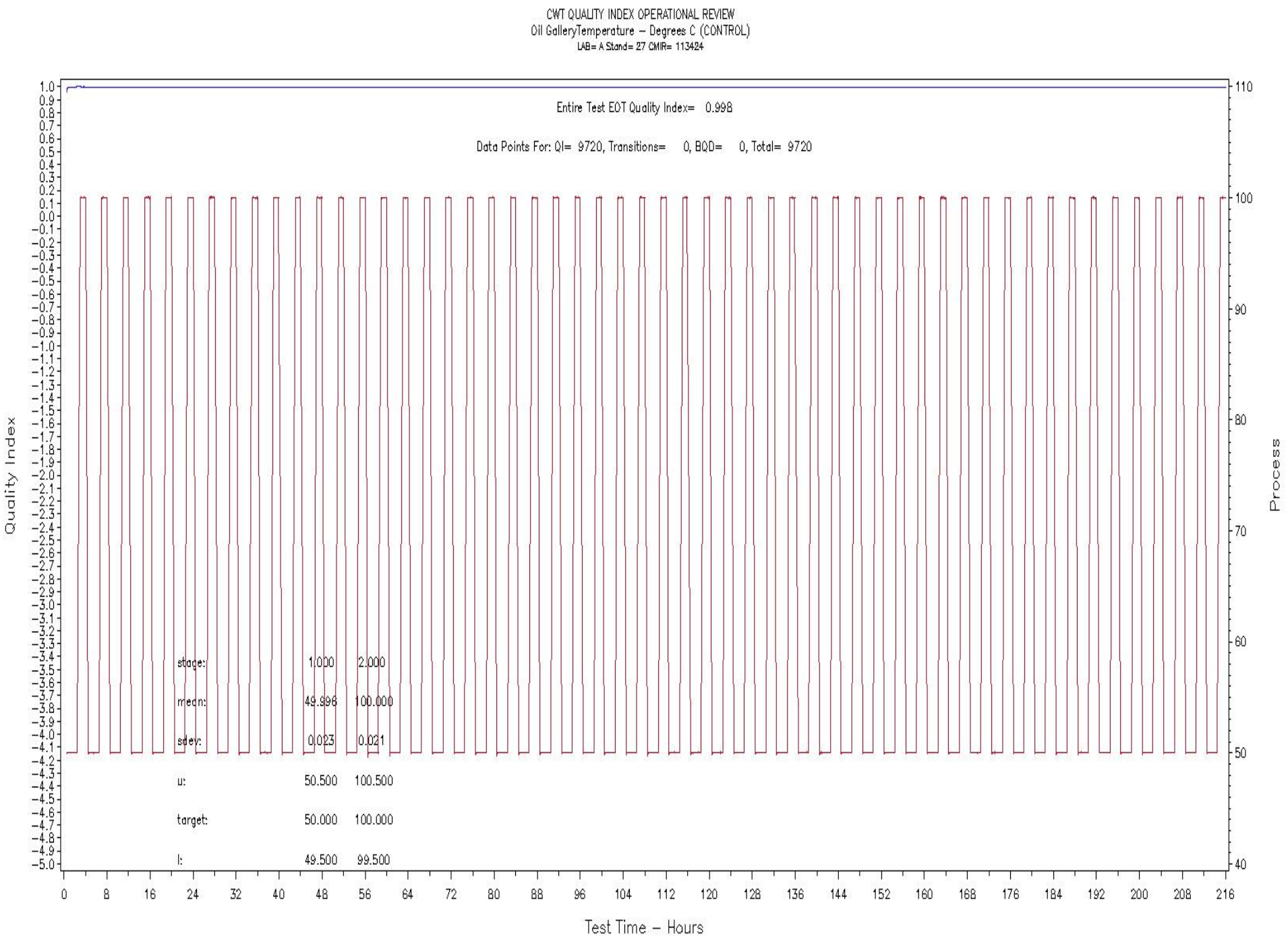

CWT QUALITY INDEX OPERATIONAL REVIEW
Engine Coolant Flow – L/min (CONTROL)
LAB= GStand= 95 CMR= 113314
Entire Test EOT Quality Index= 0.995
Data Points For: QI= 9611, Transitions= 106, BQD= 0, Total= 9717
stage: 1.000 2.000
mean: 40.001 69.999
sdev: 0.137 0.158
u: 42.000 72.000
target: 40.000 70.000
l: 38.000 68.000
Quality Index
Process
Test Time – Hours

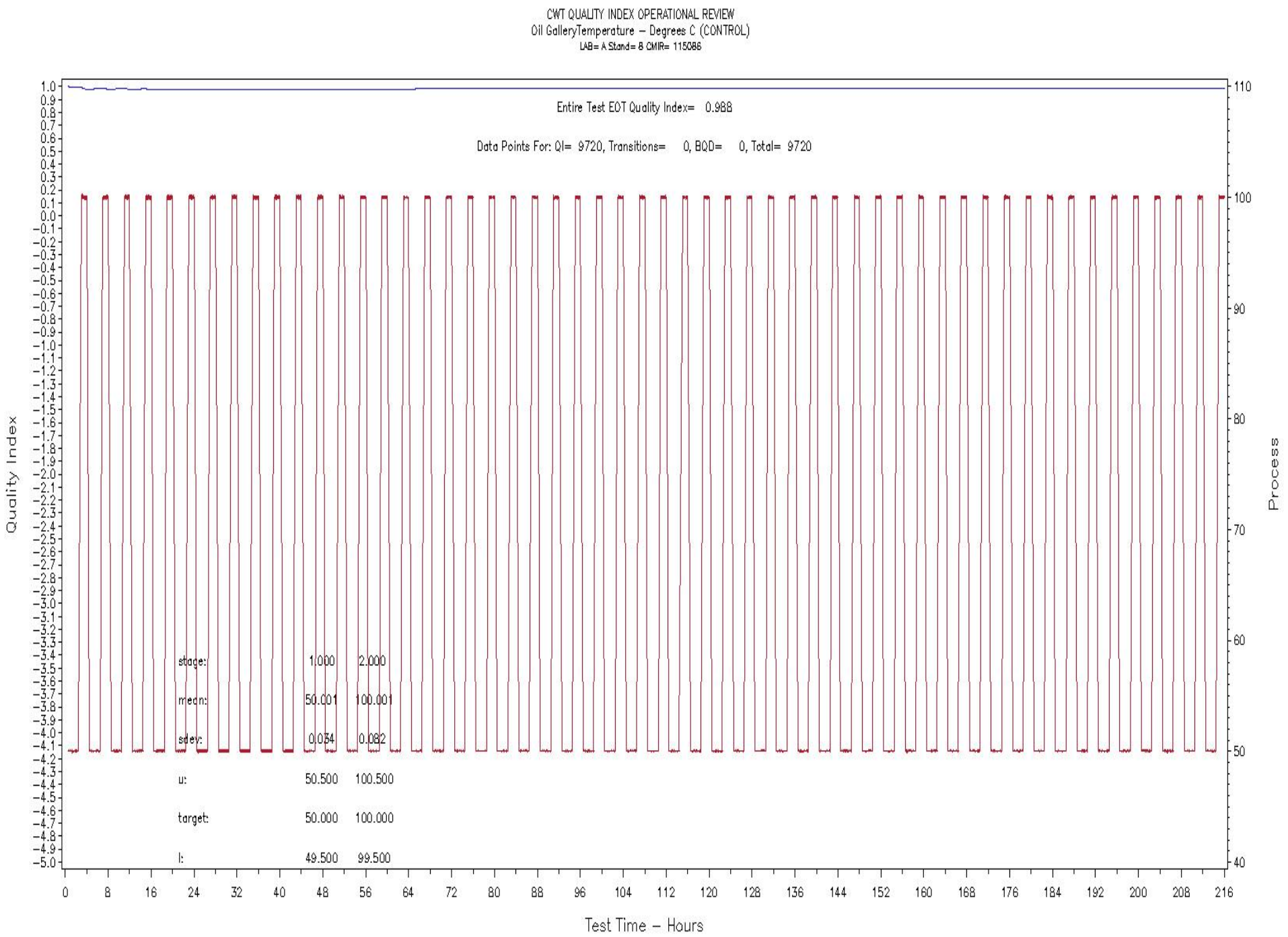

CWT QUALITY INDEX OPERATIONAL REVIEW
Engine Coolant Flow – L/min (CONTROL)
LAB= GStand= 93 CMR= 113421
Entire Test EOT Quality Index= 0.999
Data Points For: QI= 9612, Transitions= 106, BQD= 0, Total= 9718
stage: 1.000 2.000
mean: 40.000 70.000
sdev: 0.047 0.095
u: 42.000 72.000
target: 40.000 70.000
l: 38.000 68.000
Quality Index
Process
Test Time – Hours

