

## QA TASK GROUP PERFORMANCE EVALUATION REPORT FOR 2001

Results of the 5TH annual performance evaluation study included 22 labs testing 2 OSU panel configurations and 1 NBS Smoke panel configuration.

A graphical presentation is given that will give you a quick feel for where we are at.

Figure 1 is a bar chart of the peak values for the two panel configurations as well as well as the average of the two. Figure 2 is a bar chart of the 2 minute total values. Figure 3 is a bar chart of the calibration factors

The NBS smoke density maximum in 4 minutes is shown in a bar chart on figure 4

Figures 5, 6, and 7 are simple box and whisker diagrams that graphically compare the variation in these round robins for the last four years. The bottom whisker represents the bottom 25% of labs, the box represents the center 50%, and the top whisker is the top 25%. The boxes give you a good feel for variation trends of the general population because they are unaffected by outliers. The outliers are all in the whiskers.

It looks like there has been slight improvement in Peak variation over the previous 3 years and 2 Minute Total variation over the last 2 years. I have included a box and whisker from a single OSU burning a 5524 panel each week for 25 consecutive weeks as well as 25 consecutive calibrations. If all OSU's were reading the same, that is the amount of variation we could approach.

The best improvements in variation will come if the labs on the high and low end of the charts will review their processes and adjustments and see if there is anything that can be done to come closer to the center. It is recommended that a standard panel be run a least once per week so you can tell if your process is in control and if changes you make have caused shifts in the data. Ideally, a standard panel is run when the round robin samples are run. Then you will know if adjustments have brought you closer to the center.

### Individual Lab Evaluations

Each participating lab will receive their own report. A lab's individual reported value is compared to the population mean and standard deviation (SD). Any value more than 2 SD's from the mean receives a warning in the comments column. Outlier's are rejected from the population using Chauvenet's criterion which rejects any data points that have less than a  $1/(2*N)$  chance of occurring. The Z statistic listed is the number of SD's from the mean for each value. The closer Z is to zero the better.

