WHY DO SPC?

*SPC helps companies make the **HIGHEST QUALITY PRODUCT** at the **LOWEST POSSIBLE COST**.*

SPC allows you to monitor the performance of a process and, using statistics, helps you **IDENTIFY TRENDS** and **VARIATION** in the process to **PREVENT** the process from going out of control.

BENEFITS OF AUTOMATED SPC

Statistical Process Control

- MONITOR PROCESSES IN REAL-TIME
- IMPROVE QUALITY
- REDUCE PROCESS VARIATION, SCRAP, & REWORK
- ELIMINATE PAPERWORK
- COMPLY WITH CUSTOMER & REGULATORY REQUIREMENTS

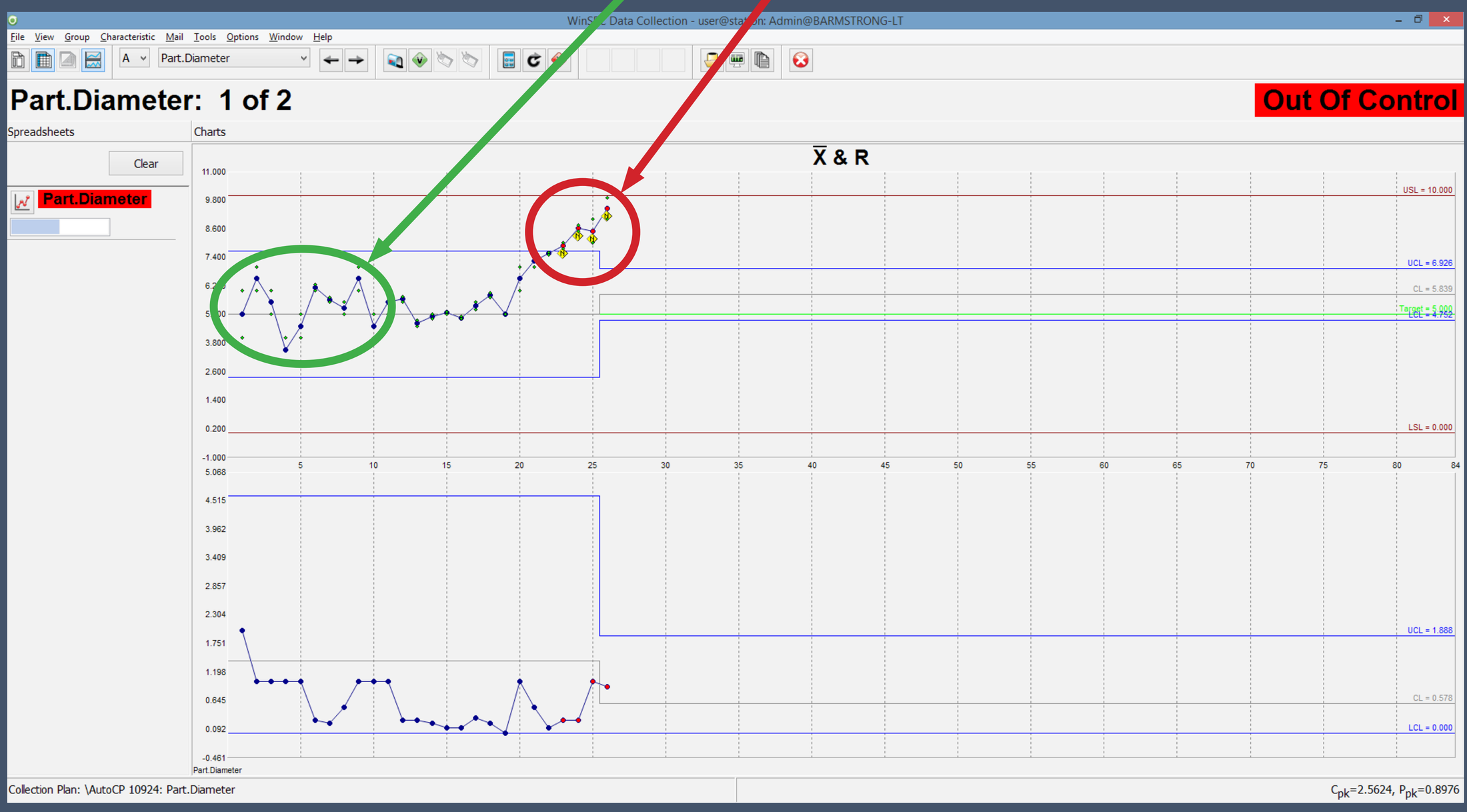
WINSPC® STATISTICAL PROCESS CONTROL

VARIATION

SPC control charts help identify Assignable Cause variation and prevent non-conformances.

RANDOM VARIATION

ASSIGNABLE CAUSE VARIATION



ALL PROCESSES HAVE VARIATION

2 Variation Types

RANDOM VARIATION is normal and ok

ASSIGNABLE CAUSE VARIATION means a process is **OUT OF CONTROL**

KEY TERMS

MEAN | average of readings

SIGMA | spread of readings (process distribution)