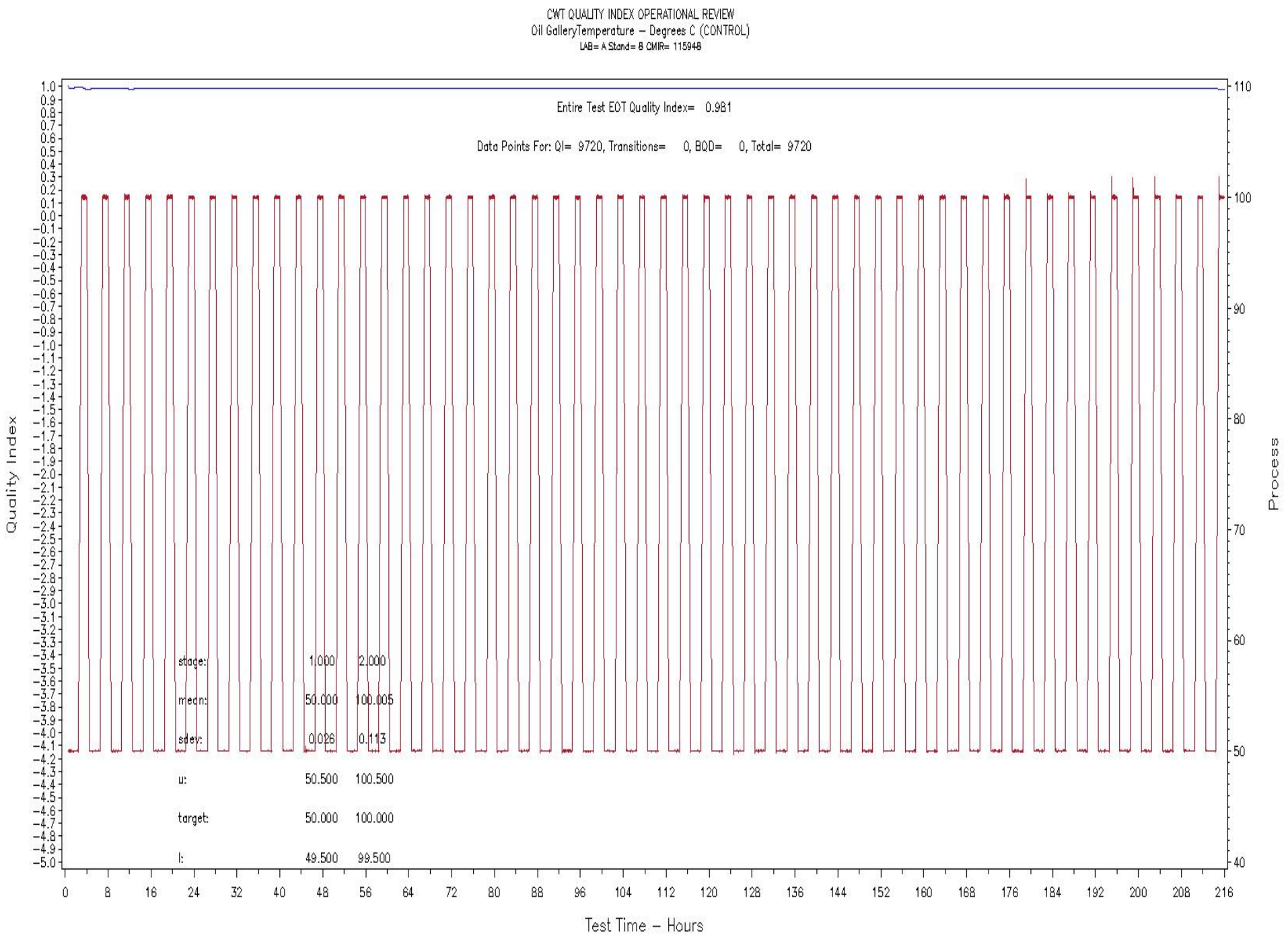

CWT QUALITY INDEX OPERATIONAL REVIEW
Engine Coolant Flow – L/min (CONTROL)
LAB= DStand= CA109 CMR= 113319
Entire Test EOT Quality Index= 0.984
Data Points For: QI= 9697, Transitions= 0, BQD= 0, Total= 9697
stage: 1.000 2.000
mean: 69.778 69.727
sdev: 0.089 0.092
u: 72.000 72.000
target: 70.000 70.000
l: 68.000 68.000
Quality Index
Process
Test Time – Hours