PEAK

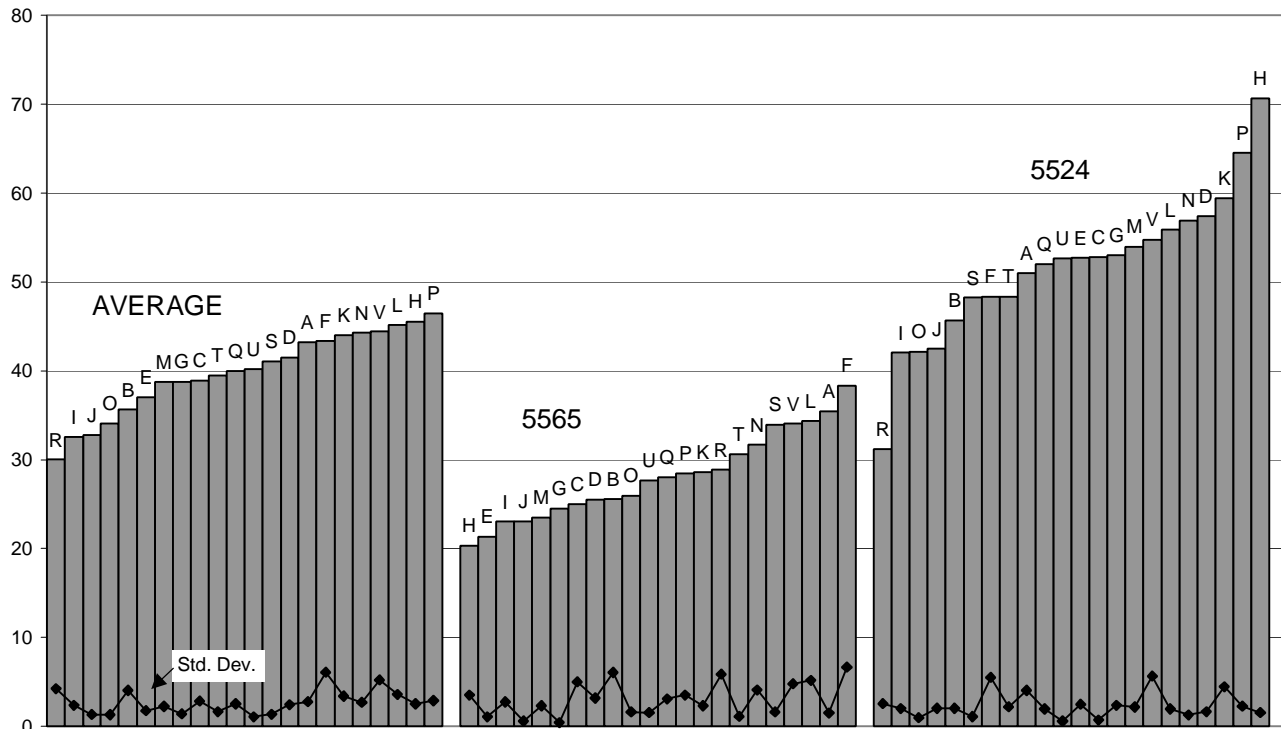


Figure 1

2 MINUTE TOTAL

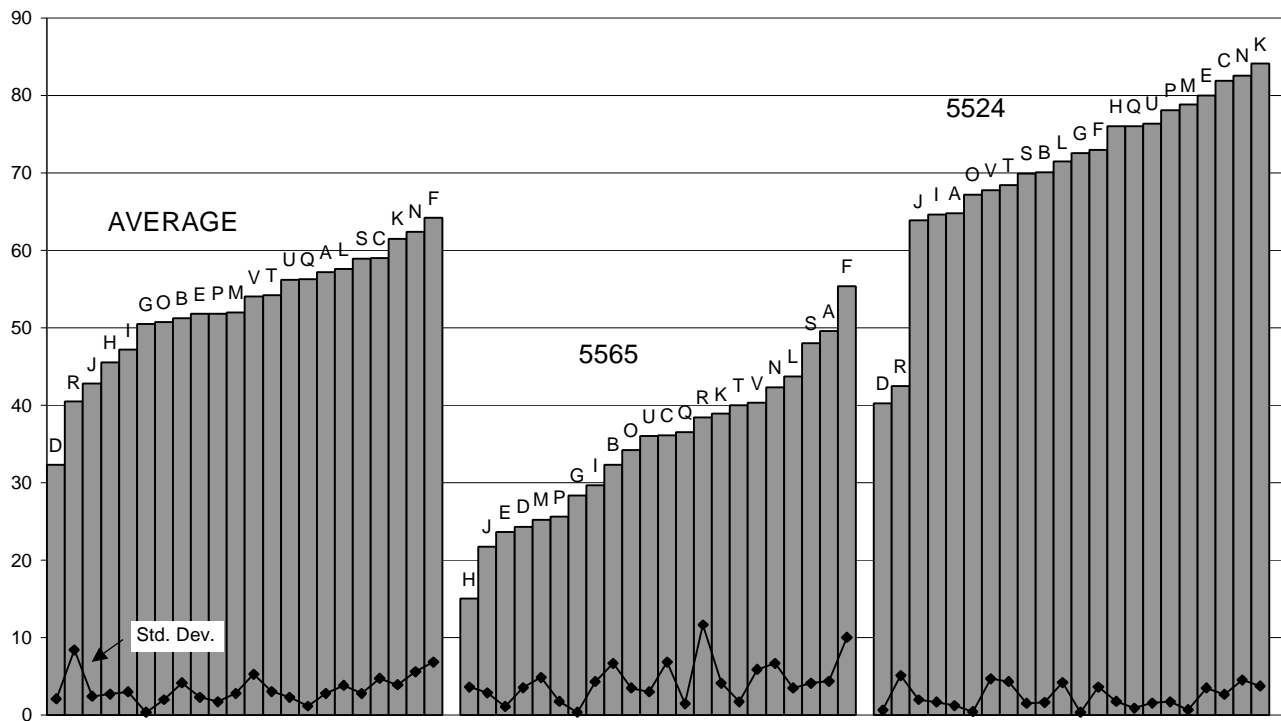


Figure 2

### Kh

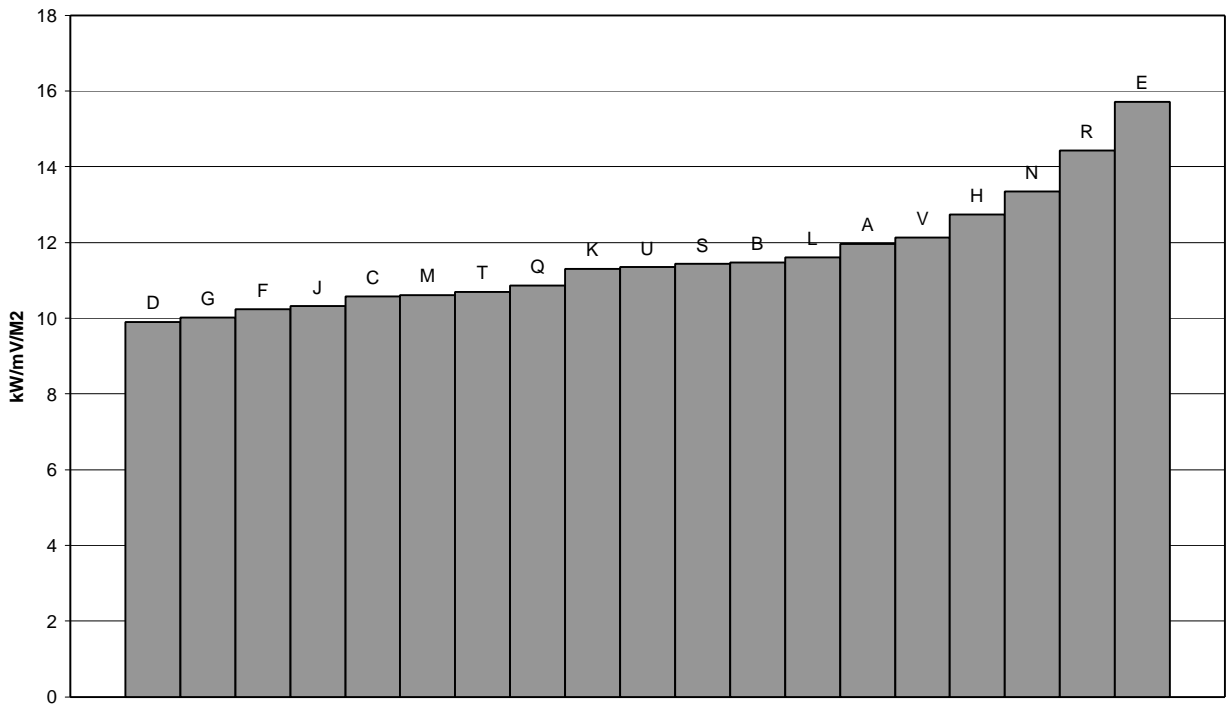


