



Brief Study on CPAL Settings

90 Asp 80 Dsp

Variable Flow Rates

Variable Plunger

Starting Points

for

Method Development Work

for the Researcher

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Outline

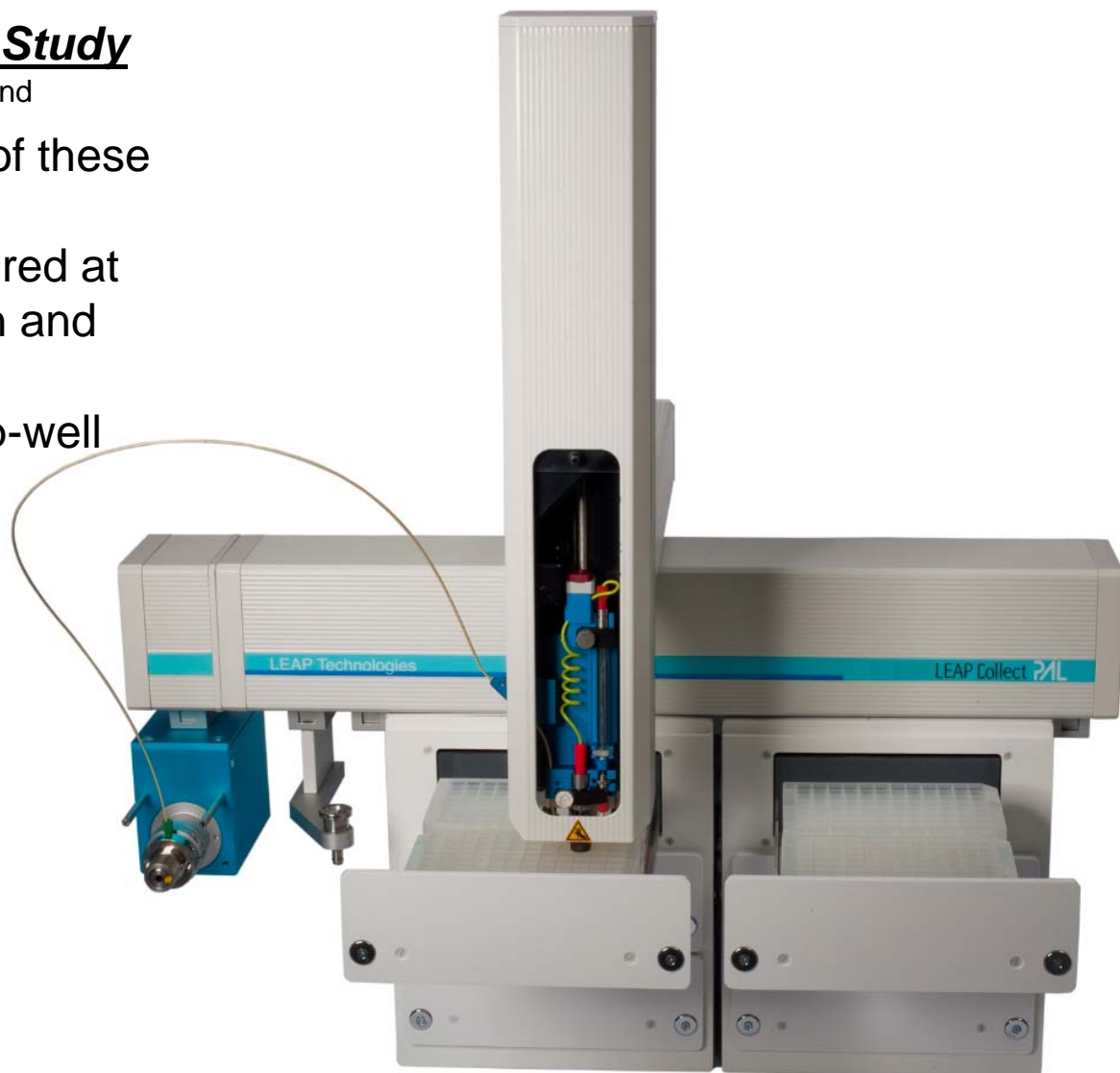
- This study was conducted over a period of three days with various settings to optimize the Collect PAL in house.
- Liquid (50:50 H₂O:MeOH) was collected.
- Parameters were selected in order to test for no dripping between well-to-well or waste-to-well movements.
- Version 2.1 Collect PAL Application was used.
- Only 500 uL/min, 1.0 mL/min, and 1.5 mL/min flow rates were measured.
- Parameters are shown on each graph.
- 0mm PENETRATION and 0mm RETRACTION values were used for the study.
- A Gilson 305 Pump with manometric module and 5.0 mL head were used. These had been PM'd and QA/QC performed just prior to use by Gilson.
- For the first set of studies the furthest plate location was chosen as a worst case scenario for waste-to-well time movement after a short delay.

First Study Overview

- A straight line in the graph means that every well was accessed for the same amount of time per well. It can be deduced from this that the Fraction Time per Well setting is accurate over a wide range of Fraction Sites.
- Both Numerical by Column and Serpentine by Column collection patterns were examined.
- For Numerical Collection the average time per well value disregards the first well time (move from waste to well 1) for 11 wells averaged.
- For Serpentine Collection the average time per well uses all 12 recorded times.
- Move from Waste incorporates a new feature in version 2.1 that adds 10mm distance only for the 1st aspiration to prevent dripping from Waste to Well #1.