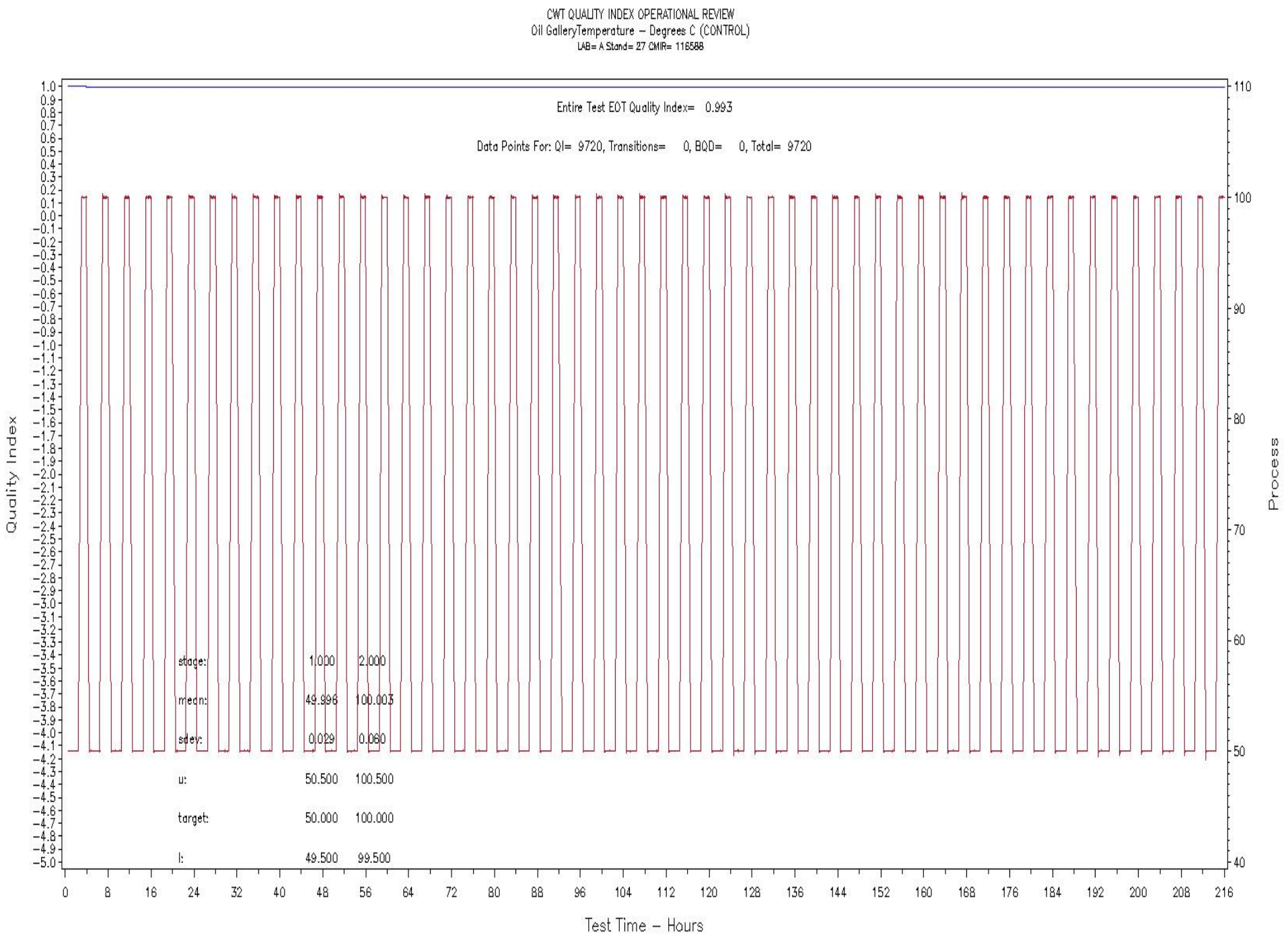
Oil Gallery Temperature

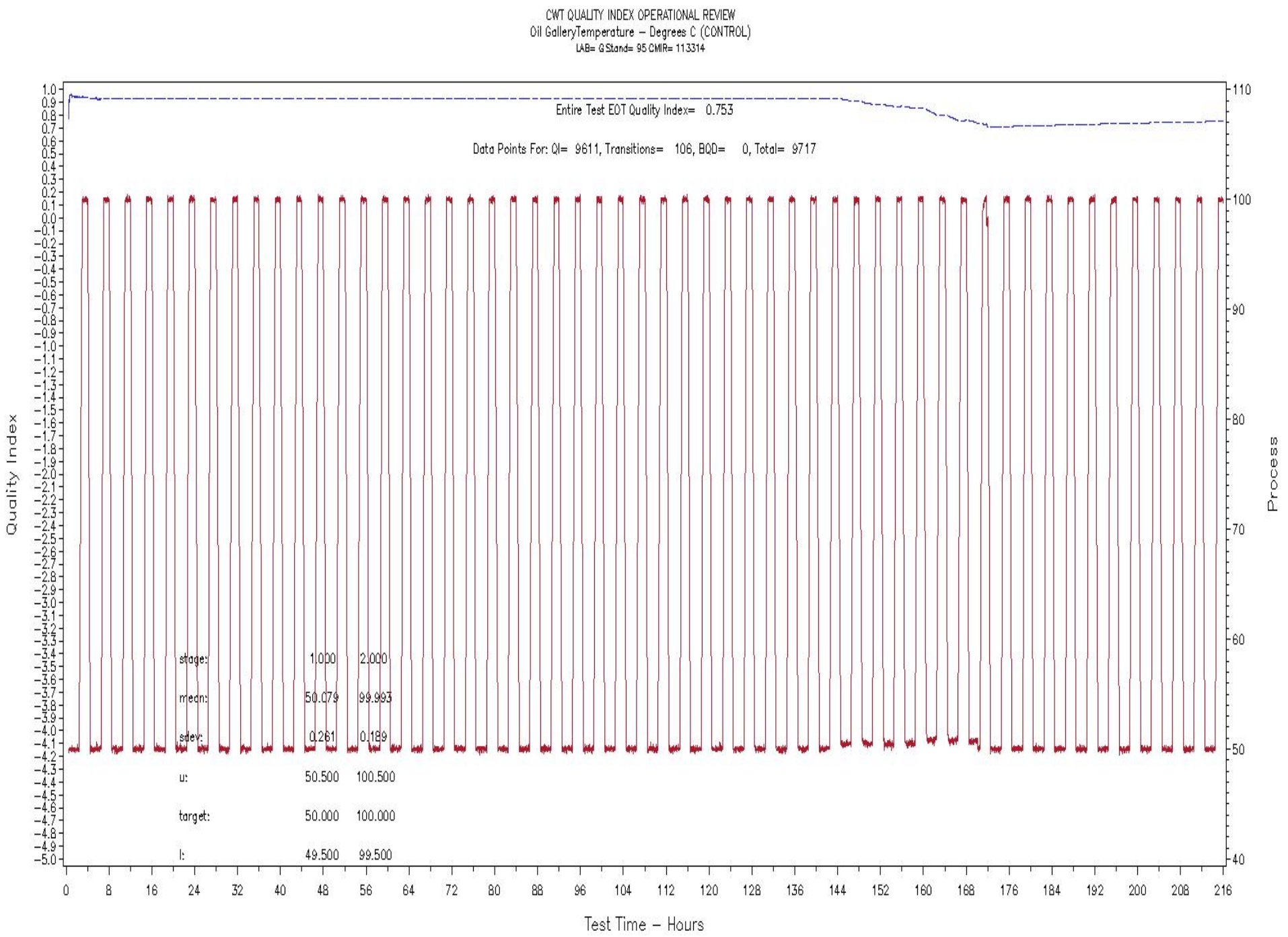
- All positive

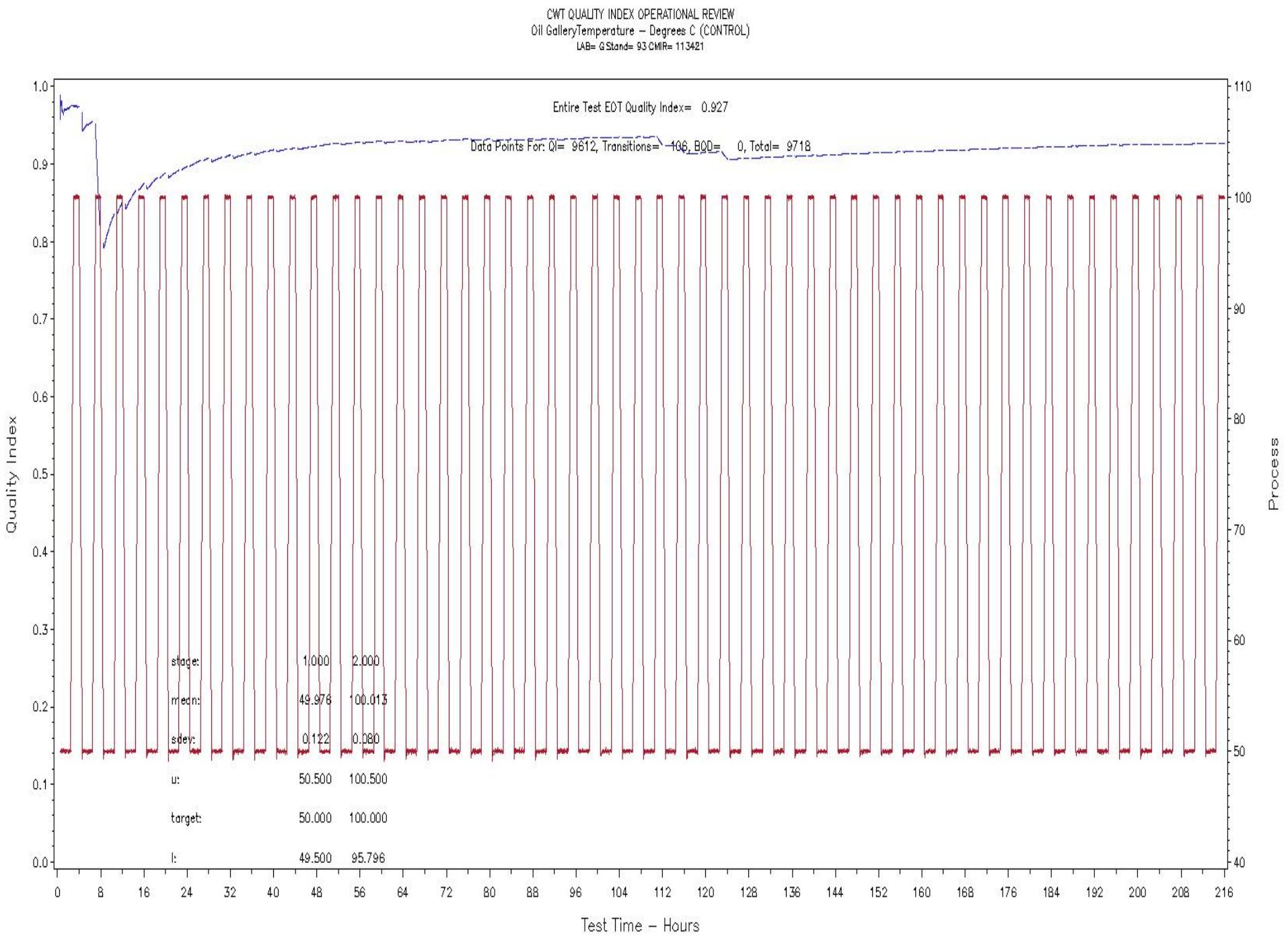

CWT QUALITY INDEX OPERATIONAL REVIEW
Oil GalleryTemperature – Degrees C (CONTROL)
LAB= A Stand= 27 CMR= 113424
Entire Test EOT Quality Index= 0.998
Data Points For: QI= 9720, Transitions= 0, BQD= 0, Total= 9720
stage: 1.000 2.000
mean: 49.996 100.000
sdev: 0.023 0.021
u: 50.500 100.500
target: 50.000 100.000
l: 49.500 99.500
Quality Index
Process
Test Time – Hours

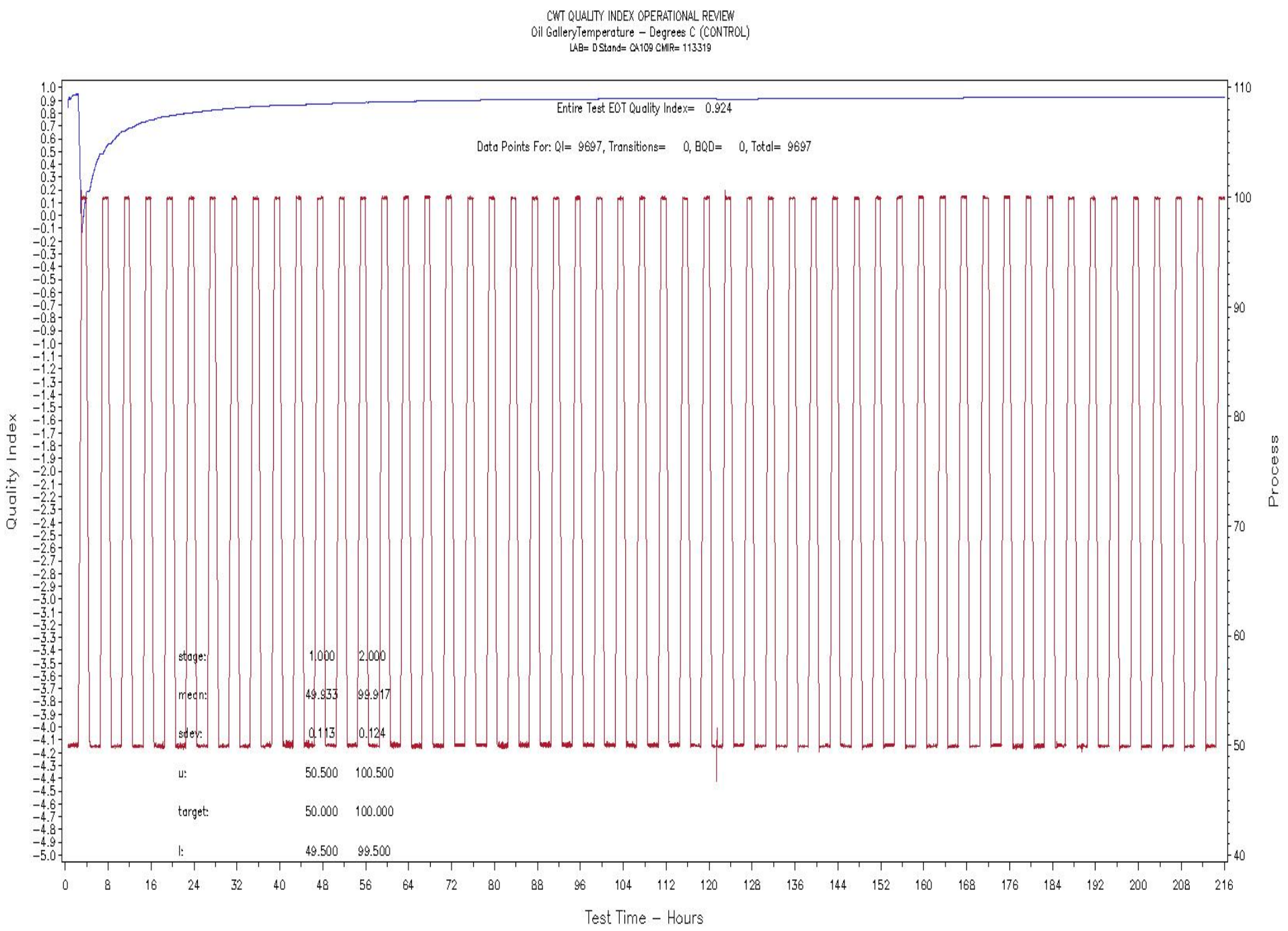

CWT QUALITY INDEX OPERATIONAL REVIEW
Oil GalleryTemperature – Degrees C (CONTROL)
LAB= A Stand= 8 CMIR= 115086
Entire Test EOT Quality Index= 0.988
Data Points For: QI= 9720, Transitions= 0, BQD= 0, Total= 9720
stage: 1.000 2.000
mean: 50.001 100.001
sdev: 0.034 0.082
u: 50.500 100.500
target: 50.000 100.000
l: 49.500 99.500
Quality Index
Process
Test Time – Hours


CWT QUALITY INDEX OPERATIONAL REVIEW
Oil GalleryTemperature – Degrees C (CONTROL)
LAB= A Stand= 8 CMIR= 115948
Entire Test EOT Quality Index= 0.981
Data Points For: QI= 9720, Transitions= 0, BQD= 0, Total= 9720
stage: 1.000 2.000
mean: 50.000 100.005
sdev: 0.026 0.113
u: 50.500 100.500
target: 50.000 100.000
l: 49.500 99.500
Quality Index
Process
Test Time – Hours


CWT QUALITY INDEX OPERATIONAL REVIEW
Oil GalleryTemperature – Degrees C (CONTROL)
LAB= A Stand= 27 CMR= 116588
Entire Test EOT Quality Index= 0.993
Data Points For: QI= 9720, Transitions= 0, BQD= 0, Total= 9720
stage: 1.000 2.000
mean: 49.996 100.003
sdev: 0.029 0.060
u: 50.500 100.500
target: 50.000 100.000
l: 49.500 99.500
Quality Index
Process
Test Time – Hours

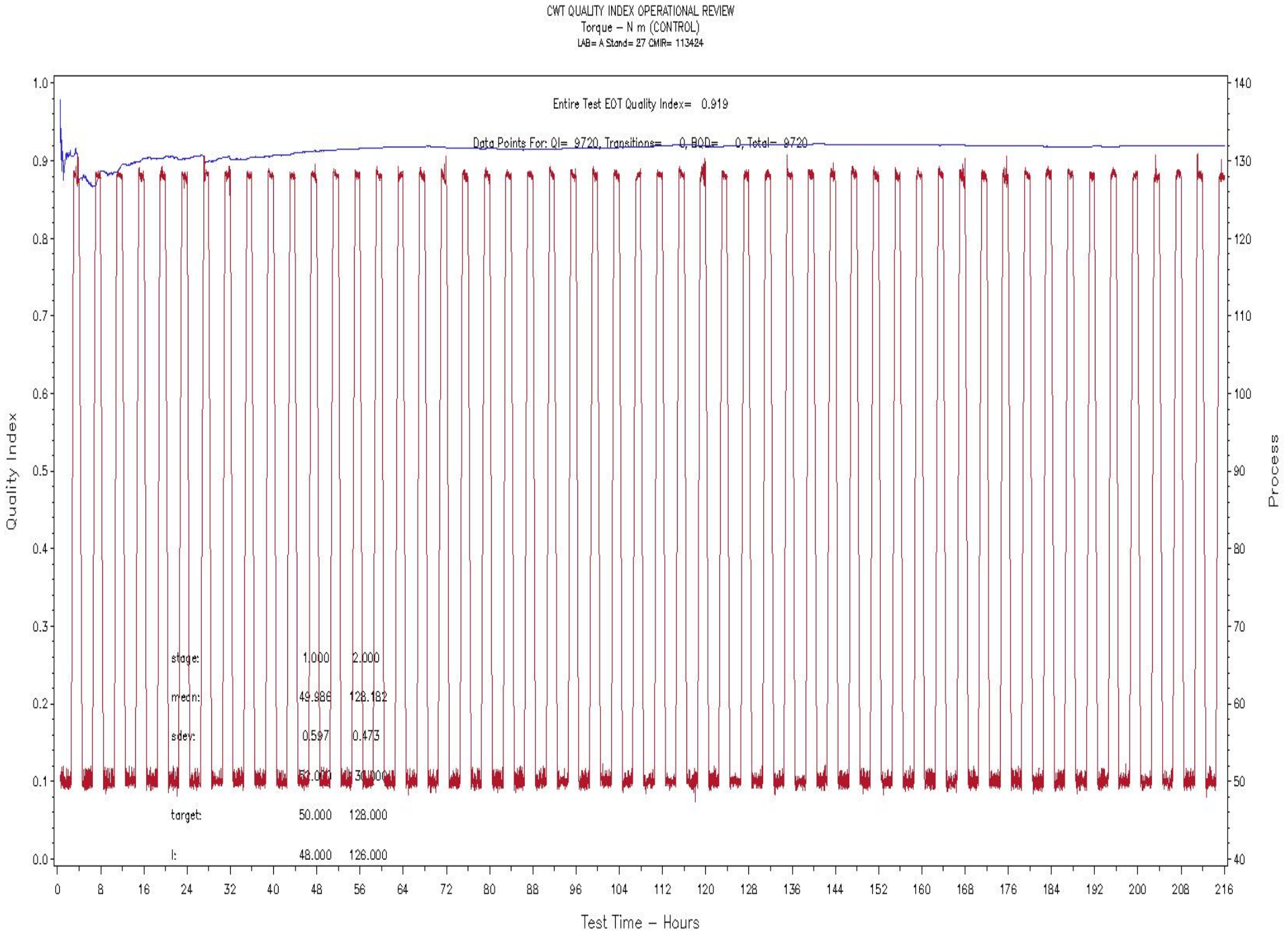

CWT QUALITY INDEX OPERATIONAL REVIEW
Oil GalleryTemperature – Degrees C (CONTROL)
LAB= GStand= 95 CMIR= 113314
Entire Test EOT Quality Index= 0.753
Data Points For: QI= 9611, Transitions= 106, BQD= 0, Total= 9717
stage: 1.000 2.000
mean: 50.079 99.993
sdev: 0.261 0.189
u: 50.500 100.500
target: 50.000 100.000
l: 49.500 99.500
Quality Index
Process
Test Time – Hours