STANDARD DEVIATION | measure of the difference from a target value

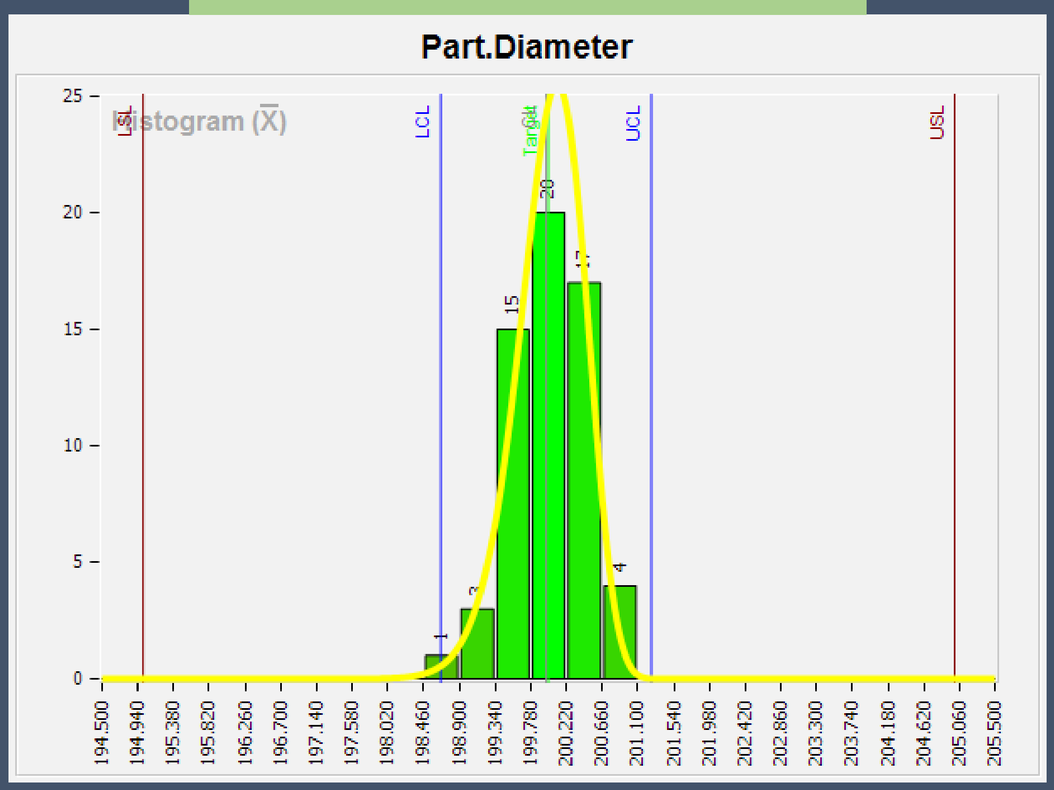
SUBGROUP SIZE | number of readings used to plot an average

WINSPC® STATISTICAL PROCESS CONTROL

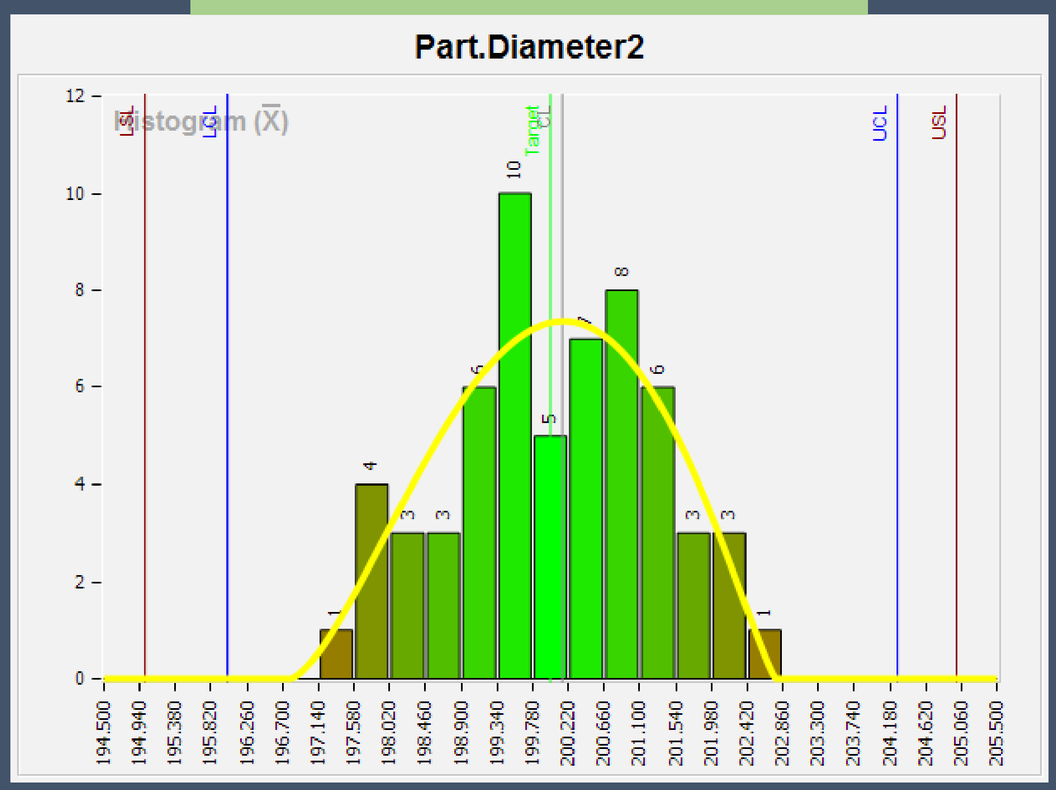
PROCESS CAPABILITY

A method of analyzing a process to see how capable the process is of meeting the desired specification limits.

High Cpk | High Cp
Cpk = 1.68 | Cp = 1.68



Low Cpk | Low Cp
Cpk = .53 | Cp = .53



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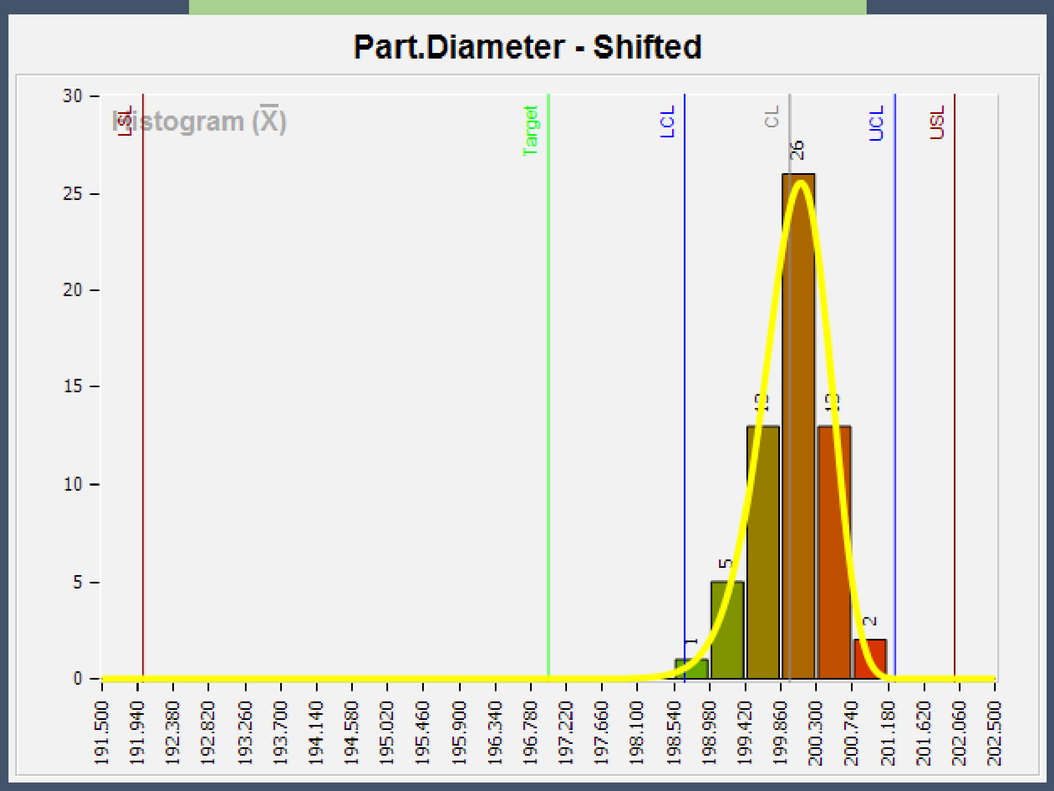
Cpk = .67 | Cp = 1.68