Set Up as Shown for the Study

- 1) The 3rd Drawer of the 2nd Stack was used for all of these measurements.
- 2) Flow rates were measured at 500 μ L/min, 1.0 mL/min and 1.5 mL/min.
- 3) Collection into 96, deep-well plates.

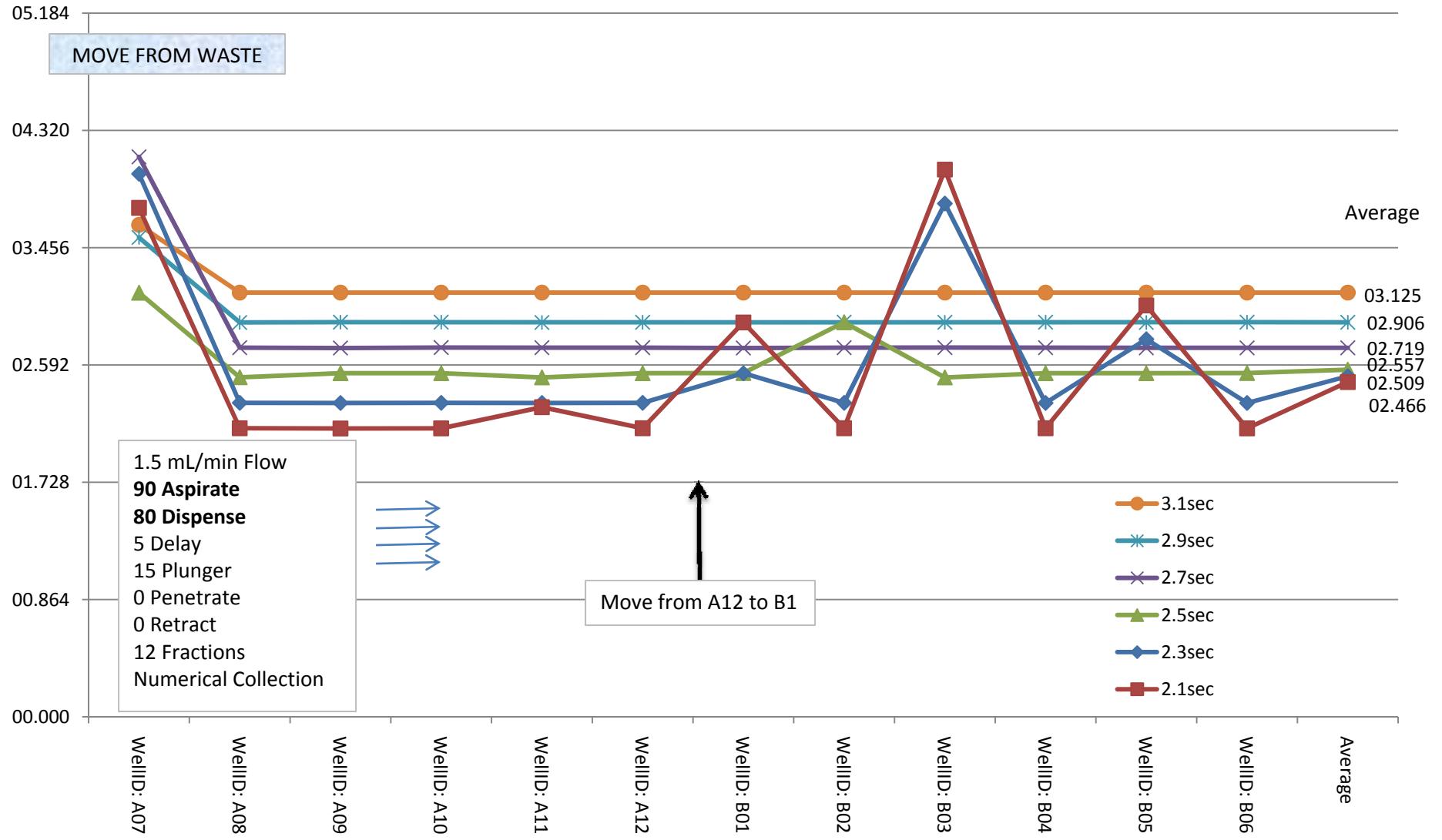


90 ASPIRATE 80 DISPENSE 5sec Delay

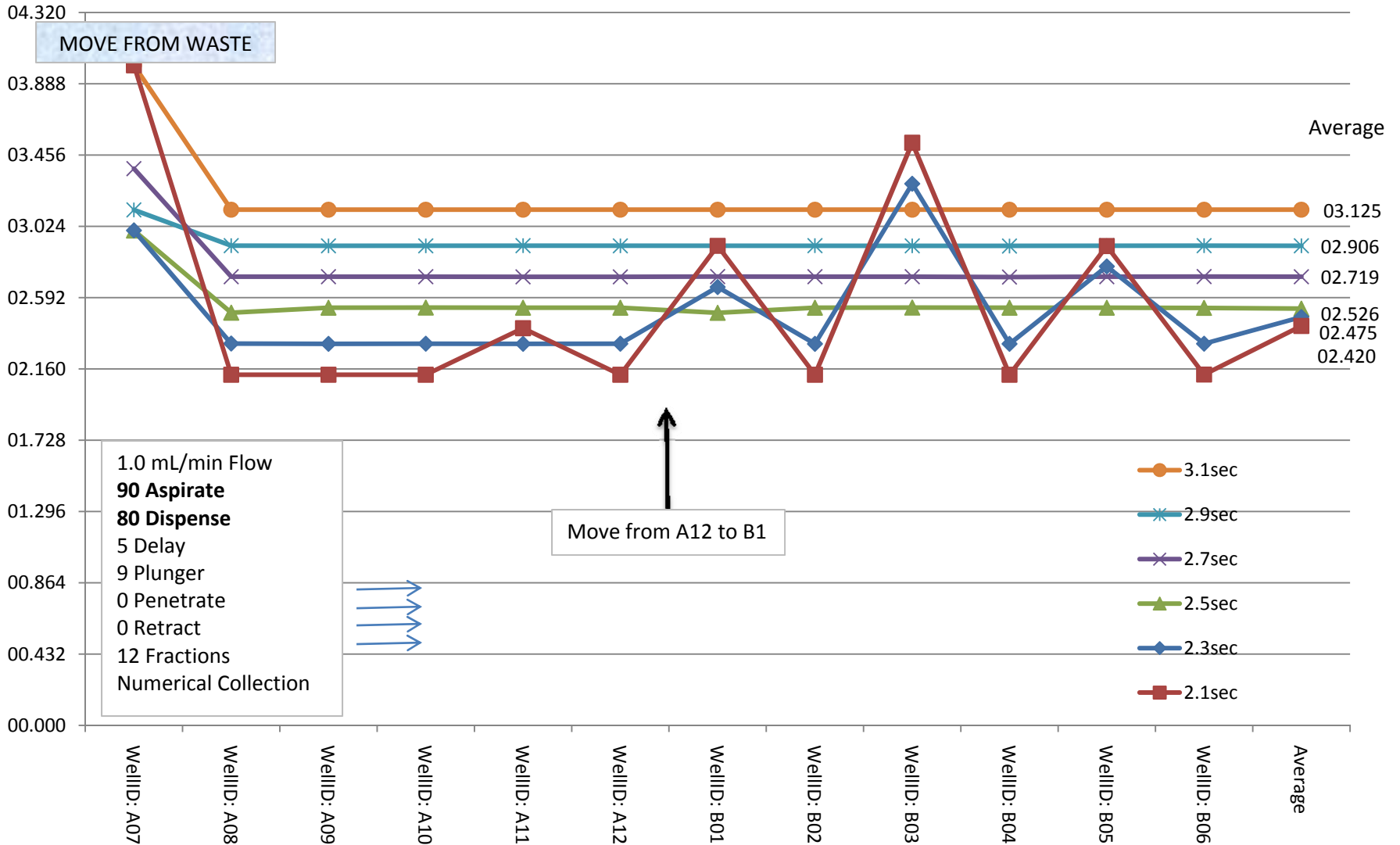
Results

- With the delay you will always have different first well TOTAL FRACTION TIME that does not match to the Fraction Time per Well setting. This time has to take into account the movement of the Head from the Waste position to Well #1. A worst case (furthest distance scenario was used for Study 1).
- This time is a measure from time=0 (when the valve switches at the waste station) to the aspirate movement of the syringe prior to moving to well #2. The graph does take into account the 5 sec delay. So REAL time for well #1 is the recorded time – delay time.
- 2.5 sec per fraction is a very solid setting for these operations and can be achieved for all of the flow rates as shown.