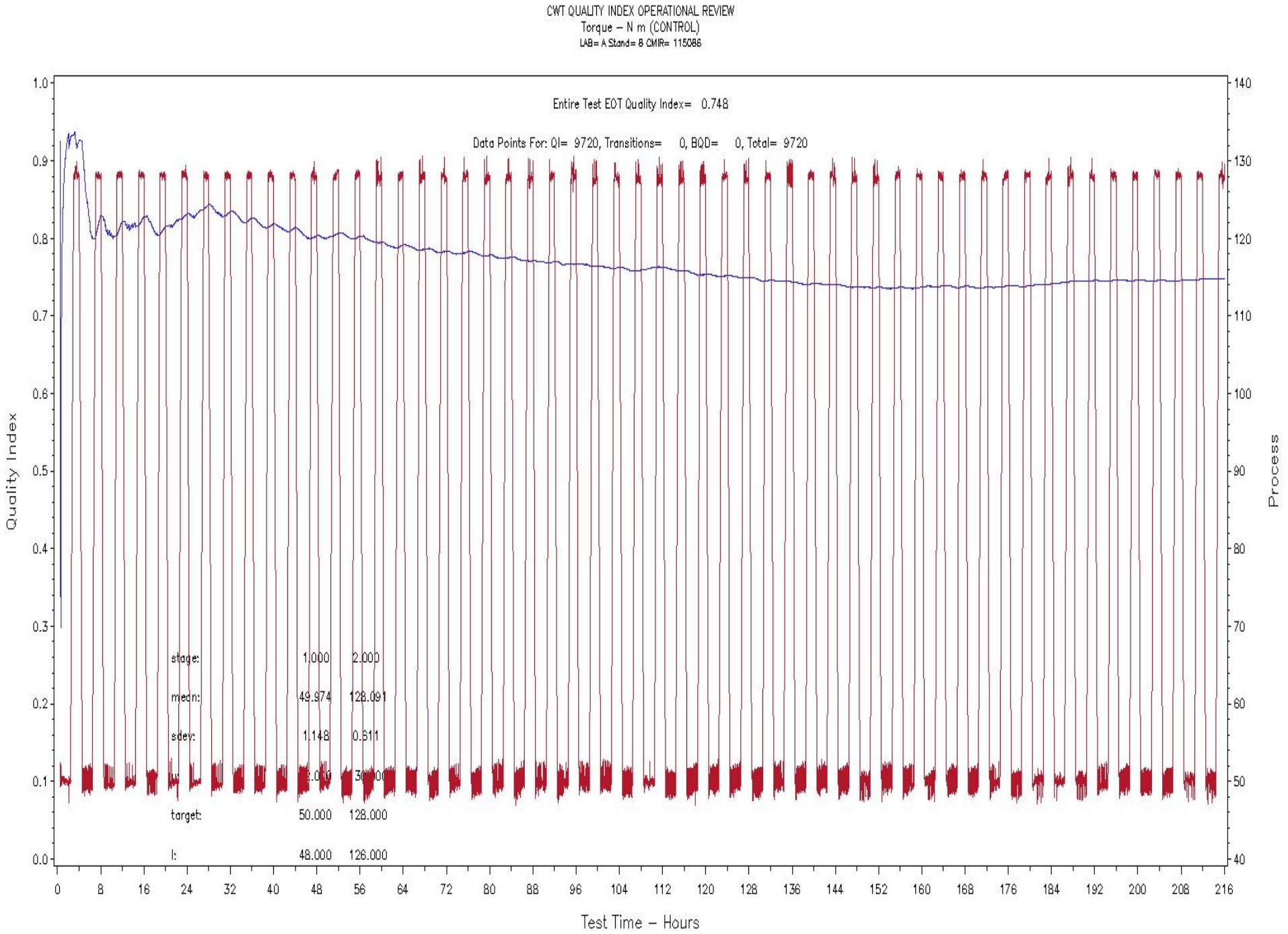

CWT QUALITY INDEX OPERATIONAL REVIEW
Oil GalleryTemperature – Degrees C (CONTROL)
LAB= GStand= 93 CMR= 113421
Entire Test EOT Quality Index= 0.927
Data Points For: QI= 9612, Transitions= 106, BOD= 0, Total= 9718
stage: 1.000 2.000
mean: 49.976 100.013
sdev: 0.122 0.080
u: 50.500 100.500
target: 50.000 100.000
l: 49.500 95.796
Quality Index
Process
Test Time – Hours

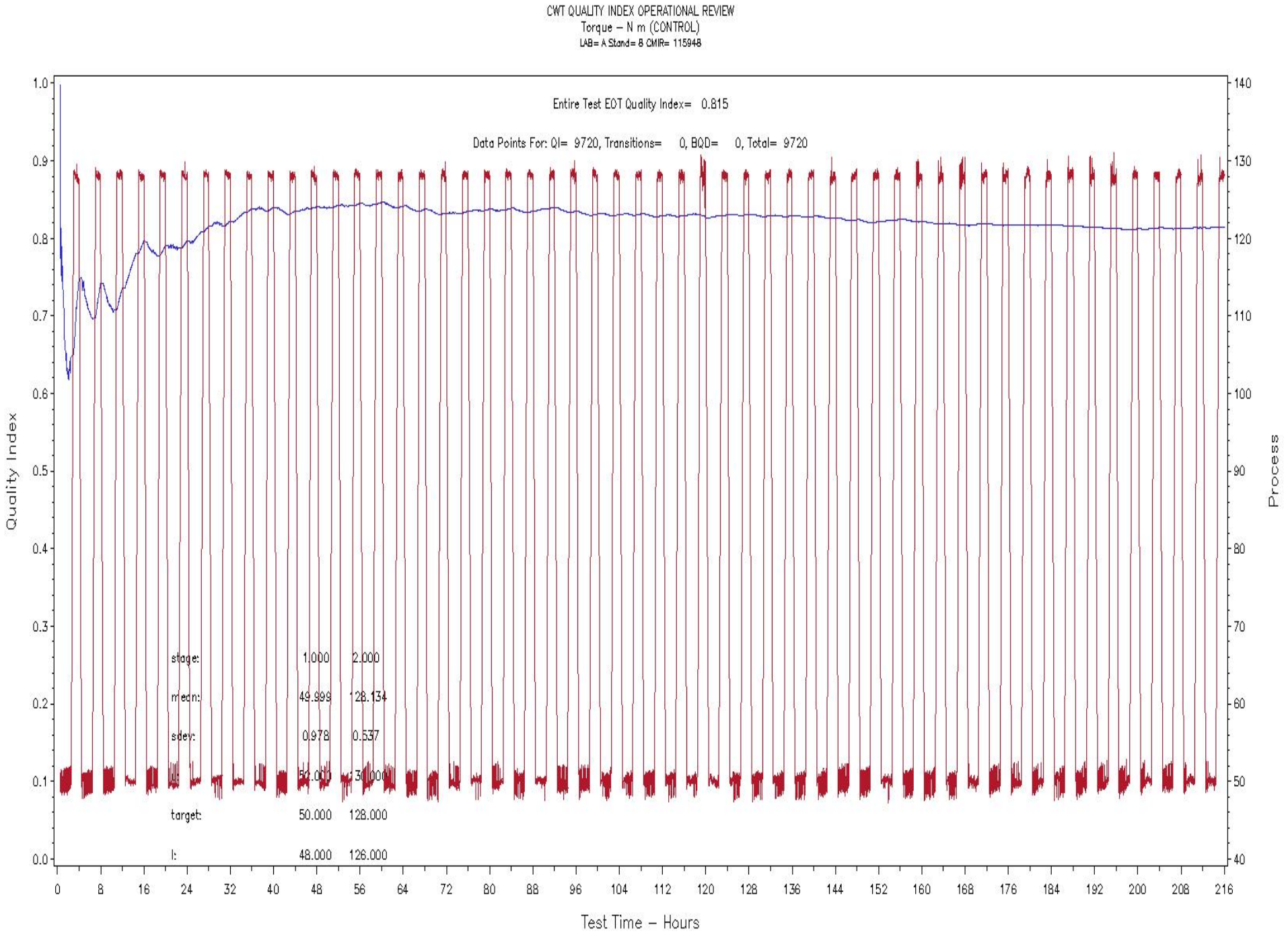

CWT QUALITY INDEX OPERATIONAL REVIEW
Oil GalleryTemperature – Degrees C (CONTROL)
LAB= D Stand= CA109 CMR= 113319
Entire Test EOT Quality Index= 0.924
Data Points For: QI= 9697, Transitions= 0, BQD= 0, Total= 9697
stage: 1.000 2.000
mean: 49.933 99.917
sdev: 0.113 0.124
u: 50.500 100.500
target: 50.000 100.000
l: 49.500 99.500
Quality Index
Process
Test Time – Hours

Torque

- All values positive


CWT QUALITY INDEX OPERATIONAL REVIEW
Torque – N m (CONTROL)
LAB= A Stand= 27 CMR= 113424
Entire Test EOT Quality Index= 0.919
Data Points For: QI= 9720, Transitions= 0, BQD= 0, Total= 9720
stage: 1.000 2.000
mean: 49.986 128.182
sdev: 0.597 0.473
target: 50.000 128.000
l: 48.000 126.000
Quality Index
Process
Test Time – Hours
0.0 0.1 0.2 0.3 0.4 0.5 0.6 0.7 0.8 0.9 1.0
40 50 60 70 80 90 100 110 120 130 140
0 8 16 24 32 40 48 56 64 72 80 88 96 104 112 120 128 136 144 152 160 168 176 184 192 200 208 216


CWT QUALITY INDEX OPERATIONAL REVIEW
Torque – N m (CONTROL)
LAB= A Stand= 8 CMR= 115086
Entire Test EOT Quality Index= 0.748
Data Points For: QI= 9720, Transitions= 0, BQD= 0, Total= 9720
stage: 1.000 2.000
mean: 49.974 128.091
sdev: 1.148 0.611
target: 50.000 128.000
l: 48.000 126.000
Quality Index
Process
Test Time – Hours
0.0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1.0
40
50
60
70
80
90
100
110
120
130
140
0
8
16
24
32
40
48
56
64
72
80
88
96
104
112
120
128
136
144
152
160
168
176
184
192
200
208
216