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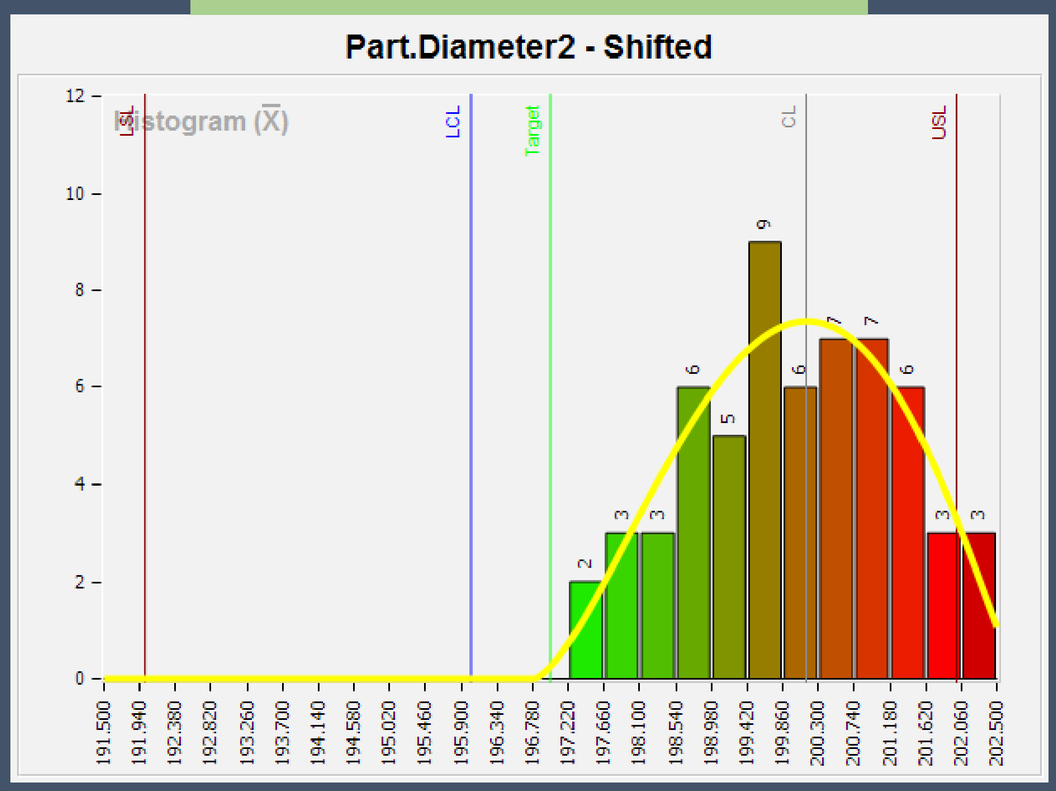

KEY TERMS

HISTOGRAM | Tally of measurements that shows the distribution of the data

CP | Measure of how narrow or wide is the distribution of data (spread) *(Target Cp > 1.3)*

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WINSPC® STATISTICAL PROCESS CONTROL