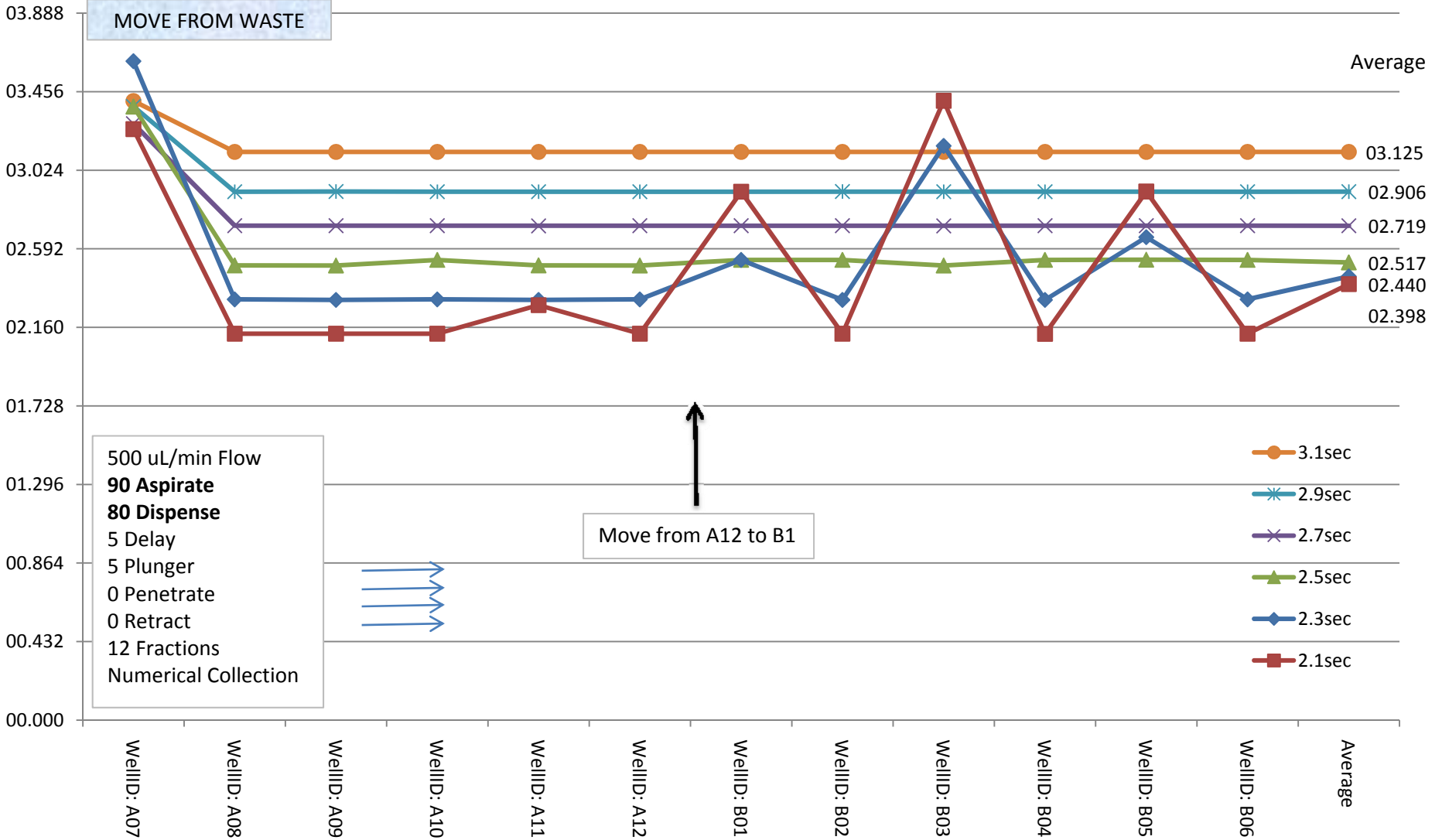
NUMERICAL COLLECTION – 1.5 mL/min Flow Rate



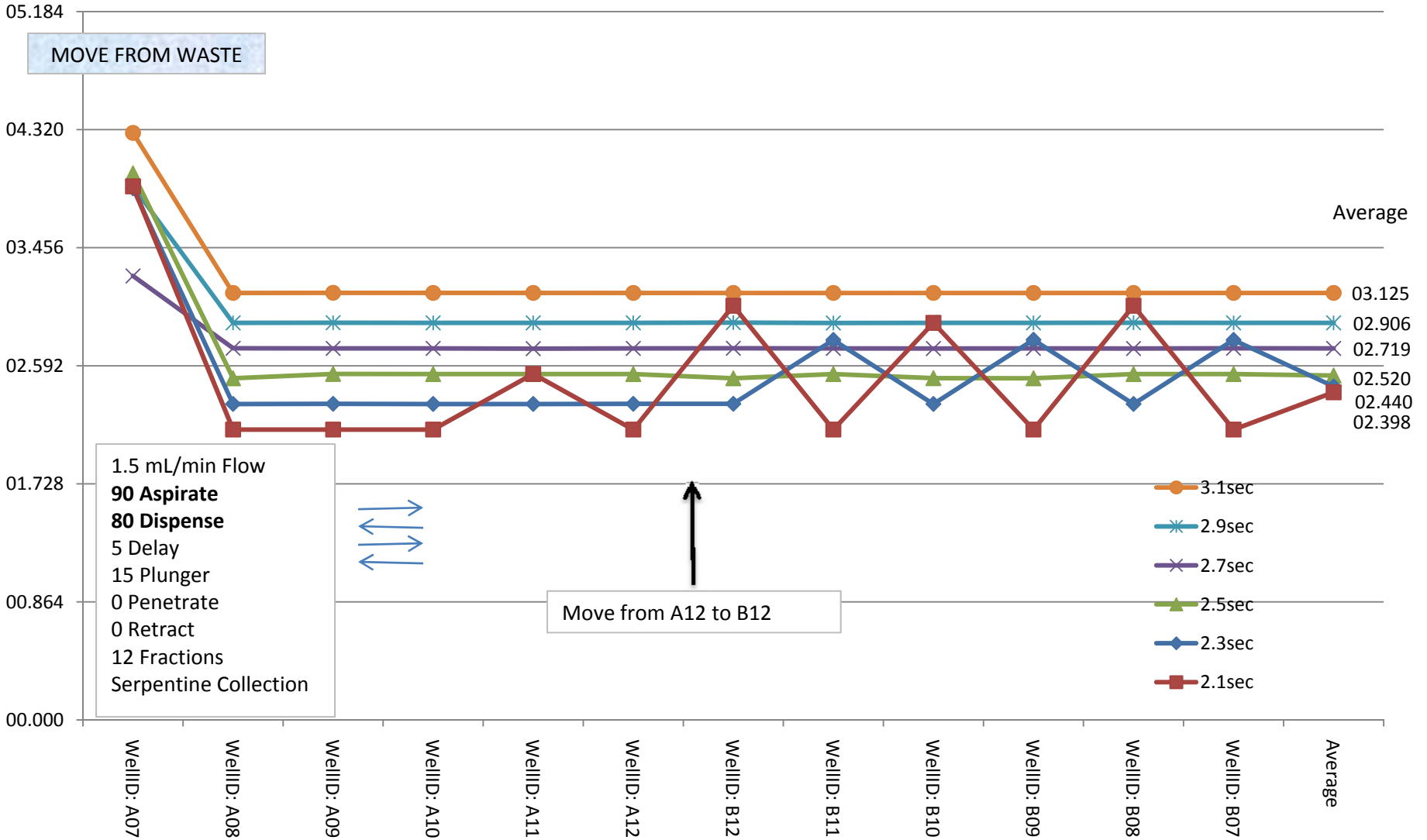
NUMERICAL COLLECTION – 1.0 mL/min Flow Rate