Figure 3

### NBS SMOKE DENSITY

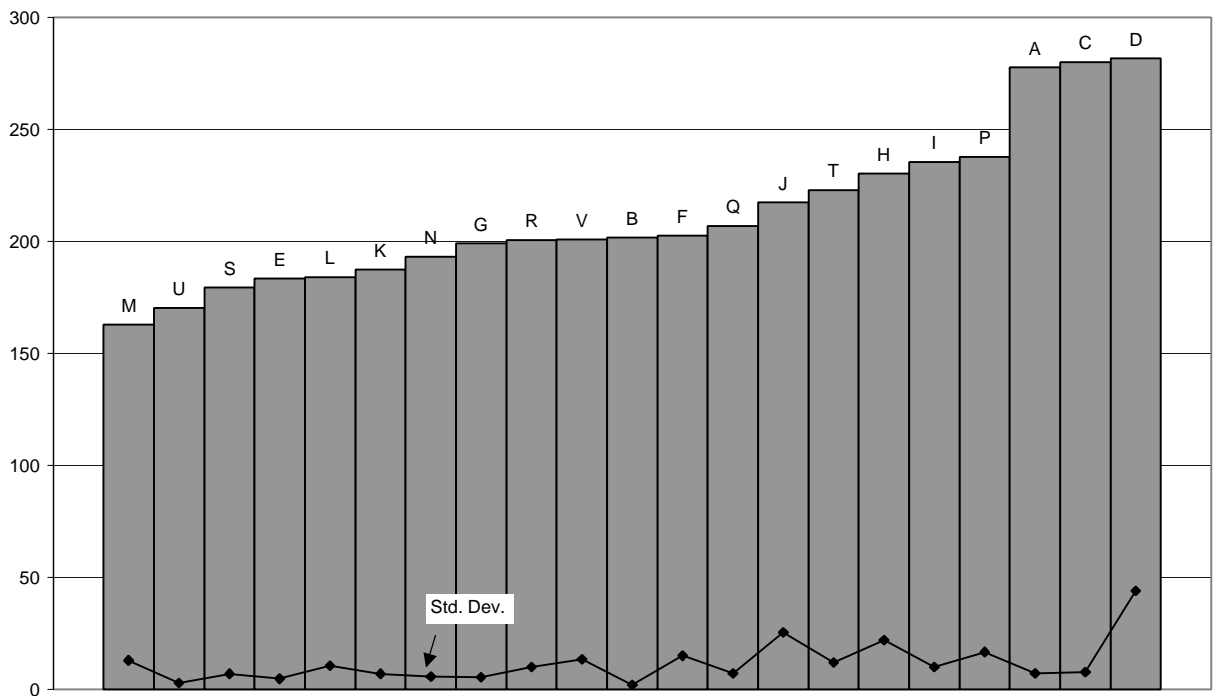


Figure 4

### PEAK SPREAD

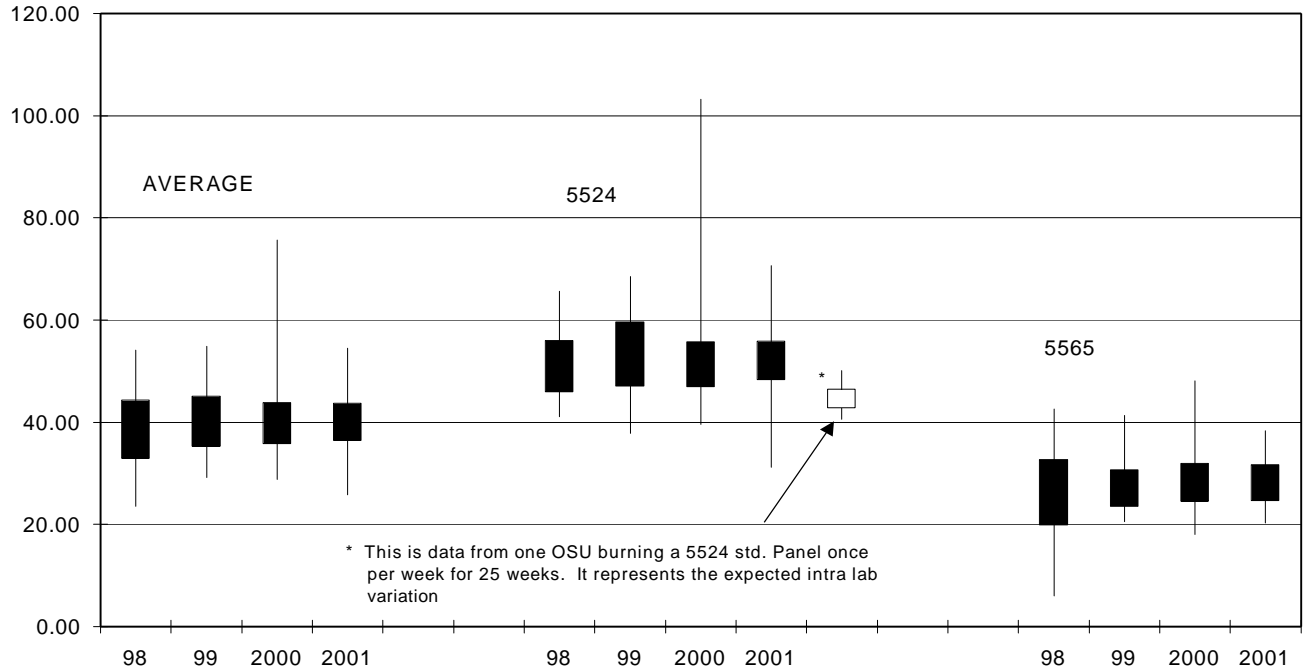