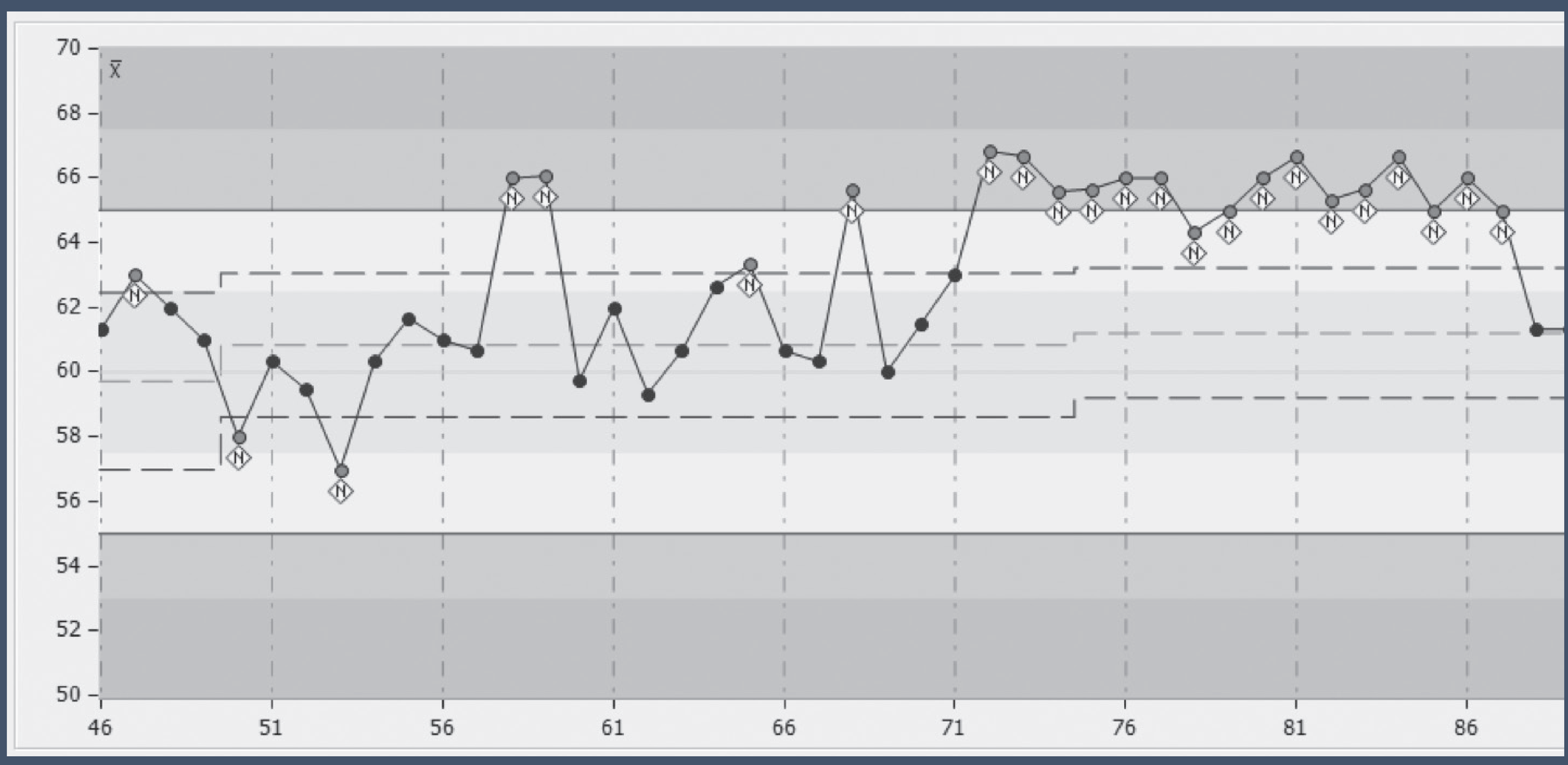
LIMITS

-- SPECIFICATION LIMITS --

The voice of the **CUSTOMER:**

TOLERANCE DICTATED by customer

NOTE: A point outside specification limits indicates that the part is out of tolerance (defective).



-- CONTROL LIMITS --

The voice of the **PROCESS:**

Calculated limits **BASED ON PROCESS DATA**

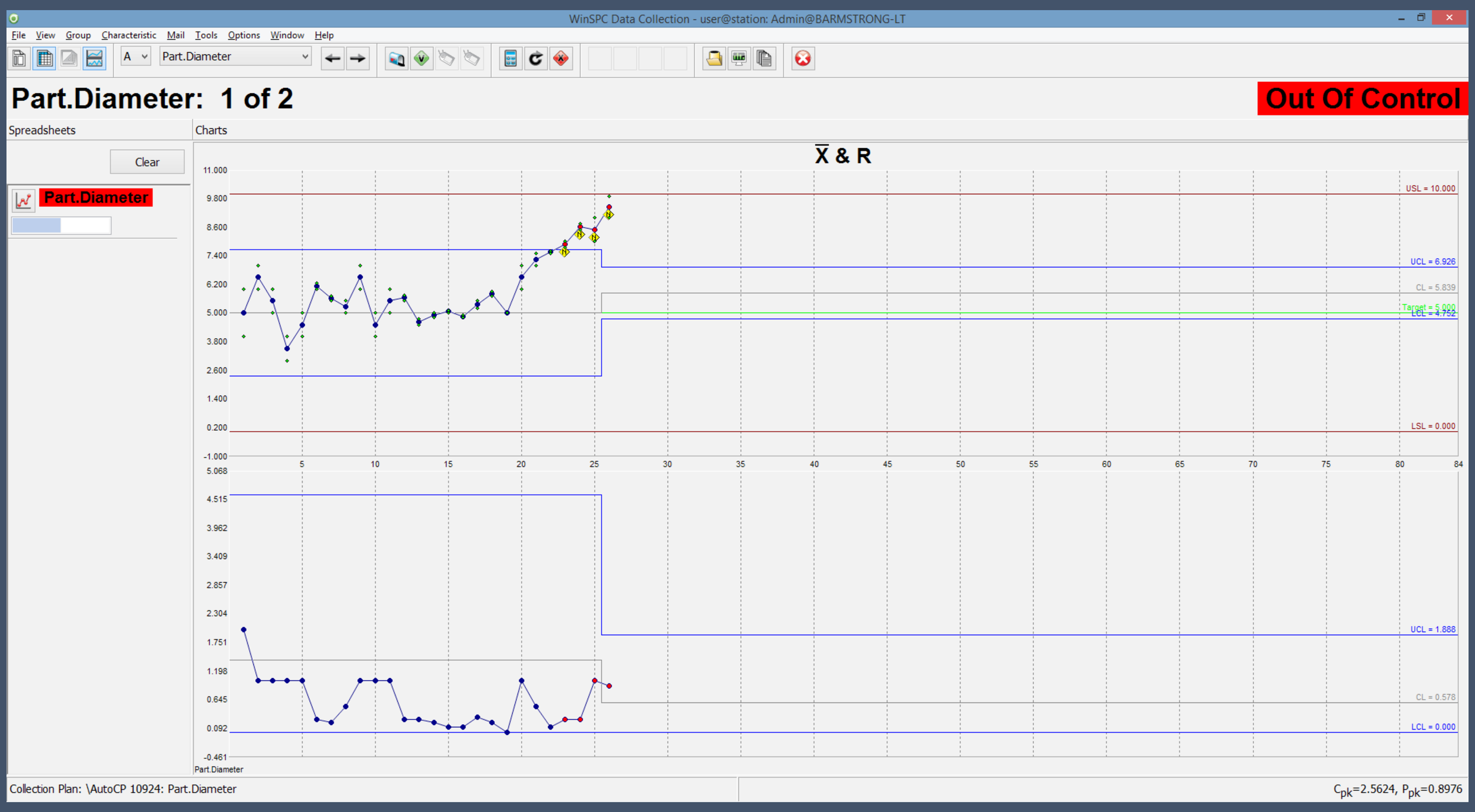
NOTE: A point outside the control limits indicates that the process is out of control.

WINSPC® STATISTICAL PROCESS CONTROL

CONTROL CHART

A chart to visualize how a process is performing against calculated control limits and to reveal variation among measurements.