CWT QUALITY INDEX OPERATIONAL REVIEW
Torque – N m (CONTROL)
LAB= A Stand= 8 CMR= 115948
Entire Test EOT Quality Index= 0.815
Data Points For: QI= 9720, Transitions= 0, BQD= 0, Total= 9720
stage: 1.000 2.000
mean: 49.999 128.134
sdev: 0.978 0.537
target: 50.000 128.000
l: 48.000 126.000
Quality Index
Process
Test Time – Hours
0.0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1.0
40
50
60
70
80
90
100
110
120
130
140
0
8
16
24
32
40
48
56
64
72
80
88
96
104
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120
128
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160
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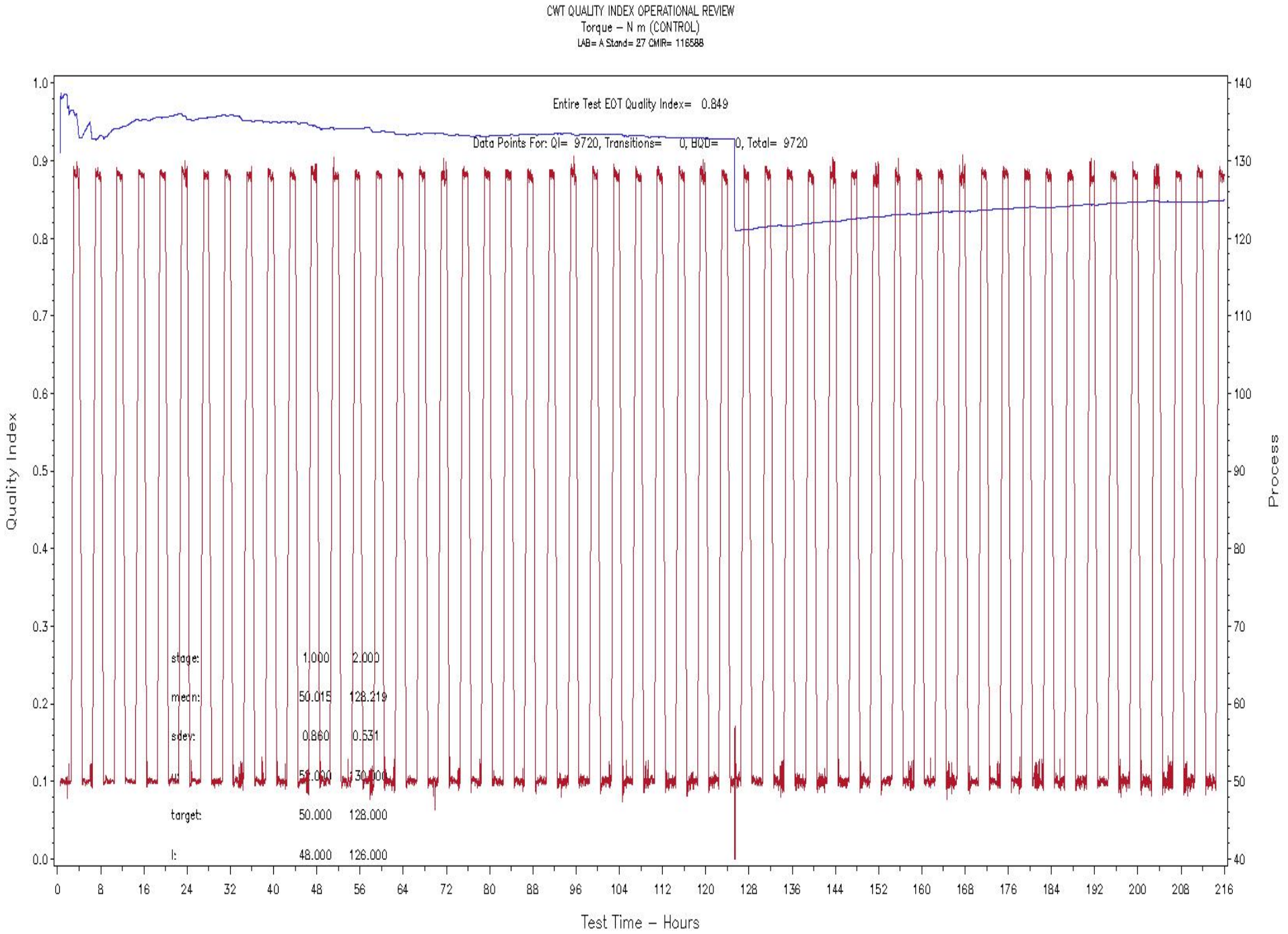
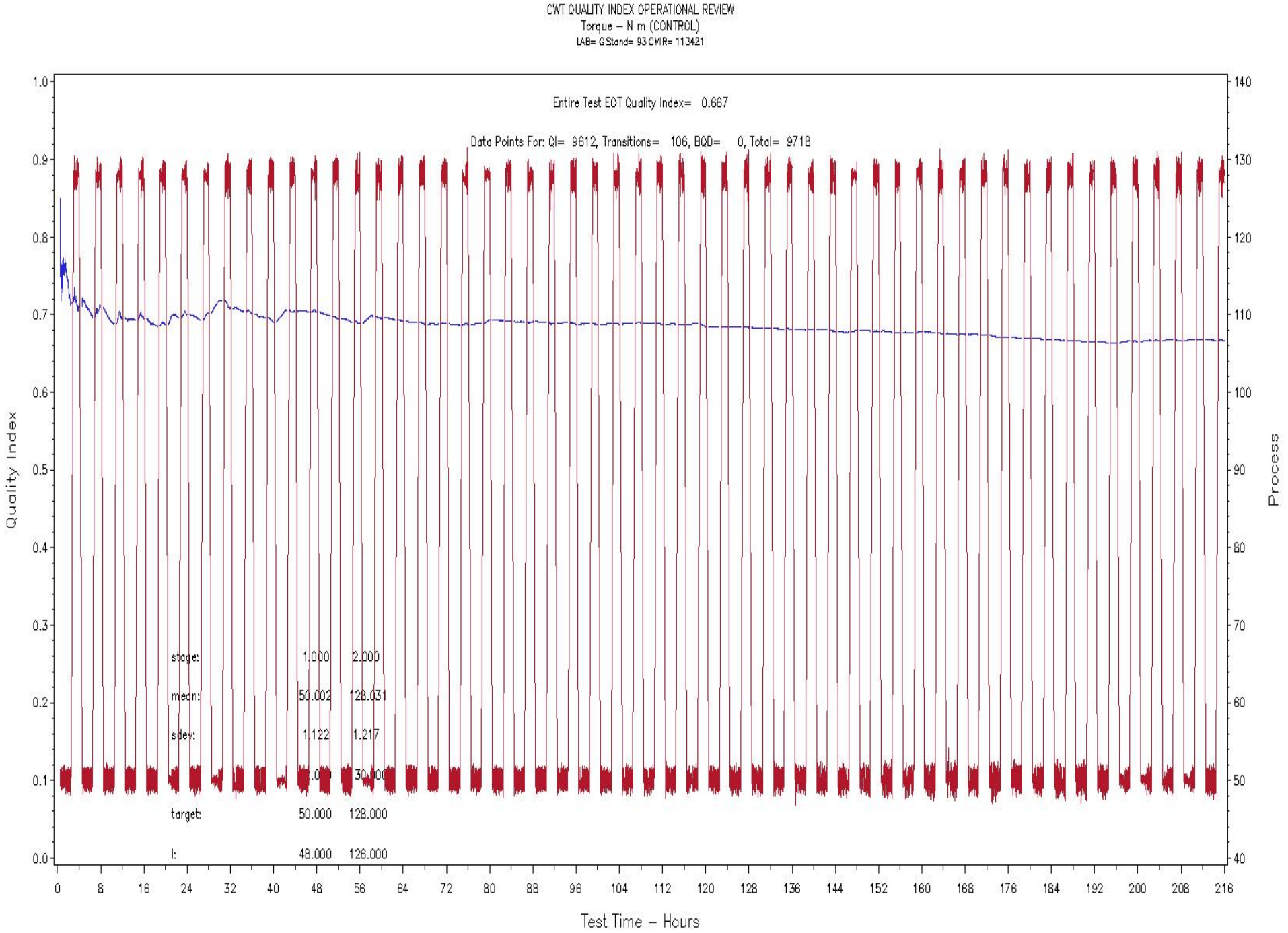
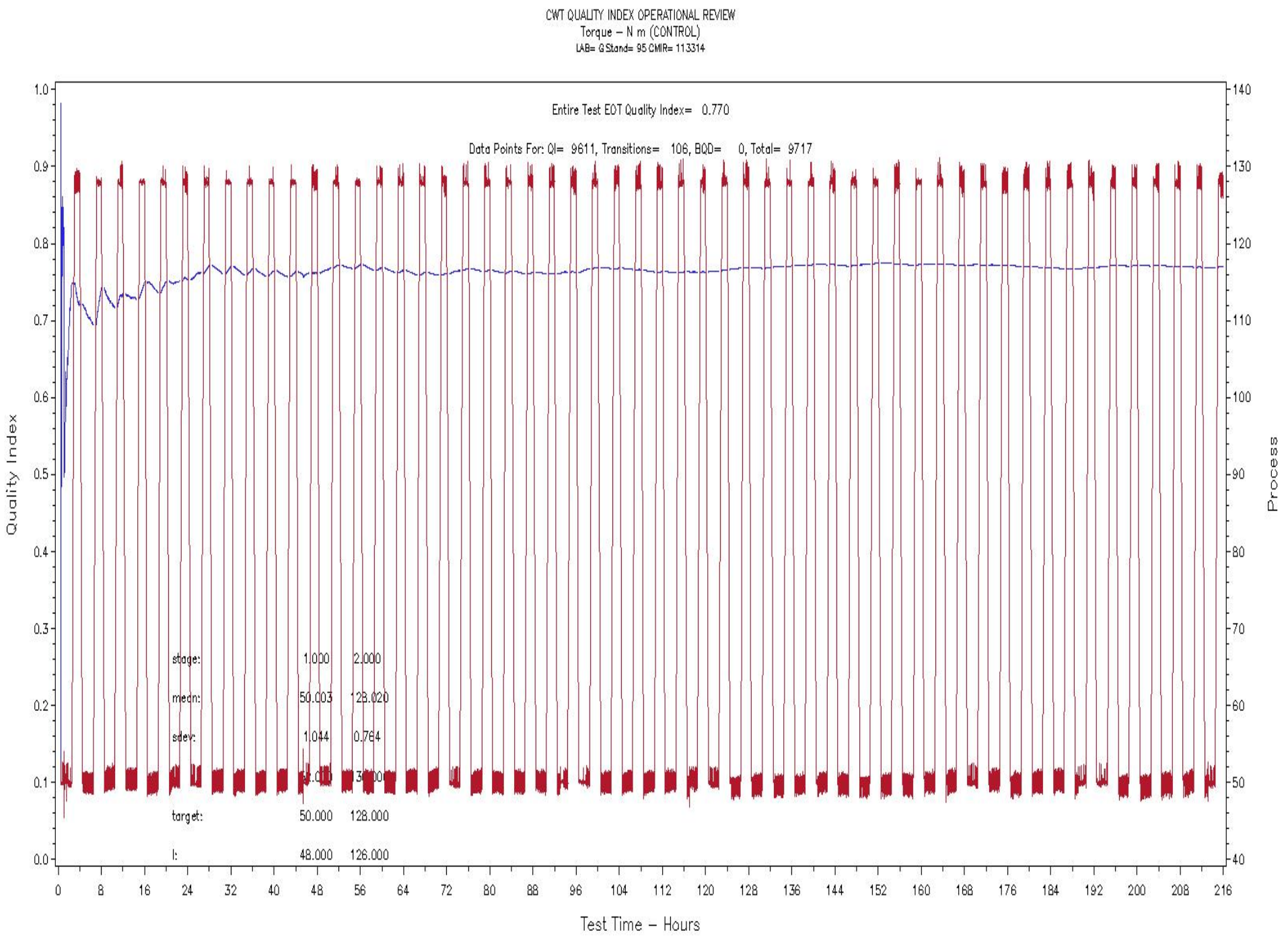
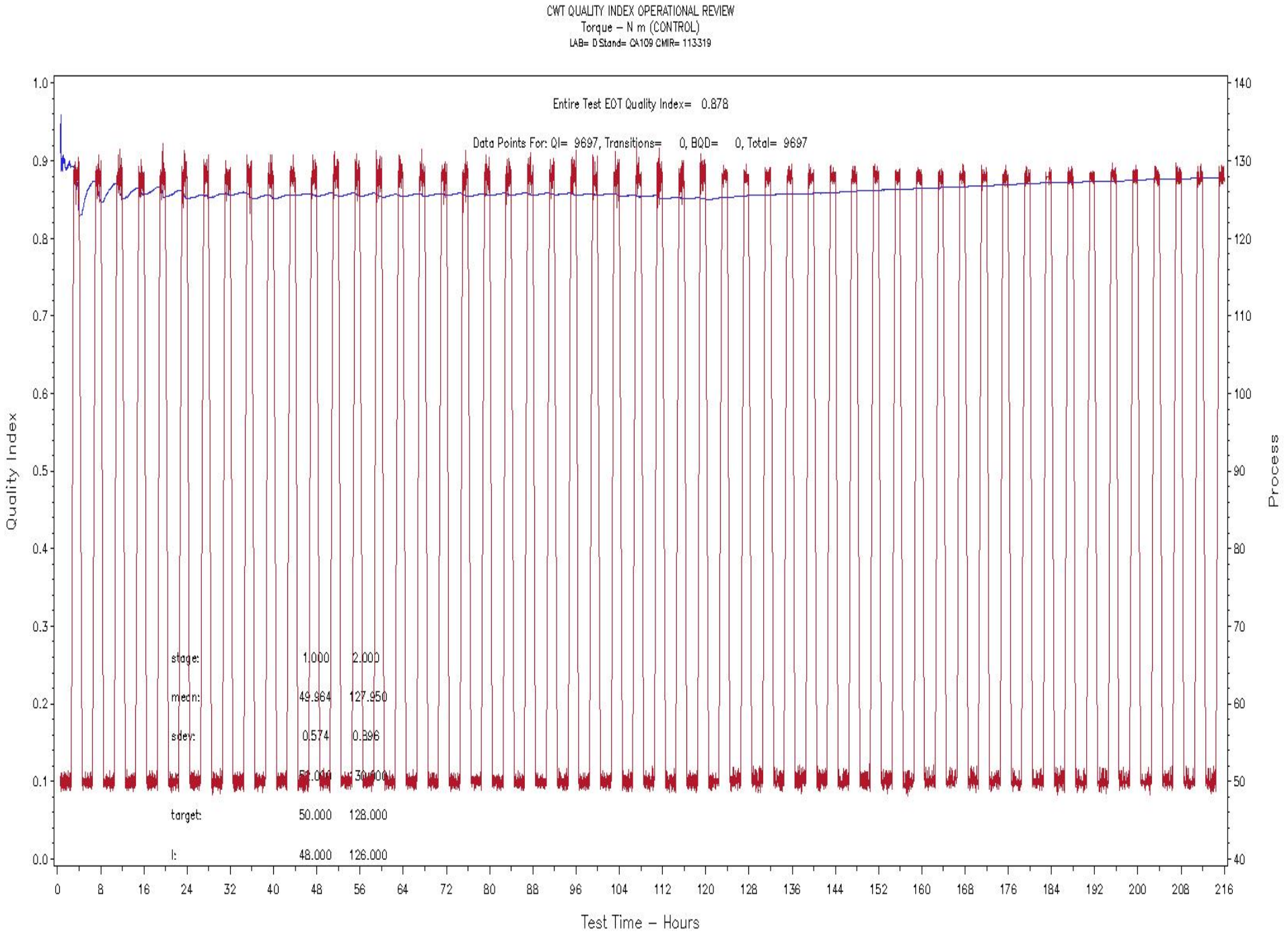