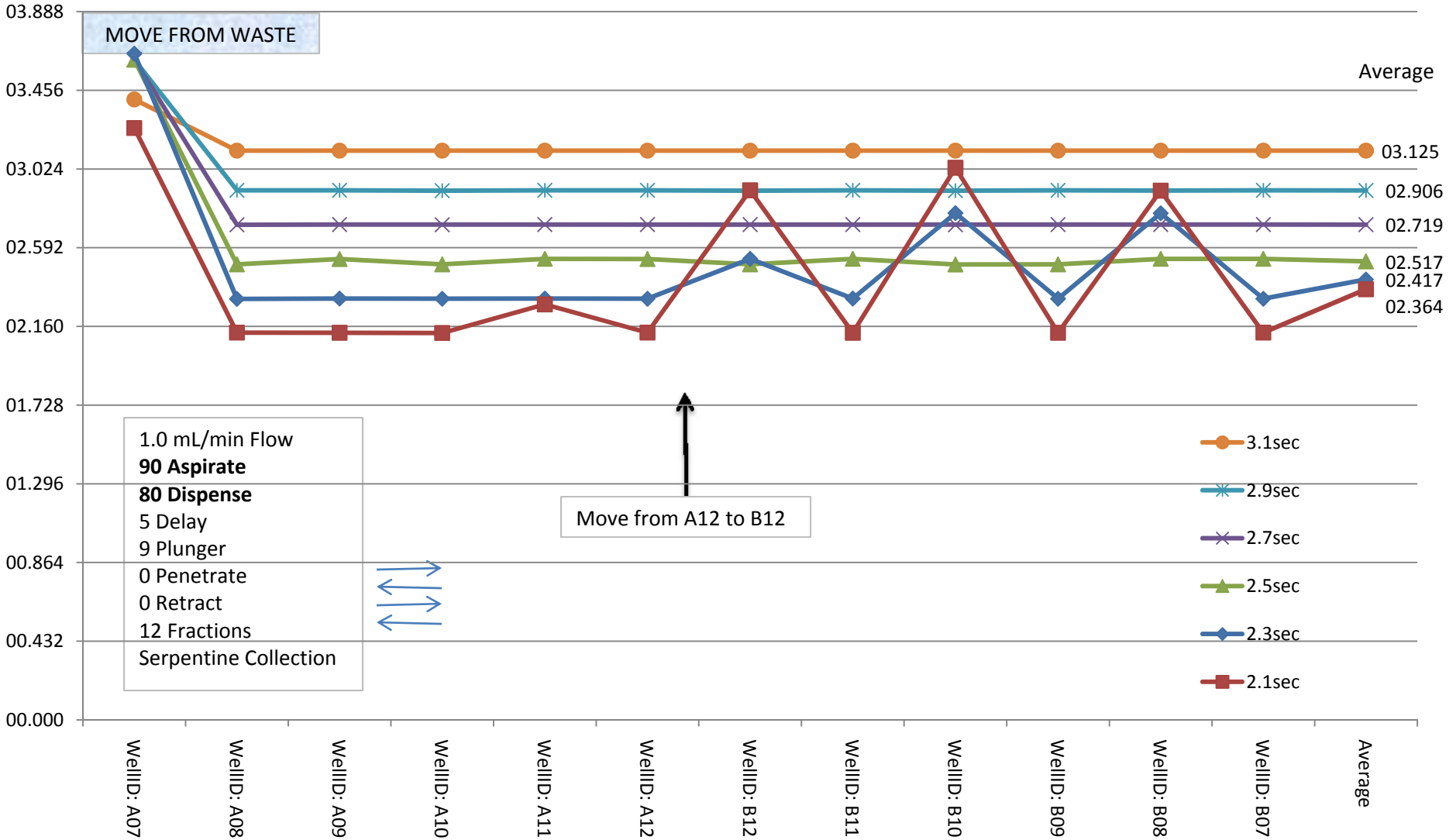
NUMERICAL COLLECTION – 500 uL/min Flow Rate