A PLOT OF DATA AGAINST CONTROL LIMITS



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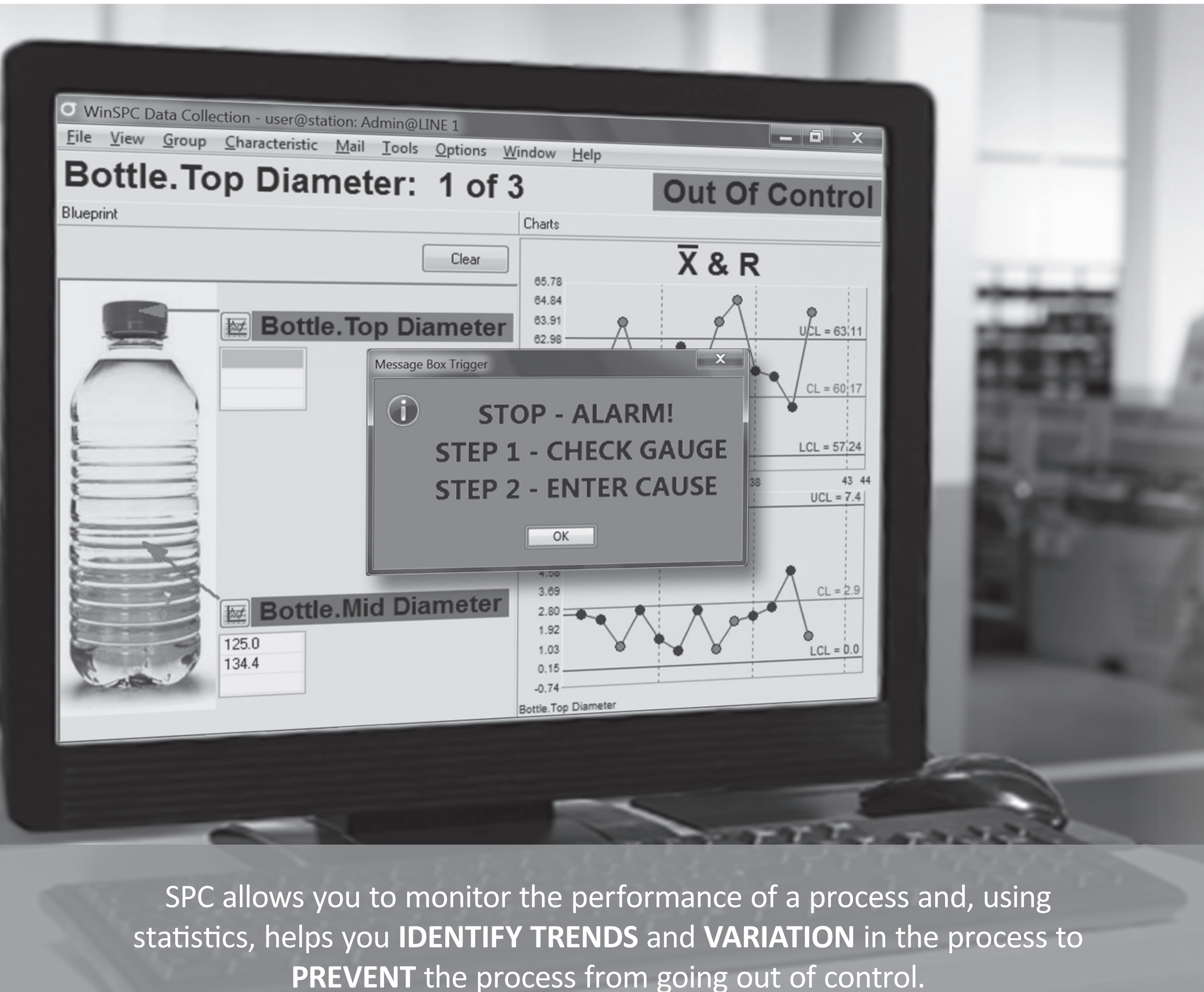

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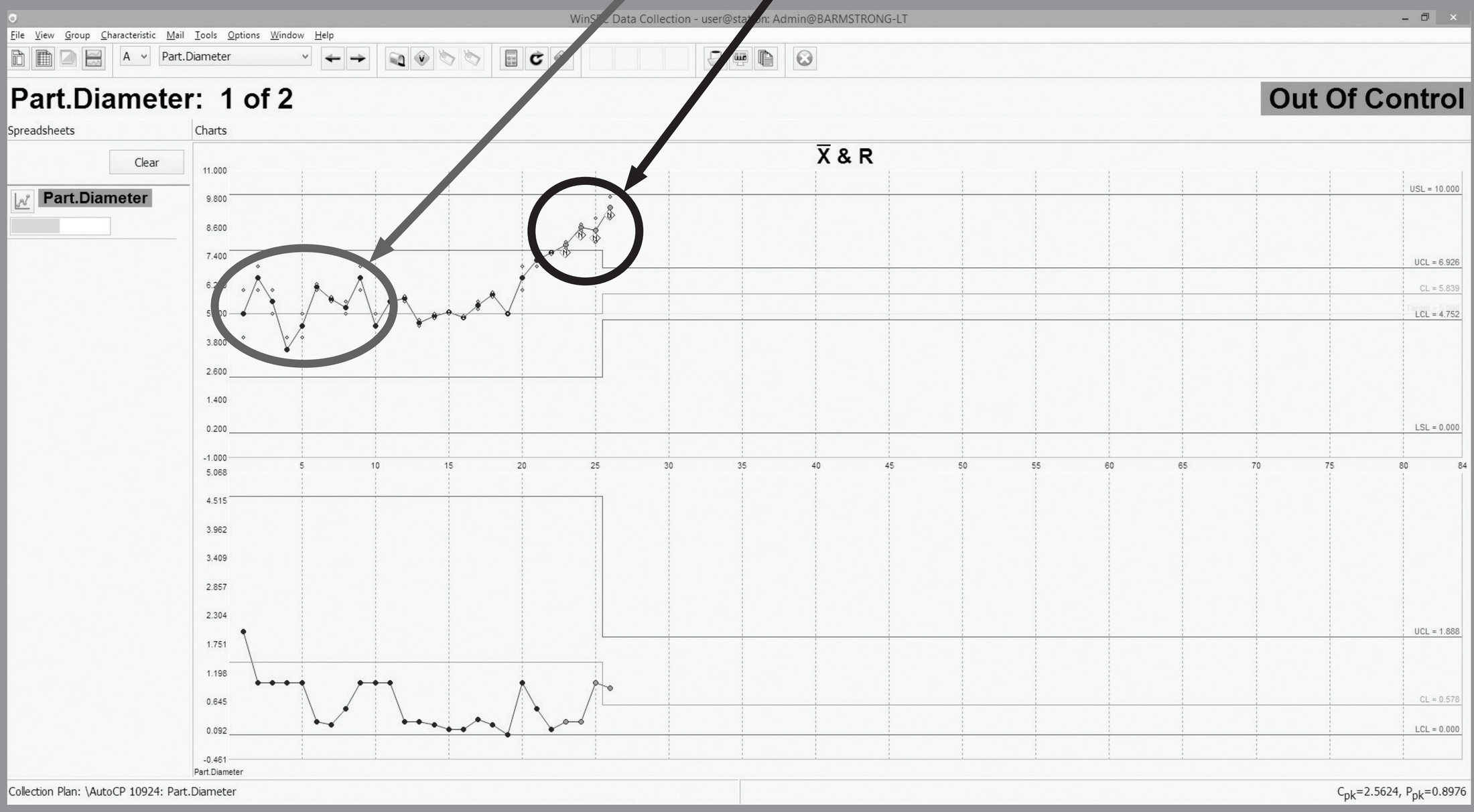

