

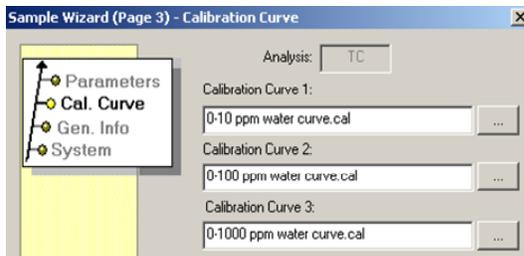
Improving TOC Productivity: Four solutions to over range samples

PC Version

TOC measurements are becoming more and more assimilated into today's manufacturing protocols and processes. Whether it is qualifying raw material, quality assuring of a product or monitoring effluent for discharge; stopping production can be expensive. For this reason the TOC – V series of instruments offers four solutions to over range samples; automatic selection of best of three calibration curves, automatic reduction of injection volume, automatic dilution of over range sample, and automatic concentration correction for bench top dilutions.

The first solution for samples over range is automatic selection of the best of three calibration curves; each sample can be compared with up to three calibration curves. Figure 1 shows a 0-10.00 ppm curve, a 0-100.0 ppm curve, and a 0-1000 ppm curve preprogrammed in the system. This setting is made on page 3 of the sample wizard.

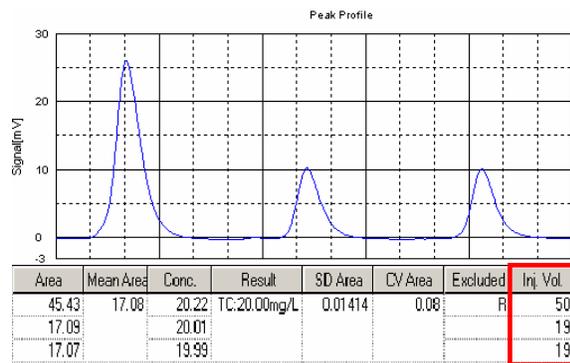
Figure 1. Utilize up to 3 Calibration Curves per Sample.



The system will automatically determine which curve is the best fit for the sample. This form of correction supersedes automatic reduction of injection volume and automatic dilution of sample.

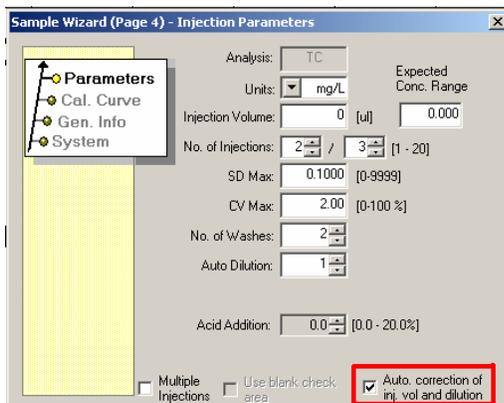
The second form of correction for slightly over range samples is reduction of injection volume. If less volume is injected, the signal will decrease linearly. Figure 2 illustrates this effect. The TOC-V reduces the sample injection volume and corrects for the change in injection volume.

Figure 2. Automatic sample injection reduction



This can be activated by selecting “**Auto correction of inj vol and dilution**” and selecting only one calibration curve. This feature is selectable on page 4 of the sample wizard. See figure 3.

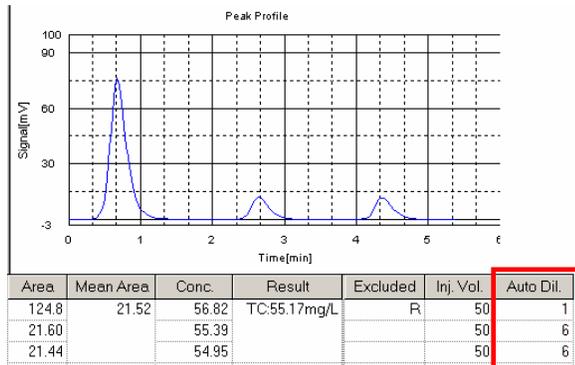
Figure 3. Automatic sample injection reduction



The third solution for over-range sample correction is auto-dilution. The sampling system in the instrument will automatically

dilute the over-range sample and correct for the dilution as shown in Figure 4. A 55.00 ppm C solution was analyzed using only the first calibration curve shown in Figure 1. The first measurement was over range, so the sample was automatically diluted 1:6 and re-measured. The returned result was 55.17 ppm C. That correlates to a corrected recovery of 100.3%. The TOC-V's sampling system can perform up to a 50x dilution on over-range samples automatically.

Figure 4. Automatic dilution



The instrument will also perform the automatic dilution and reduction in sample volume injection in conjunction with the manual dilution correction increasing the measuring range even more; saving the user time, frustration and sample.

In addition to the automatic dilution function, the instruments can also correct for manual dilutions performed by the user. This allow for much greater dilution than 50x which the instrument can perform, there by increasing the dynamic range of the analyzer. The instrument will quantify the carbon in the sample and then correct for the manual dilution. See figure 5.

Figure 5. Correction of manual dilution