SERPENTINE COLLECTION – 1.5 mL/min Flow Rate

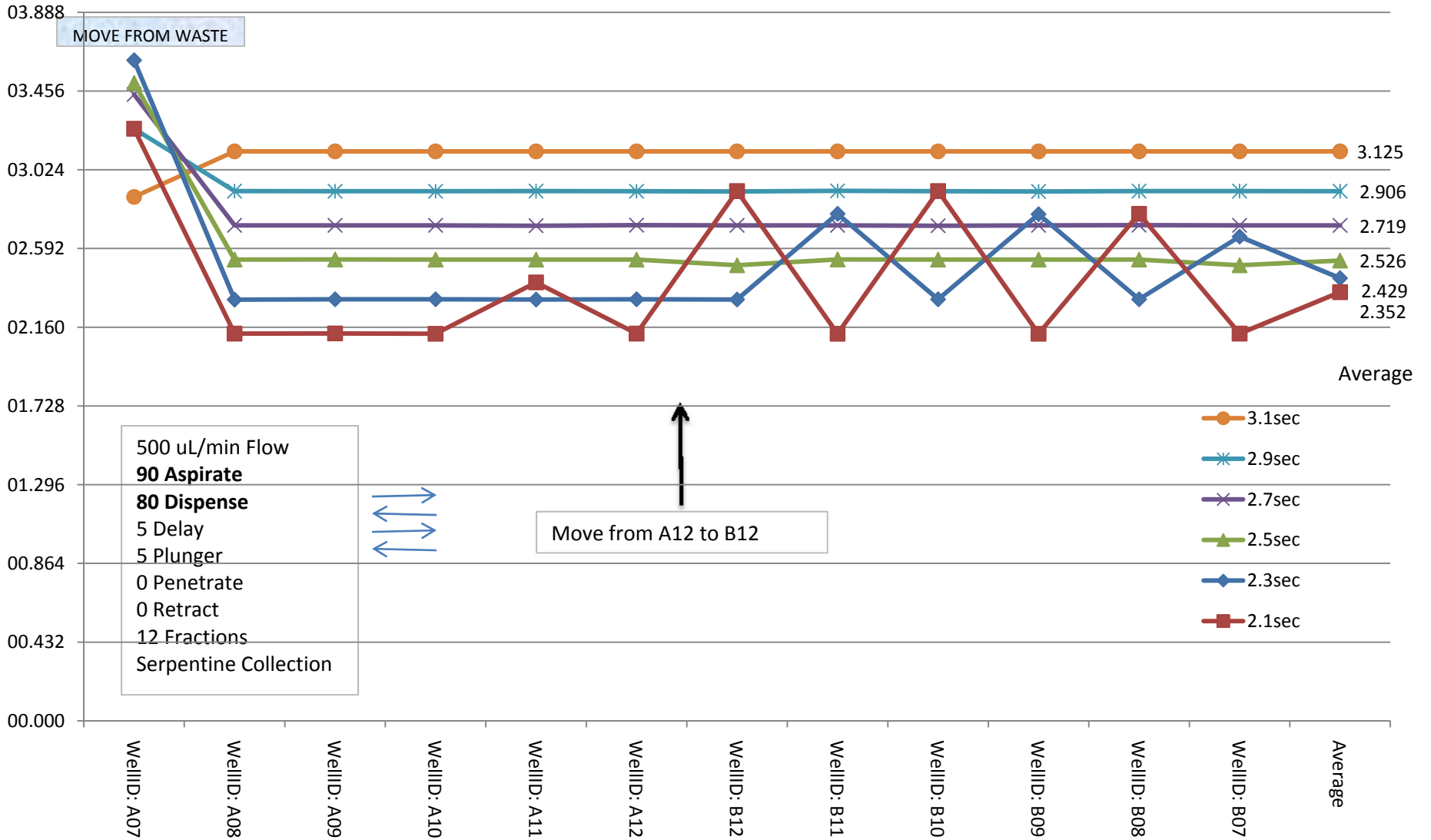


SERPENTINE COLLECTION – 1.0 mL/min Flow Rate





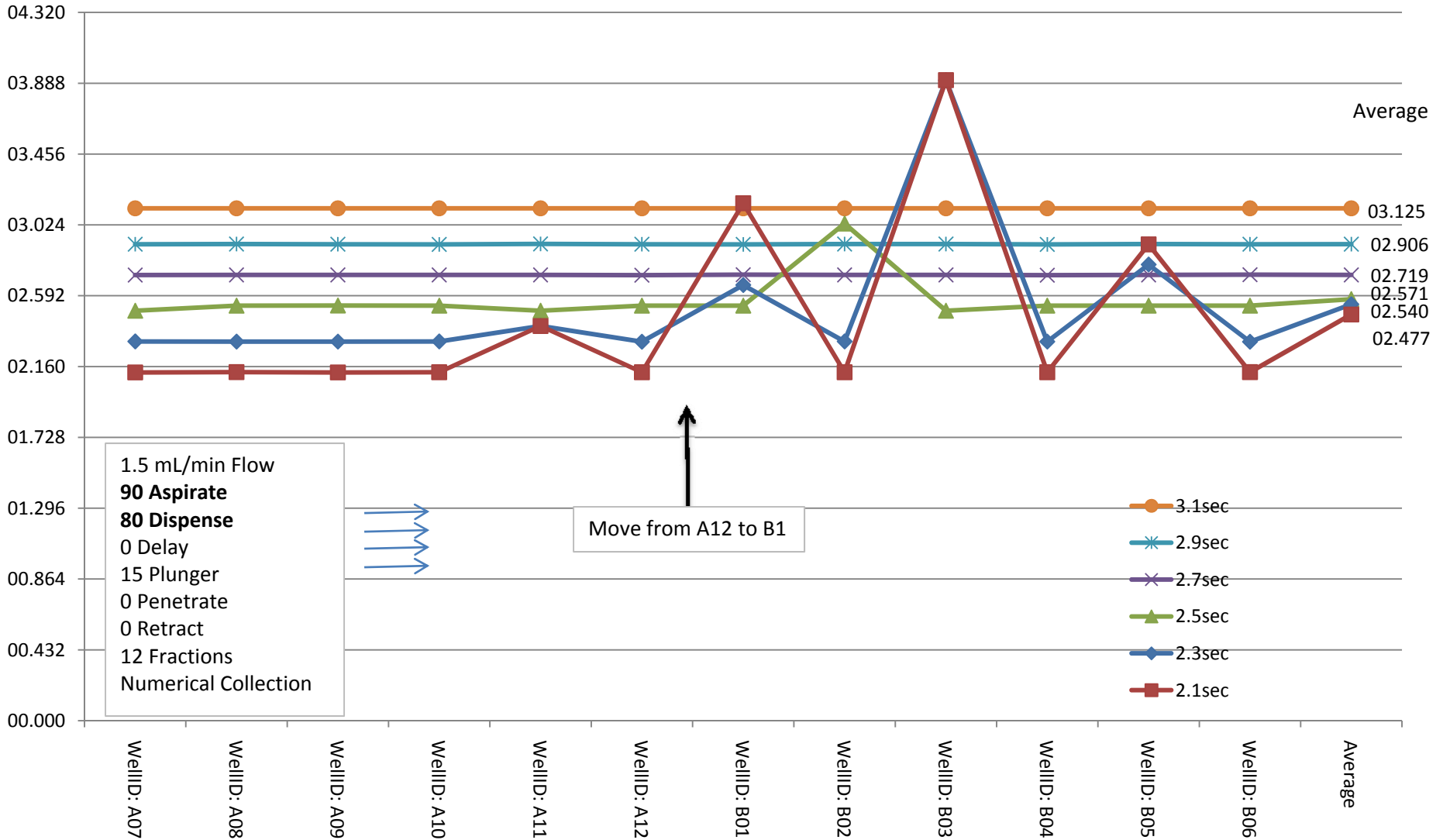
SERPENTINE COLLECTION – 500 uL/min Flow Rate



90 ASPIRATE 80 DISPENSE 0sec Delay Results

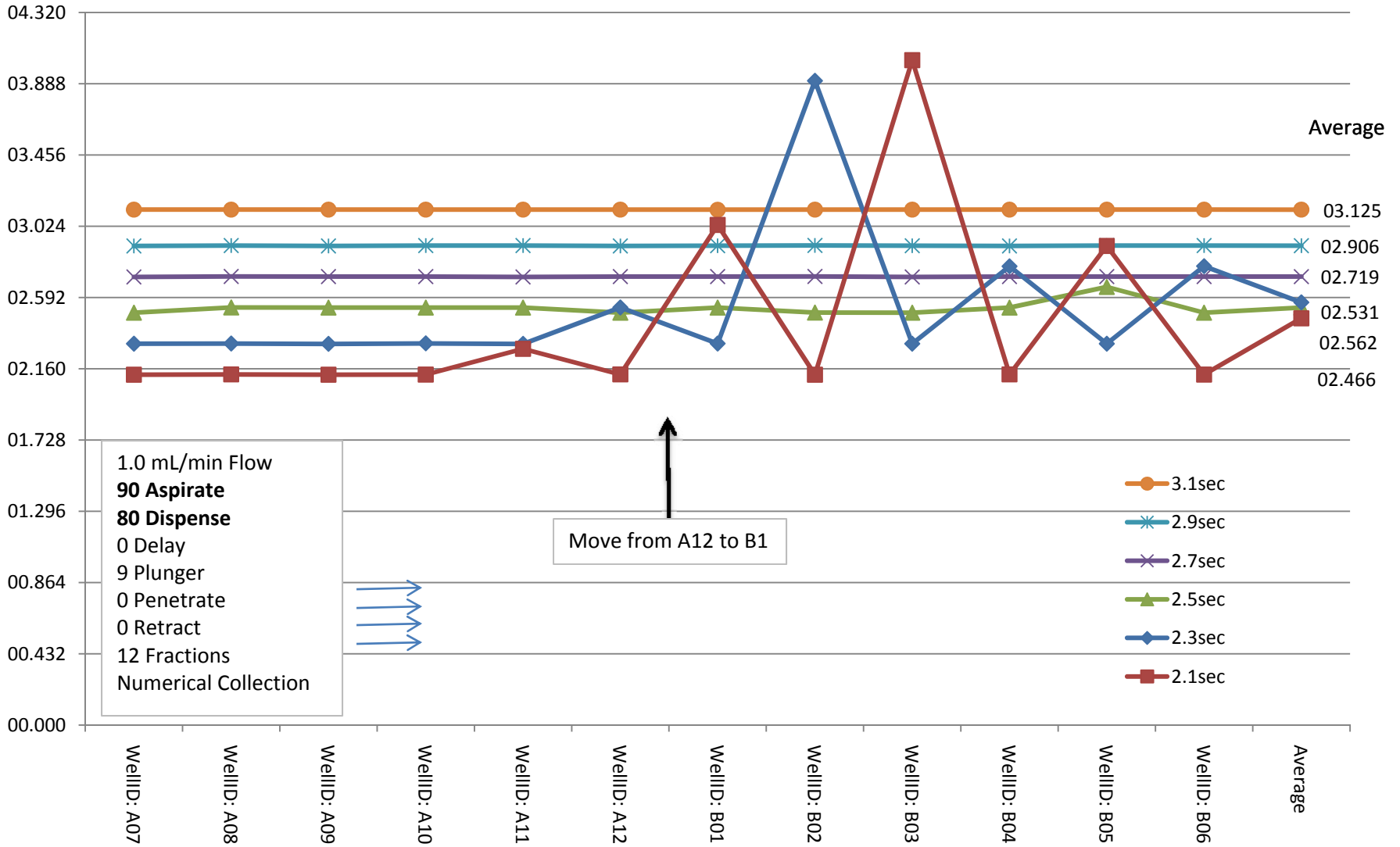
- With the 0 sec delay you should always have the first well TOTAL FRACTION TIME matching to the Fraction Time per Well setting.
- This time is a measure from time=0 (when the valve switches at Well #1) to the aspirate movement of the syringe prior to moving to well #2.
- 2.5 sec per fraction is a very solid setting for these settings and can be achieved for all of the flow rates as shown.