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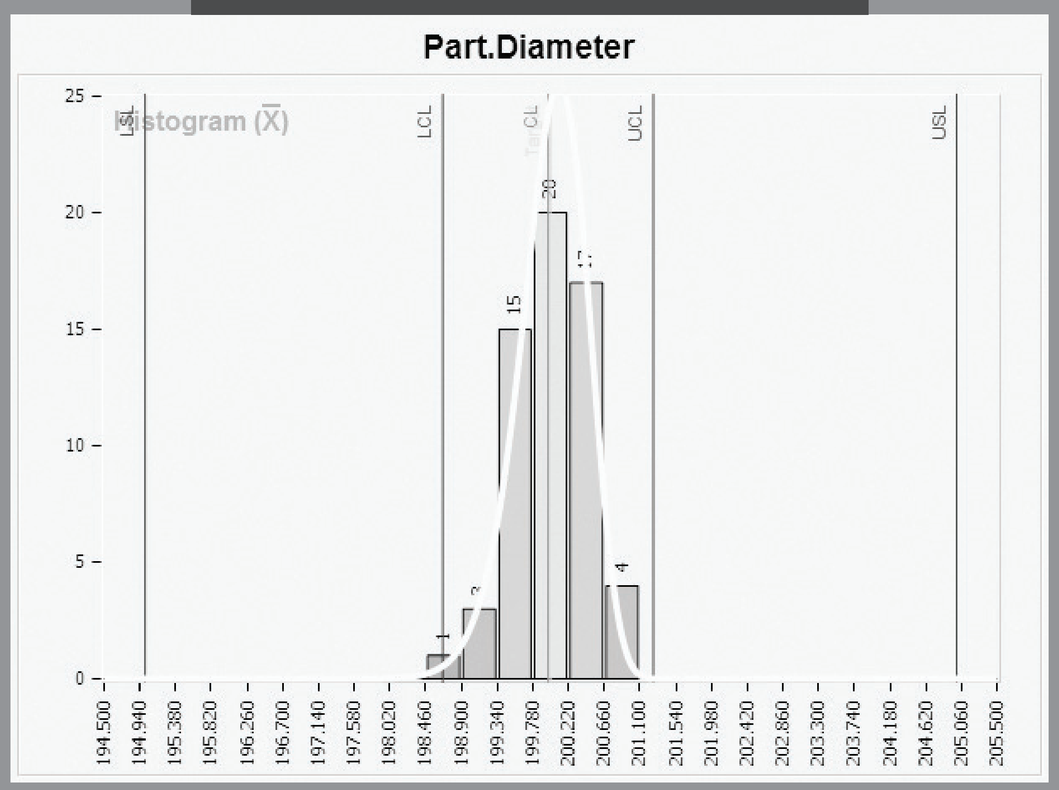

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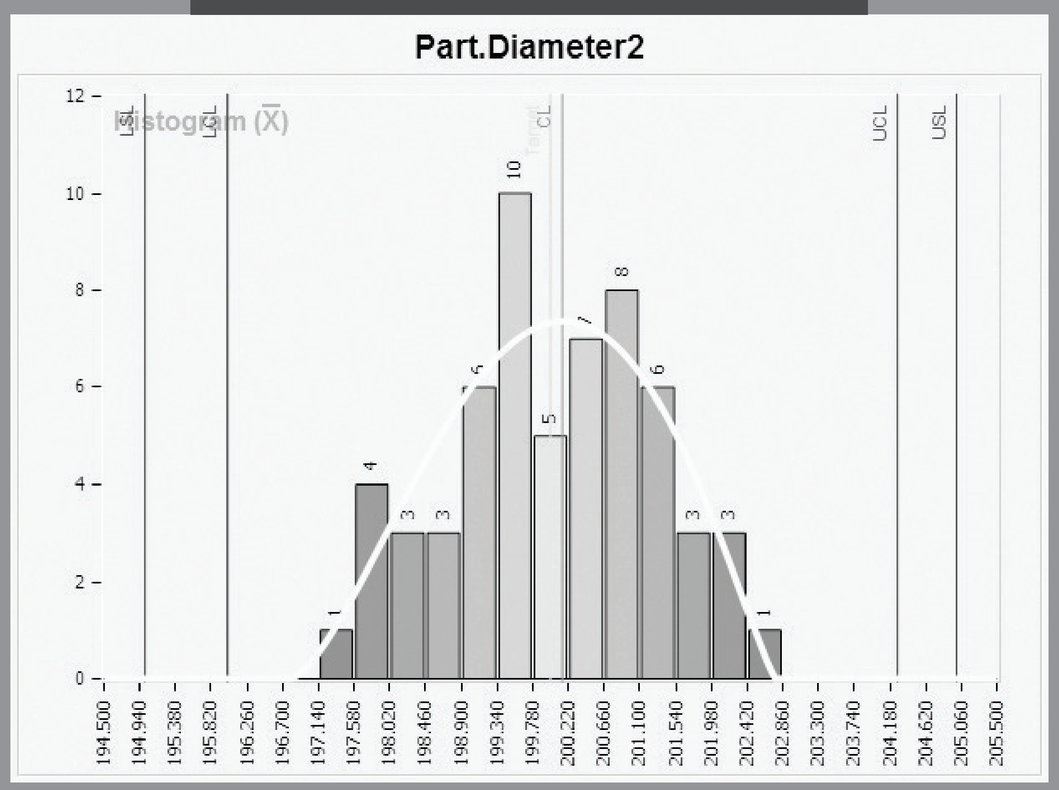