CWT QUALITY INDEX OPERATIONAL REVIEW
Torque – N m (CONTROL)
LAB= A Stand= 27 CMR= 116588
Entire Test EOT Quality Index= 0.849
Data Points For: QI= 9720, Transitions= 0, HQD= 0, Total= 9720
stage: 1.000 2.000
mean: 50.015 128.219
sdev: 0.860 0.531
u: 52.000 130.000
target: 50.000 128.000
l: 48.000 126.000
Quality Index
Process
Test Time – Hours

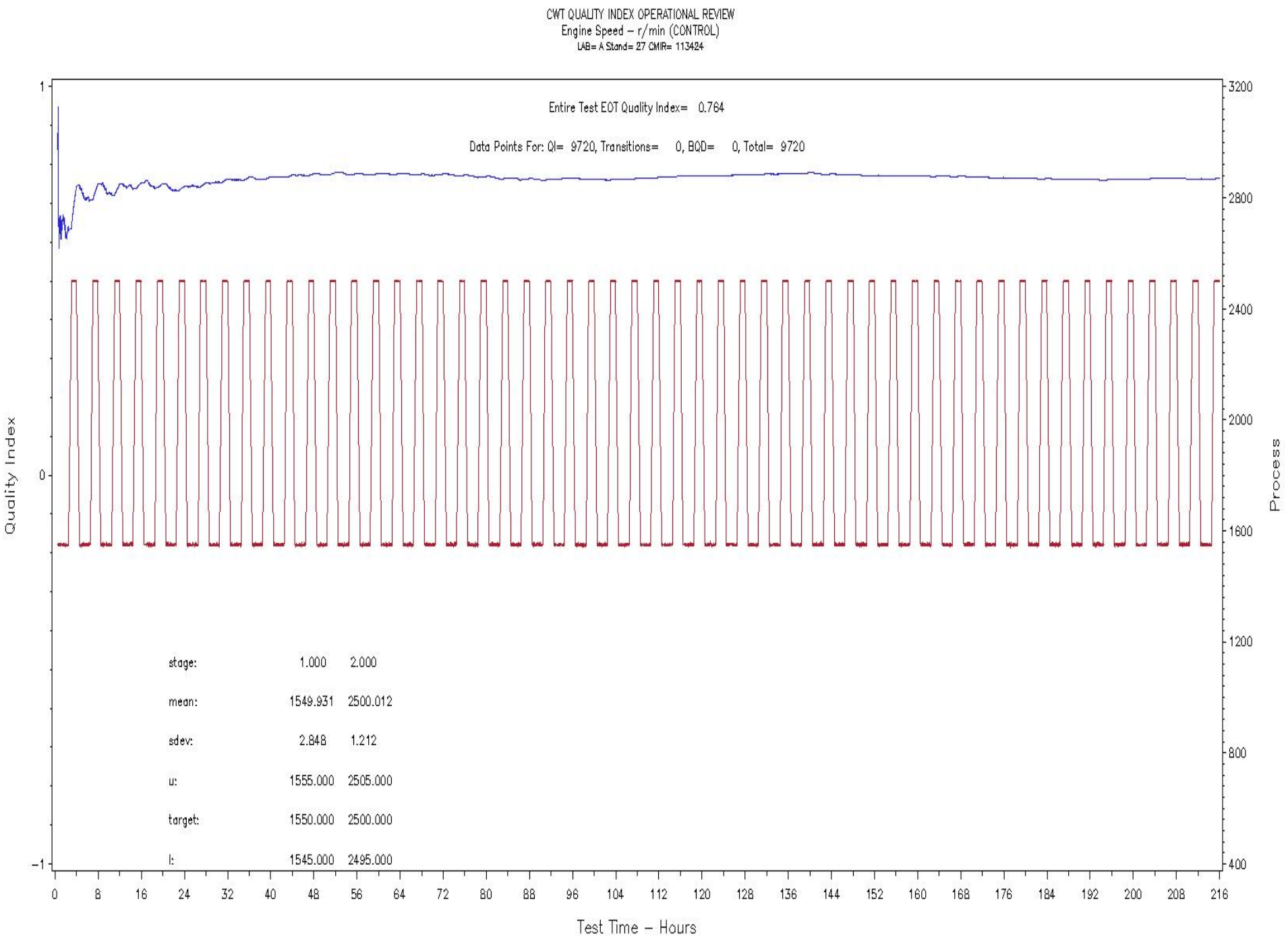

CWT QUALITY INDEX OPERATIONAL REVIEW
Torque – N m (CONTROL)
LAB= GStand= 93 CMR= 113421
Entire Test EOT Quality Index= 0.667
Data Points For: QI= 9612, Transitions= 106, BQD= 0, Total= 9718
stage: 1.000 2.000
mean: 50.002 128.031
sdev: 1.122 1.217
target: 50.000 128.000
l: 48.000 126.000
Quality Index
Process
Test Time – Hours
0.0 0.1 0.2 0.3 0.4 0.5 0.6 0.7 0.8 0.9 1.0
40 50 60 70 80 90 100 110 120 130 140
0 8 16 24 32 40 48 56 64 72 80 88 96 104 112 120 128 136 144 152 160 168 176 184 192 200 208 216

