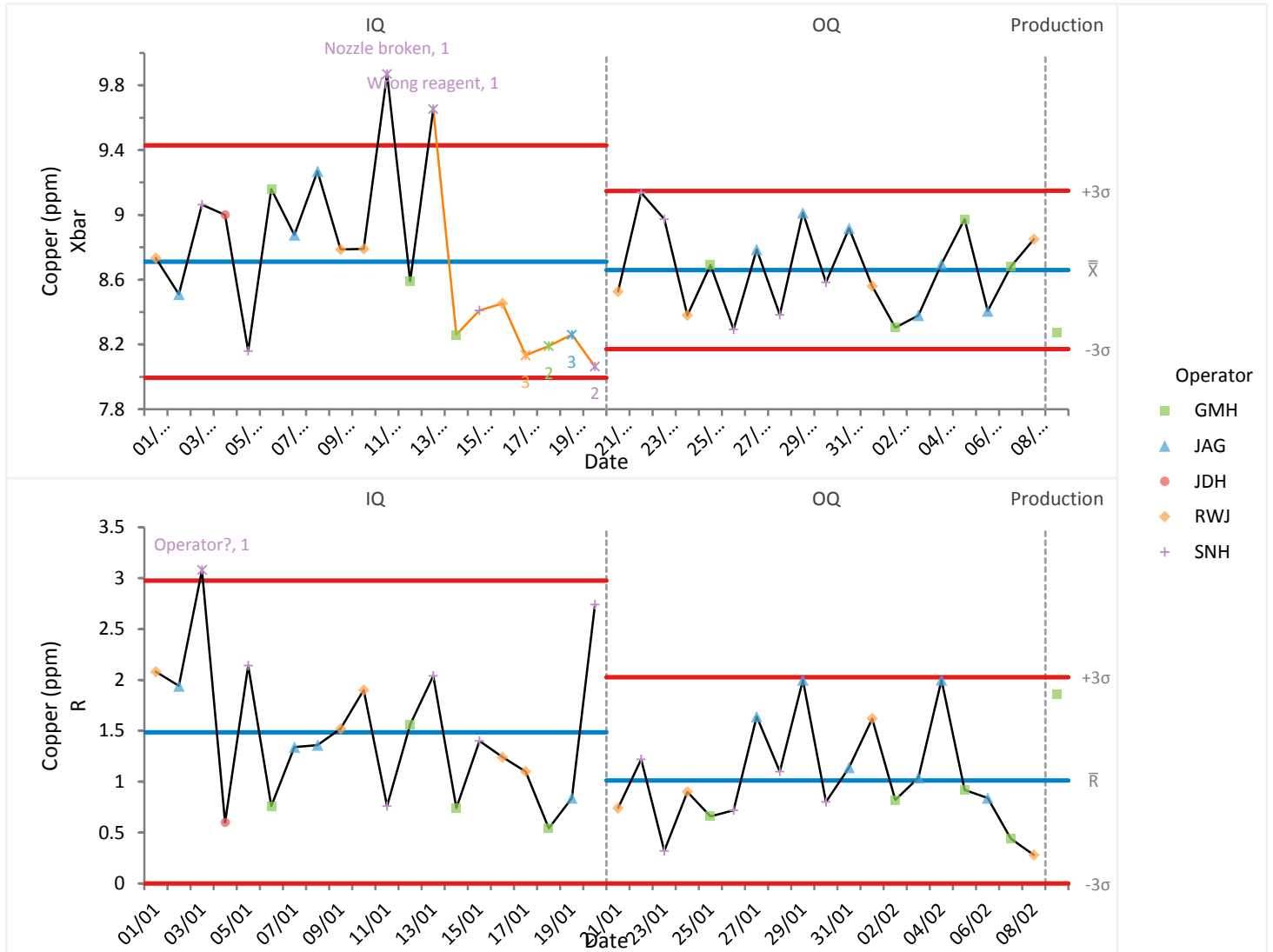


Copper concentration in plating pool

Last updated 2 February 2016 at 7:49 by Analyse-it Software, Ltd.

Control



Montgomery rules: 1, 2, 3, 5, 8 applied to Xbar statistic.

Out-of-control signals

Phase	Date	Statistic	Value	Broken rule
IQ	03/01	R	3.08	1
IQ	11/01	Xbar	9.87	1
IQ	13/01	Xbar	9.65	1
IQ	17/01	Xbar	8.13	3
IQ	18/01	Xbar	8.19	2
IQ	19/01	Xbar	8.26	3
IQ	20/01	Xbar	8.06	2

1: 1 point is outside the control limits.

2: 2 out of 3 consecutive points are more than 2 sigma from the center line in the same direction.

3: 4 out of 5 consecutive points are more than 1 sigma from the center line in the same direction.

# Process Control: Copper

## Copper concentration in plating pool

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### Process parameters

Copper (ppm) by Phase	Mean	Sigma
IQ	8.712	0.586 <sup>3</sup>
OQ	8.660	0.399 <sup>3</sup>
Production	8.660 <sup>1</sup>	0.399 <sup>2</sup>

<sup>1</sup> Mean known.

<sup>2</sup> Sigma known.

<sup>3</sup> Sigma estimated by Rbar.

### Process control statistics

Statistic	Phase	Sample size	Centre	$\pm 3$ -sigma limits
Xbar	IQ	6	8.712	7.994 to 9.429
Xbar	OQ	6	8.660	8.171 to 9.148
Xbar	Production	6	8.660	8.171 to 9.149
R	IQ	6	1.484	0.000 to 2.974
R	OQ	6	1.011	0.000 to 2.025
R	Production	6	1.011	0.000 to 2.026