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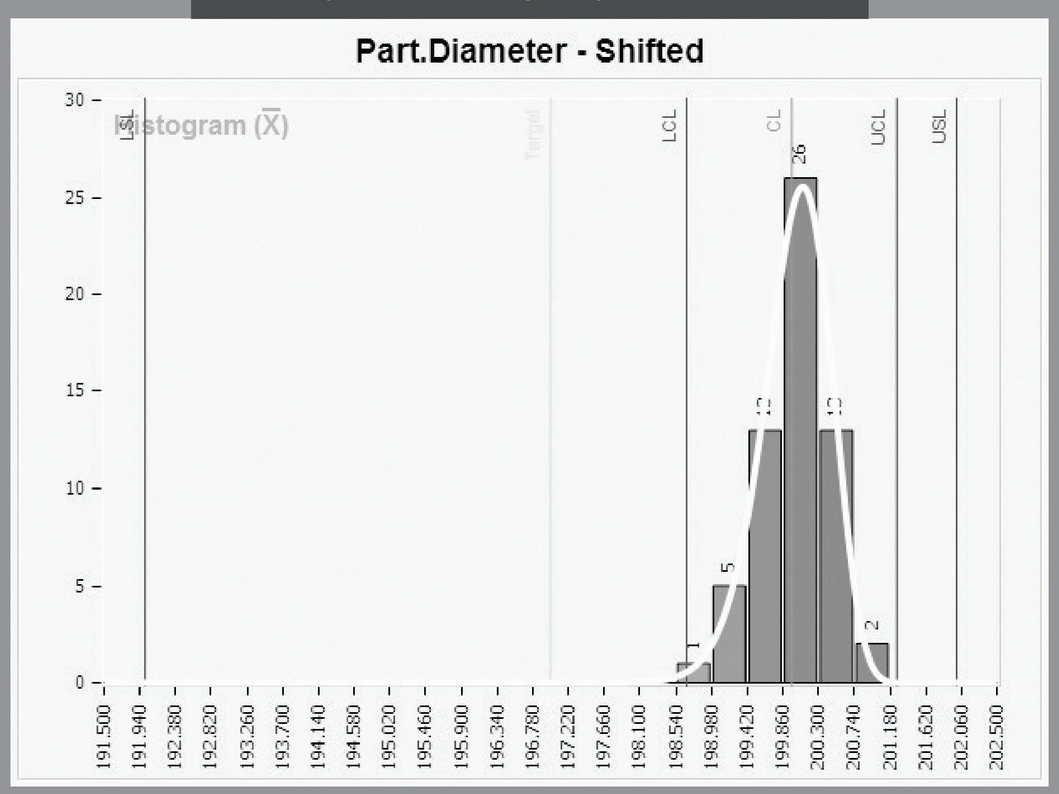

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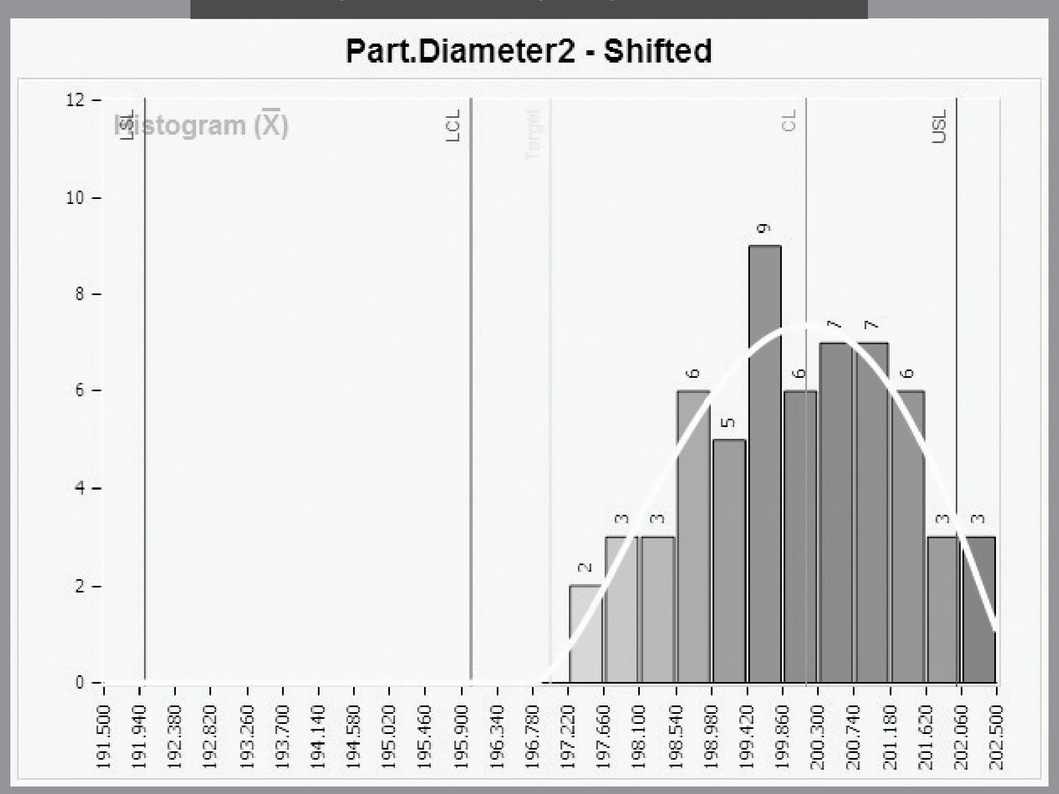