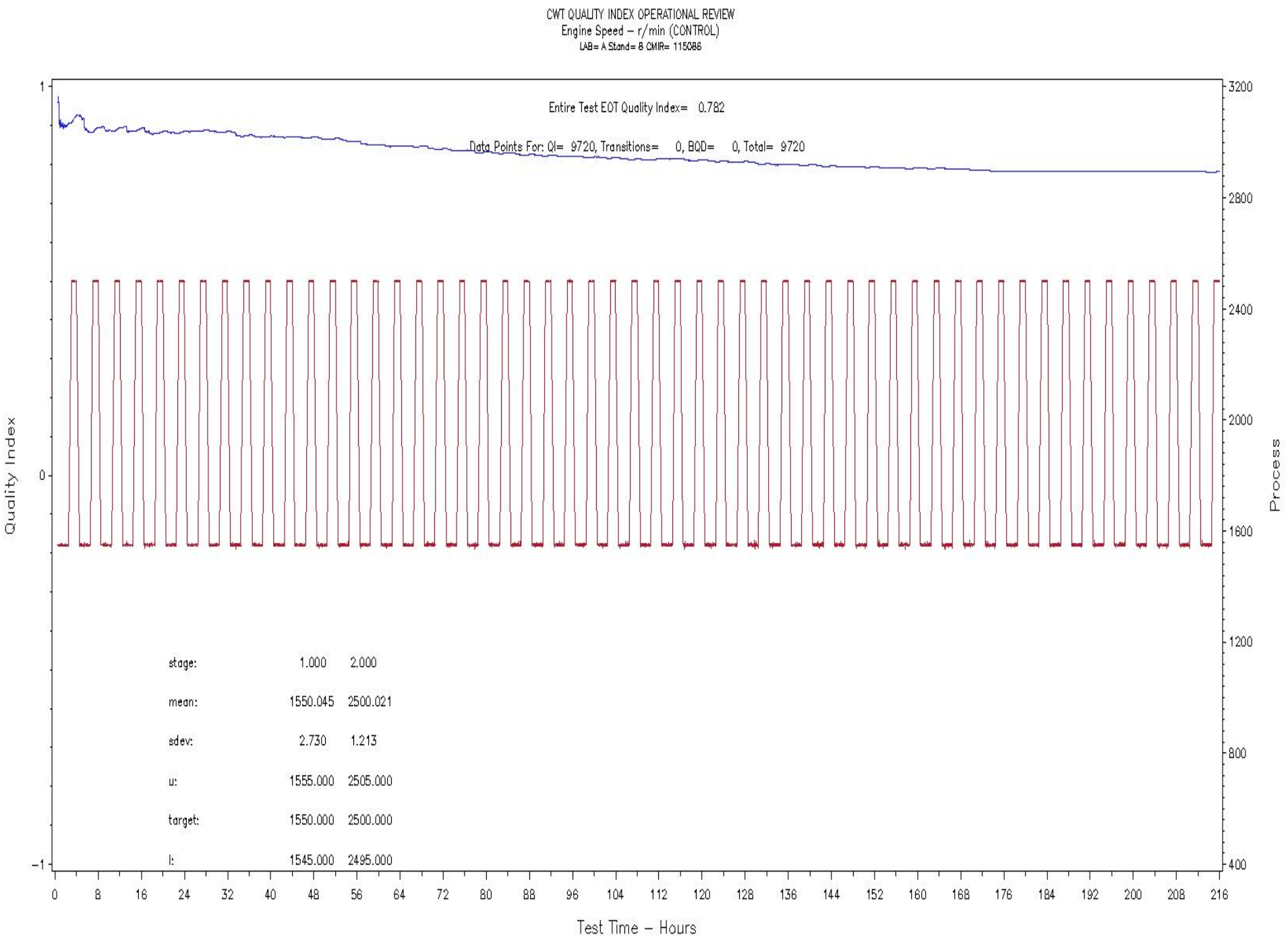

CWT QUALITY INDEX OPERATIONAL REVIEW
Torque – N m (CONTROL)
LAB= GStand= 95 CMR= 113314
Entire Test EOT Quality Index= 0.770
Data Points For: QI= 9611, Transitions= 106, BQD= 0, Total= 9717
stage: 1.000 2.000
mean: 50.003 128.020
sdev: 1.044 0.764
target: 50.000 128.000
l: 48.000 126.000
Quality Index
Process
Test Time – Hours
0.0 0.1 0.2 0.3 0.4 0.5 0.6 0.7 0.8 0.9 1.0
40 50 60 70 80 90 100 110 120 130 140
0 8 16 24 32 40 48 56 64 72 80 88 96 104 112 120 128 136 144 152 160 168 176 184 192 200 208 216

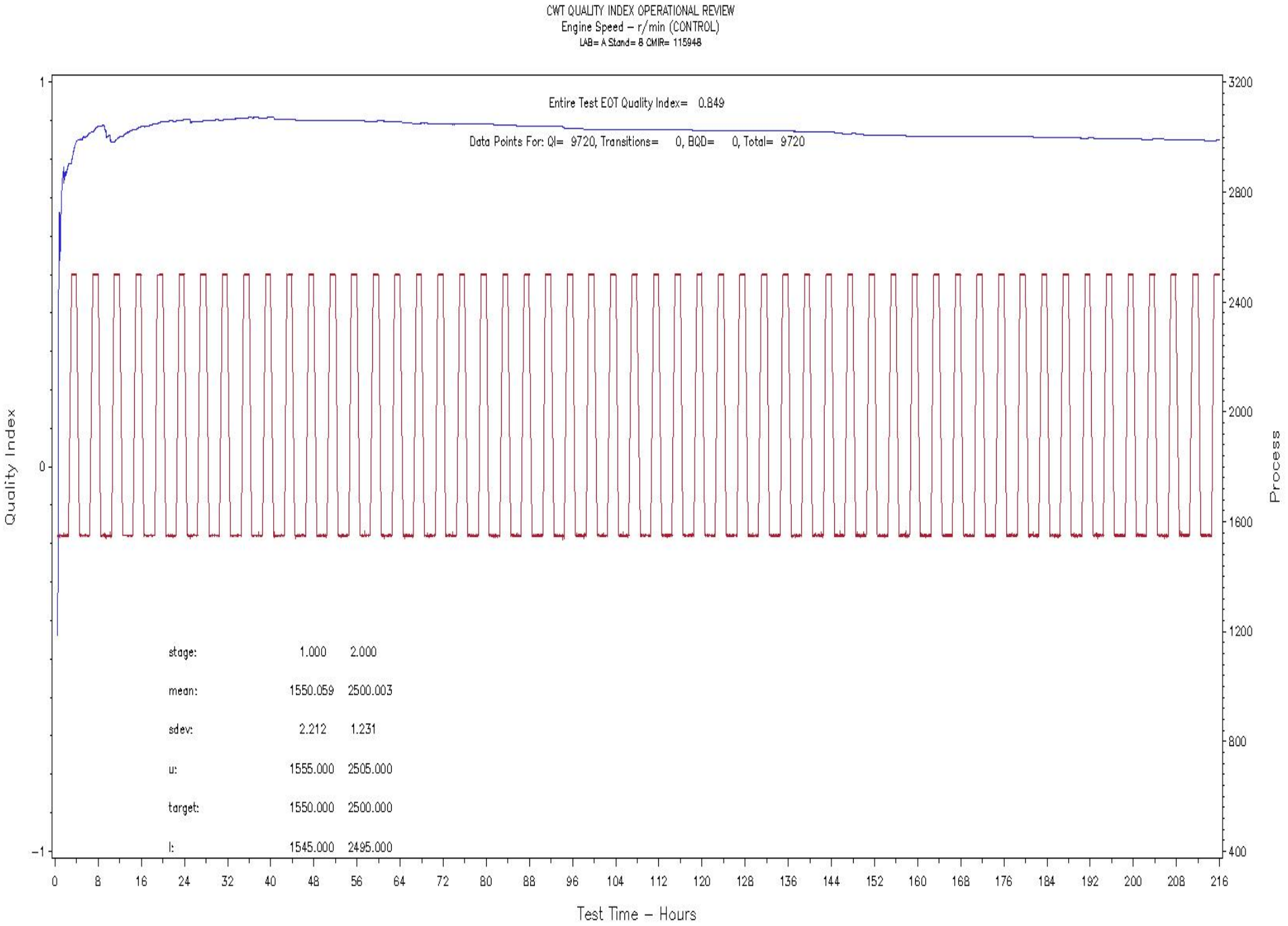

CWT QUALITY INDEX OPERATIONAL REVIEW
Torque – N m (CONTROL)
LAB= 0 Stand= CA109 CMR= 113319
Entire Test EOT Quality Index= 0.878
Data Points For: QI= 9697, Transitions= 0, BQD= 0, Total= 9697
stage: 1.000 2.000
mean: 49.964 127.950
sdev: 0.574 0.896
target: 50.000 128.000
l: 48.000 126.000
Quality Index
Process
Test Time – Hours
0.0 0.1 0.2 0.3 0.4 0.5 0.6 0.7 0.8 0.9 1.0
40 50 60 70 80 90 100 110 120 130 140
0 8 16 24 32 40 48 56 64 72 80 88 96 104 112 120 128 136 144 152 160 168 176 184 192 200 208 216

