Customer Guidance: AACE Spiked Sample Calculation

To make sure that the results of an analysis are not influenced by the sample matrix, a known quantity of the substance to determine is added to the sample and the resulting “spiked sample” is measured and the recovery of the added amount is calculated.

AACE software can calculate the spike recovery of a sample that has been manually spiked. This will show the percent recovery of the spiked sample compared to that of the un-spiked sample. The spiking amount does not need to be the same for each sample, but it can also remain consistent.

1. Entering the Value of the Stock Standard Concentration

The stock standard concentration is the concentration of the standard that was used to spike the sample. This value is entered per channel.

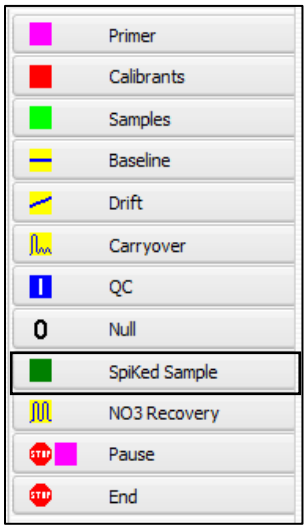
Select ***Setup – Analysis / Run*** from the main menu and open the relevant analysis / run.

At the top of the Analysis window, click on the ***Channel 1*** tab. Insert the standard concentration that was used under the ***Spike Recovery: Standard conc.:*** box. Ensure this is in the same units as the calibration curve. Repeat these steps for each channel.

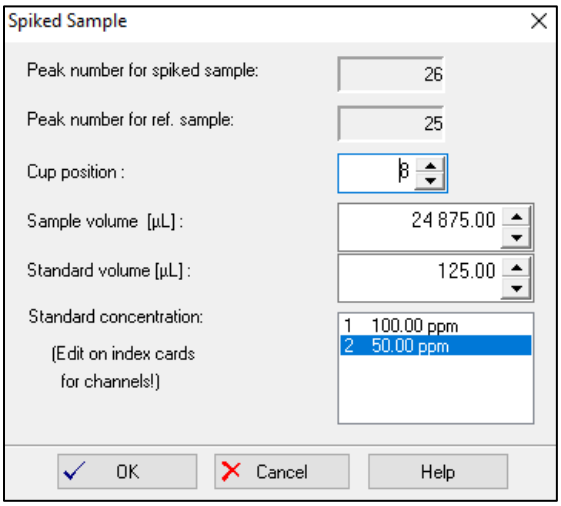
2. Entering the Spiked Samples in the Tray Protocol

One or more spiked sample cups can be added into the tray protocol.

In the ***Tray Protocol*** tab, click ***Spiked Sample***.



Then a new box will appear.



In the screen the **Cup number for spiked sample** (sequential number) and the **Cup number for reference sample** (number of the previous sample) are displayed in the first two lines. These values cannot be changed in this window.

In the field **Cup position**, enter the position of the spiked sample on the tray.

Enter the **Sample volume** [**µL**] in the corresponding field (the default value is 2000 µL; it can be modified in steps of 100).

Enter the **Standard volume** [**µL**] in the corresponding field (the default value is 200 µL; it can be modified in steps of 10). The **Standard concentration** for each channel can be edited on the index cards for the corresponding channels. The value entered on this cards is displayed here. The standard concentration is the same for all spiked samples in a channel.

Click ***OK*** to insert the cup in the Tray or ***Cancel*** to abort.

Note:

A spiked sample can only be entered after a sample in the tray protocol.
In all other positions the corresponding button is dim.

3. Calculations

After the run is complete, the software compares the results for the spiked and for the normal sample and calculates the recovery of the added standard.

Spiked samples are reported on three lines, with the first line giving the sample name with the extension “Added”, the second line giving the Quantity of standard found, and the last line giving the recovery.

Spike Recovery		
10, 0.02 spiked Added	262.8	0.271
10, 0.02 spiked Found	289.8	0.277
Recovery %	110.3	102.158

The software calculation for spike recovery can be found in Appendix A of the software manual.