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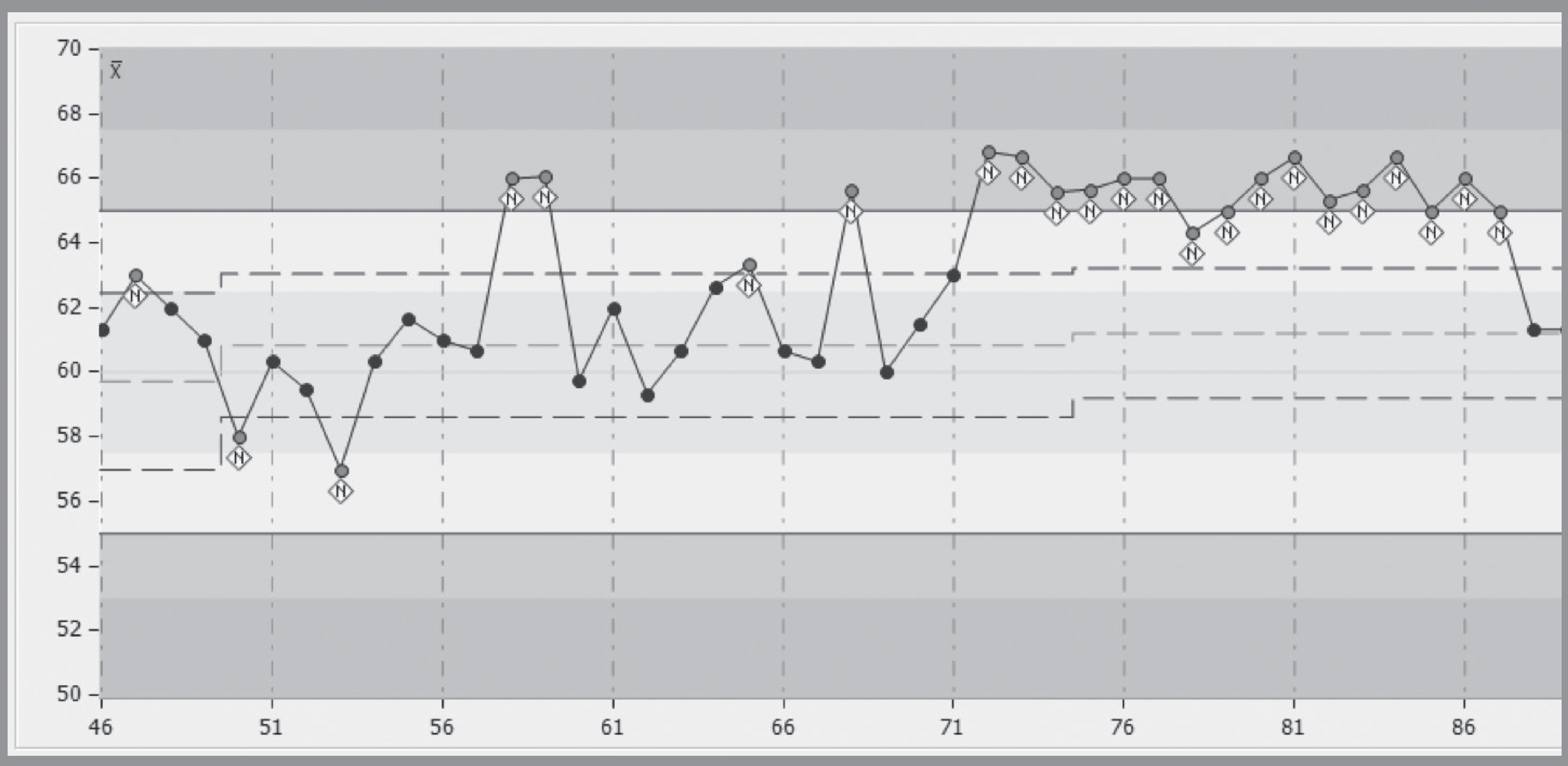

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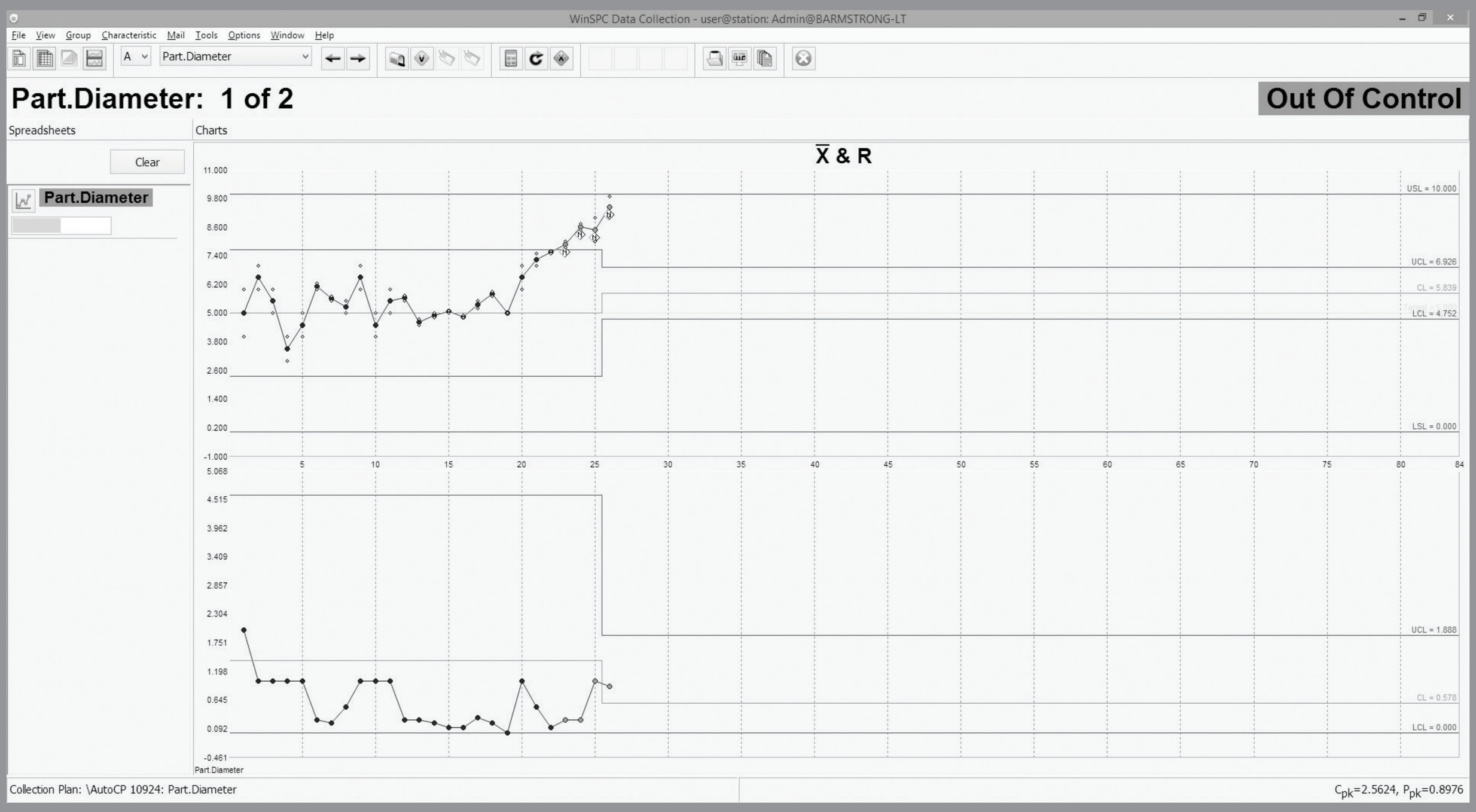

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