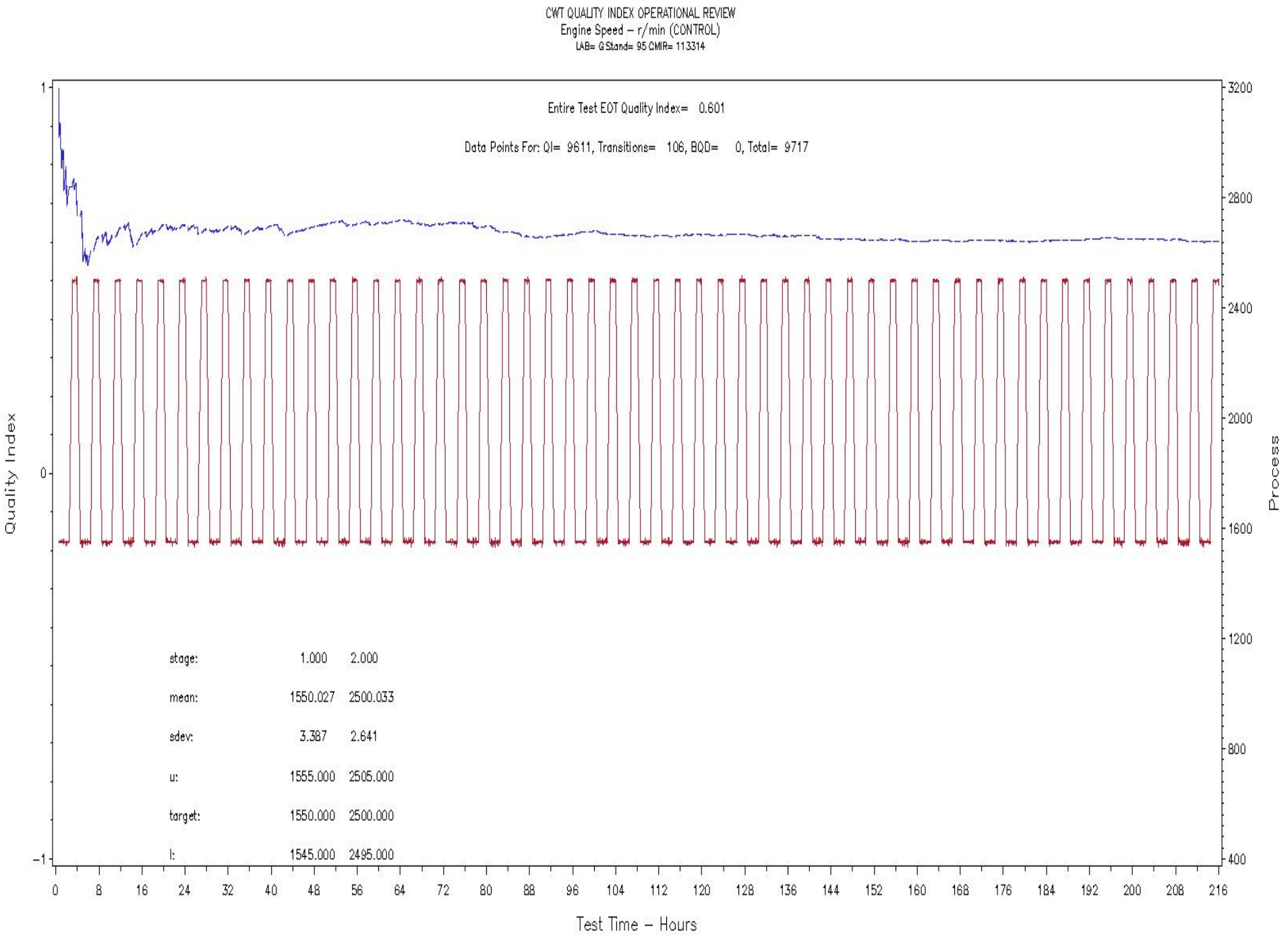
Speed

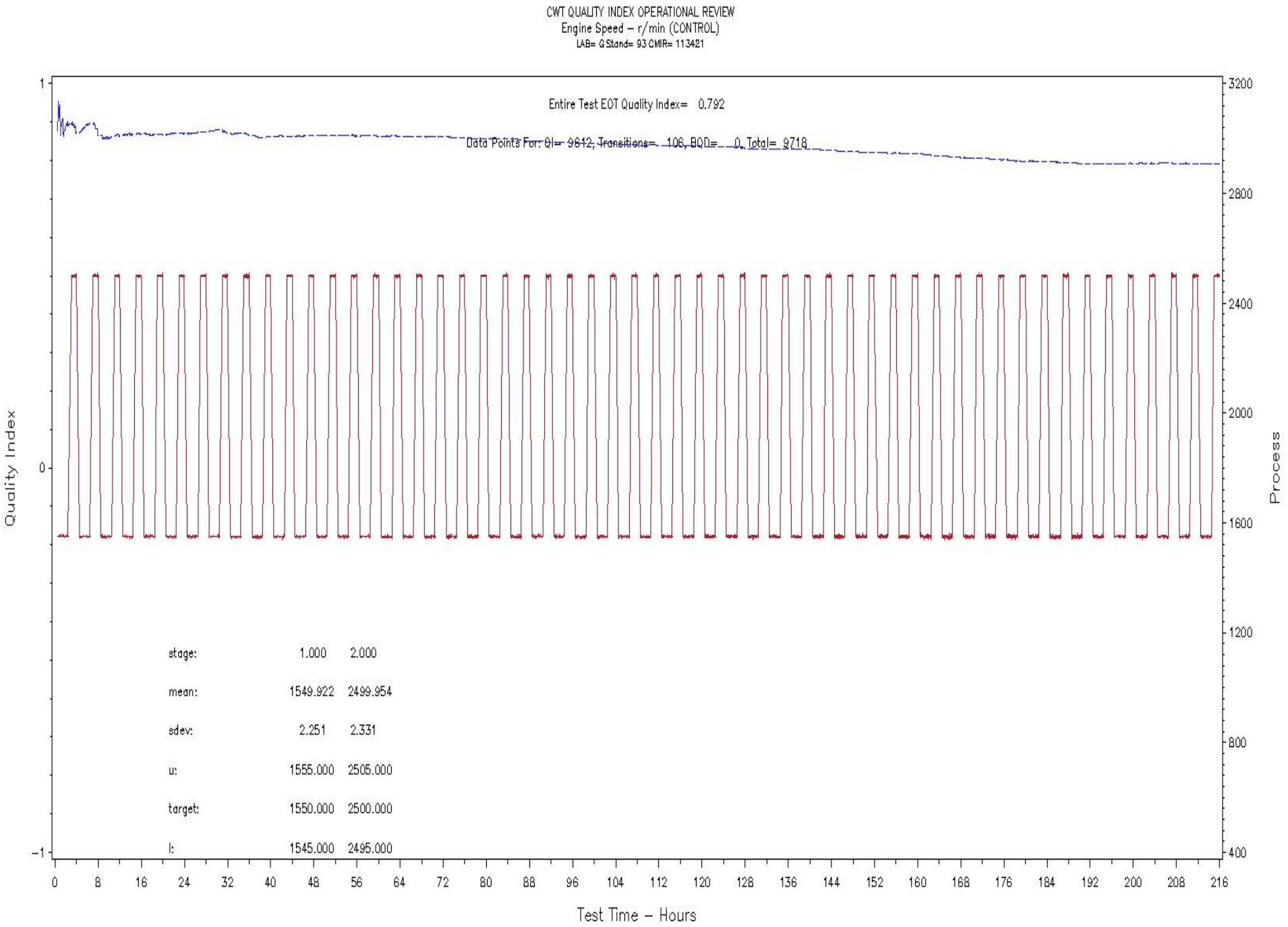
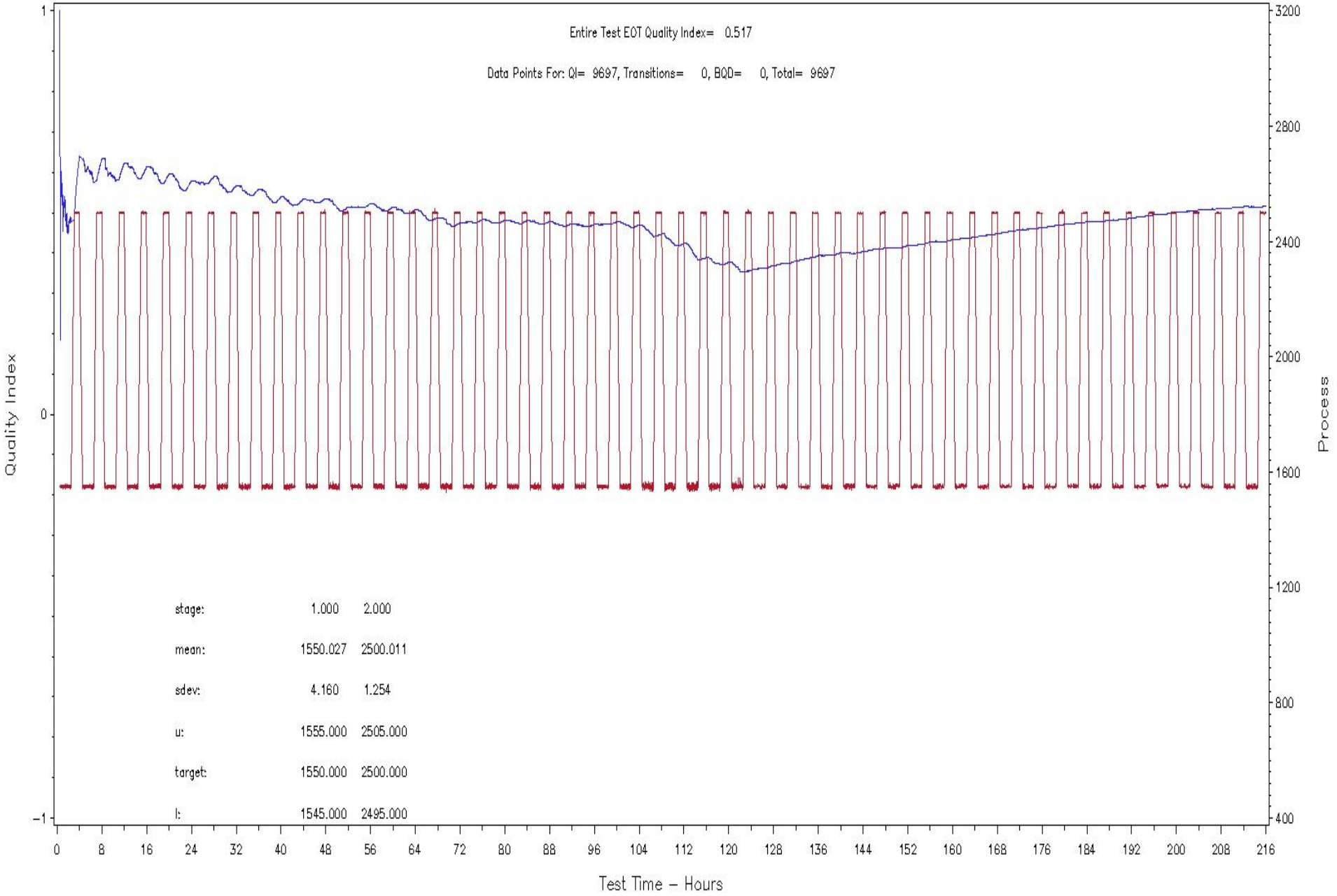
- No issues


CWT QUALITY INDEX OPERATIONAL REVIEW
Engine Speed – r/min (CONTROL)
LAB= A Stand= 27 CMR= 113424
Entire Test EOT Quality Index= 0.764
Data Points For: QI= 9720, Transitions= 0, BQD= 0, Total= 9720
stage: 1.000 2.000
mean: 1549.931 2500.012
sdev: 2.848 1.212
u: 1555.000 2505.000
target: 1550.000 2500.000
l: 1545.000 2495.000
Quality Index
Process
Test Time – Hours
1
0
-1
3200
2800
2400
2000
1600
1200
800
400
0 8 16 24 32 40 48 56 64 72 80 88 96 104 112 120 128 136 144 152 160 168 176 184 192 200 208 216


CWT QUALITY INDEX OPERATIONAL REVIEW
Engine Speed – r/min (CONTROL)
LAB= A Stand= 8 CMR= 115086
Entire Test EOT Quality Index= 0.782
Data Points For: QI= 9720, Transitions= 0, BQD= 0, Total= 9720
stage: 1.000 2.000
mean: 1550.045 2500.021
sdev: 2.730 1.213
u: 1555.000 2505.000
target: 1550.000 2500.000
l: 1545.000 2495.000
Quality Index
Process
Test Time – Hours
1
0
−1
3200
2800
2400
2000
1600
1200
800
400
0 8 16 24 32 40 48 56 64 72 80 88 96 104 112 120 128 136 144 152 160 168 176 184 192 200 208 216


CWT QUALITY INDEX OPERATIONAL REVIEW
Engine Speed – r/min (CONTROL)
LAB= A Stand= 8 CMR= 115948
Entire Test EOT Quality Index= 0.849
Data Points For: QI= 9720, Transitions= 0, BQD= 0, Total= 9720
stage: 1.000 2.000
mean: 1550.059 2500.003
sdev: 2.212 1.231
u: 1555.000 2505.000
target: 1550.000 2500.000
l: 1545.000 2495.000
Quality Index
Process
Test Time – Hours
1
0
−1
3200
2800
2400
2000
1600
1200
800
400
0 8 16 24 32 40 48 56 64 72 80 88 96 104 112 120 128 136 144 152 160 168 176 184 192 200 208 216


CWT QUALITY INDEX OPERATIONAL REVIEW
Engine Speed – r/min (CONTROL)
LAB= GStand= 95 CMR= 113314
Entire Test EOT Quality Index= 0.601
Data Points For: QI= 9611, Transitions= 106, BQD= 0, Total= 9717
stage: 1.000 2.000
mean: 1550.027 2500.033
sdev: 3.387 2.641
u: 1555.000 2505.000
target: 1550.000 2500.000
l: 1545.000 2495.000
Quality Index
Process
Test Time – Hours
1
0
-1
3200
2800
2400
2000
1600
1200
800
400
0 8 16 24 32 40 48 56 64 72 80 88 96 104 112 120 128 136 144 152 160 168 176 184 192 200 208 216


CWT QUALITY INDEX OPERATIONAL REVIEW
Engine Speed – r/min (CONTROL)
LAB= GStand= 93 CMR= 113421
Entire Test EOT Quality Index= 0.792
Data Points For: QI= 9612, Transitions= 106, BQD= 0, Total= 9718
stage: 1.000 2.000
mean: 1549.922 2499.954
sdev: 2.251 2.331
u: 1555.000 2505.000
target: 1550.000 2500.000
l: 1545.000 2495.000
Quality Index
Process
Test Time – Hours
1
0
-1
3200
2800
2400
2000
1600
1200
800
400
0 8 16 24 32 40 48 56 64 72 80 88 96 104 112 120 128 136 144 152 160 168 176 184 192 200 208 216

CWT QUALITY INDEX OPERATIONAL REVIEW
Engine Speed – r/min (CONTROL)
LAB= D Stand= CA109 CMR= 113319