Figure 5

### 2 MINUTE TOTAL SPREAD

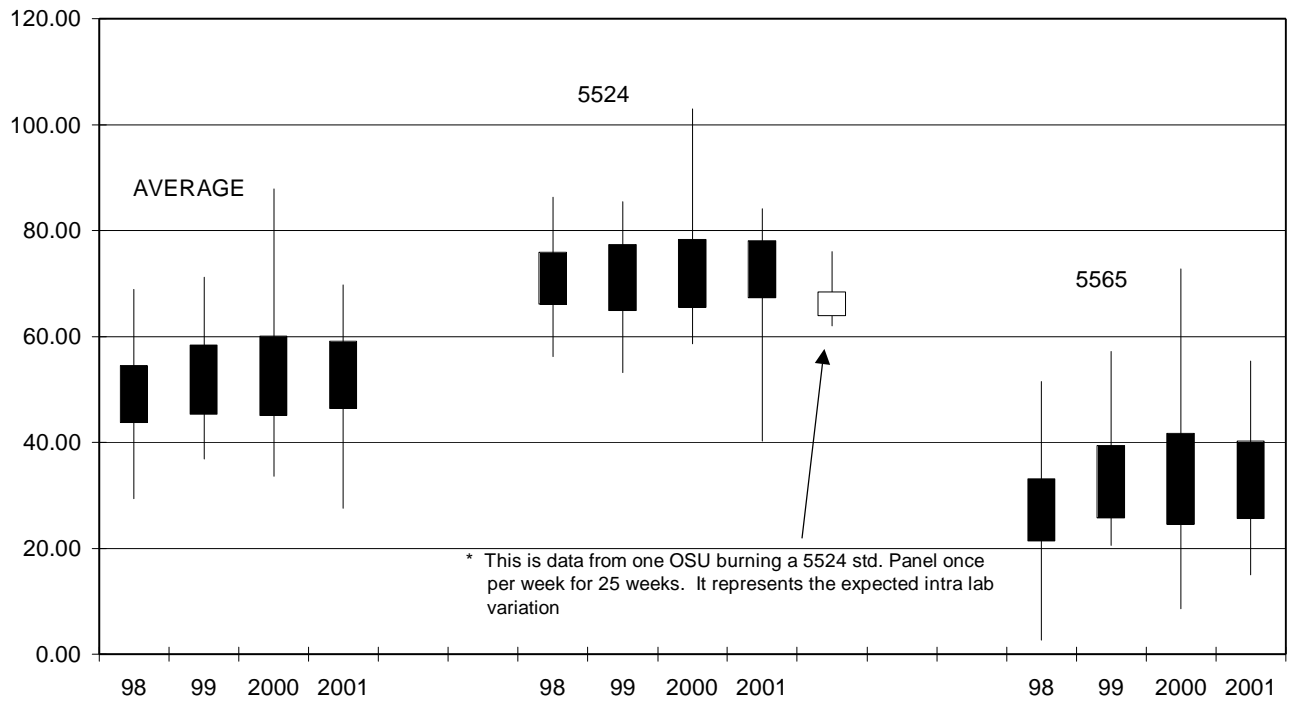
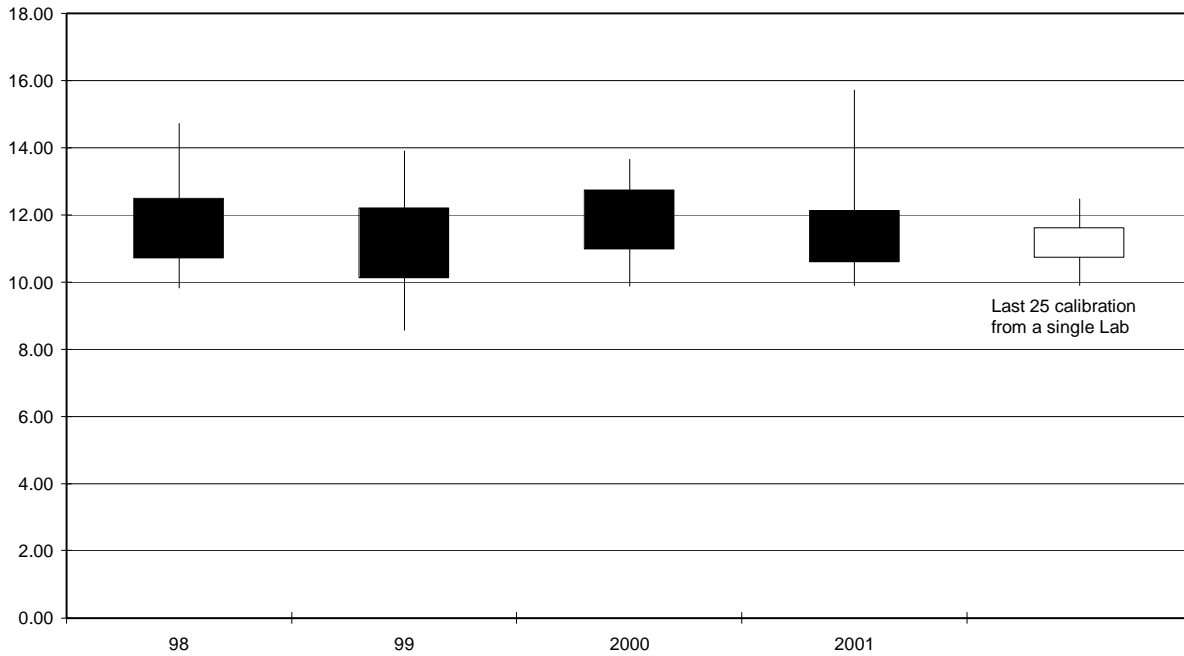


Figure 6

**KH GAS CALIBRATION FACTOR**  
**kW/mV/M<sup>2</sup>**



**Figure 7**

The next performance evaluation will start in the fall.

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