NUMERICAL COLLECTION – 1.5 mL/min Flow Rate

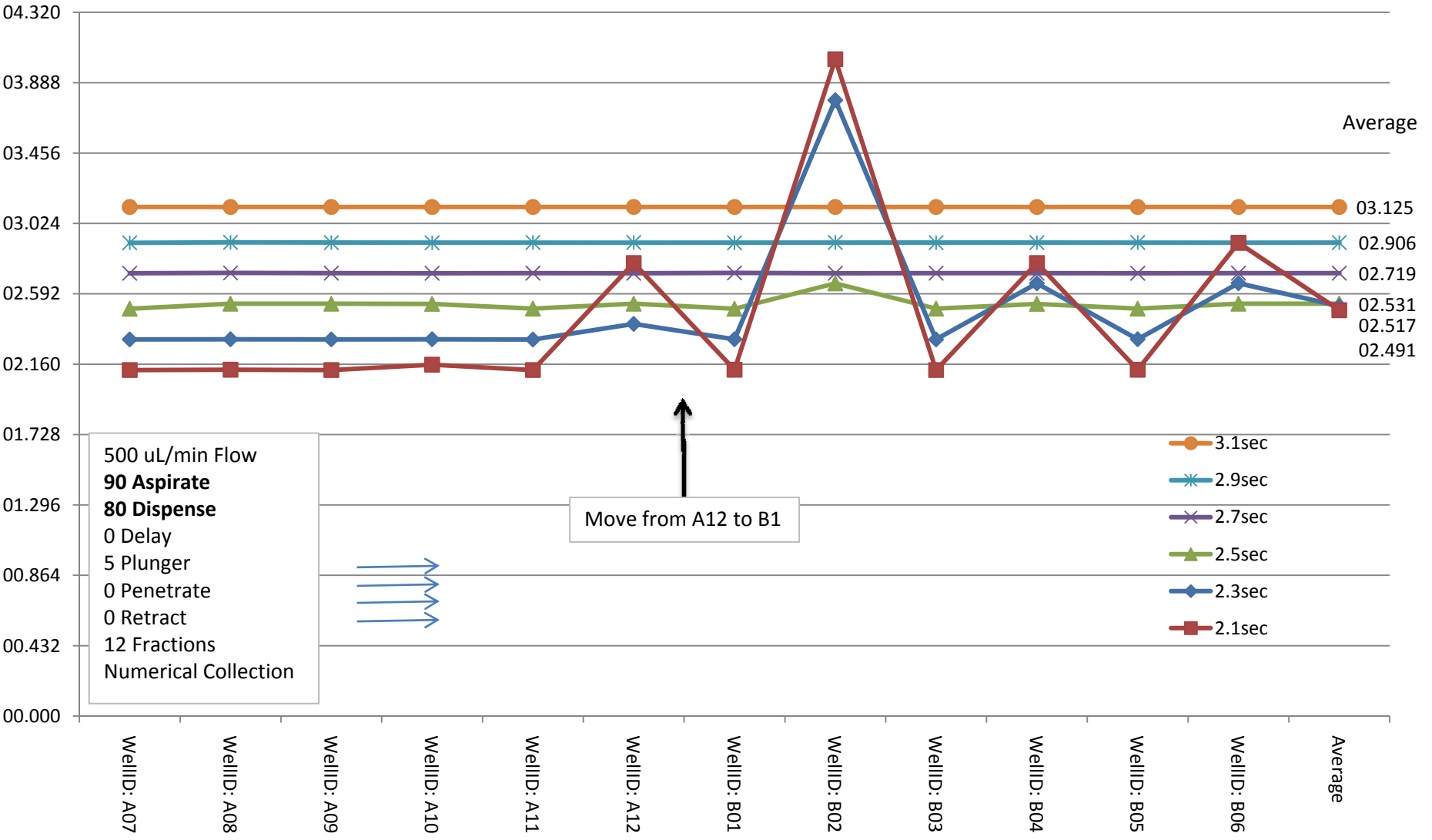




NUMERICAL COLLECTION – 1.0 mL/min Flow Rate

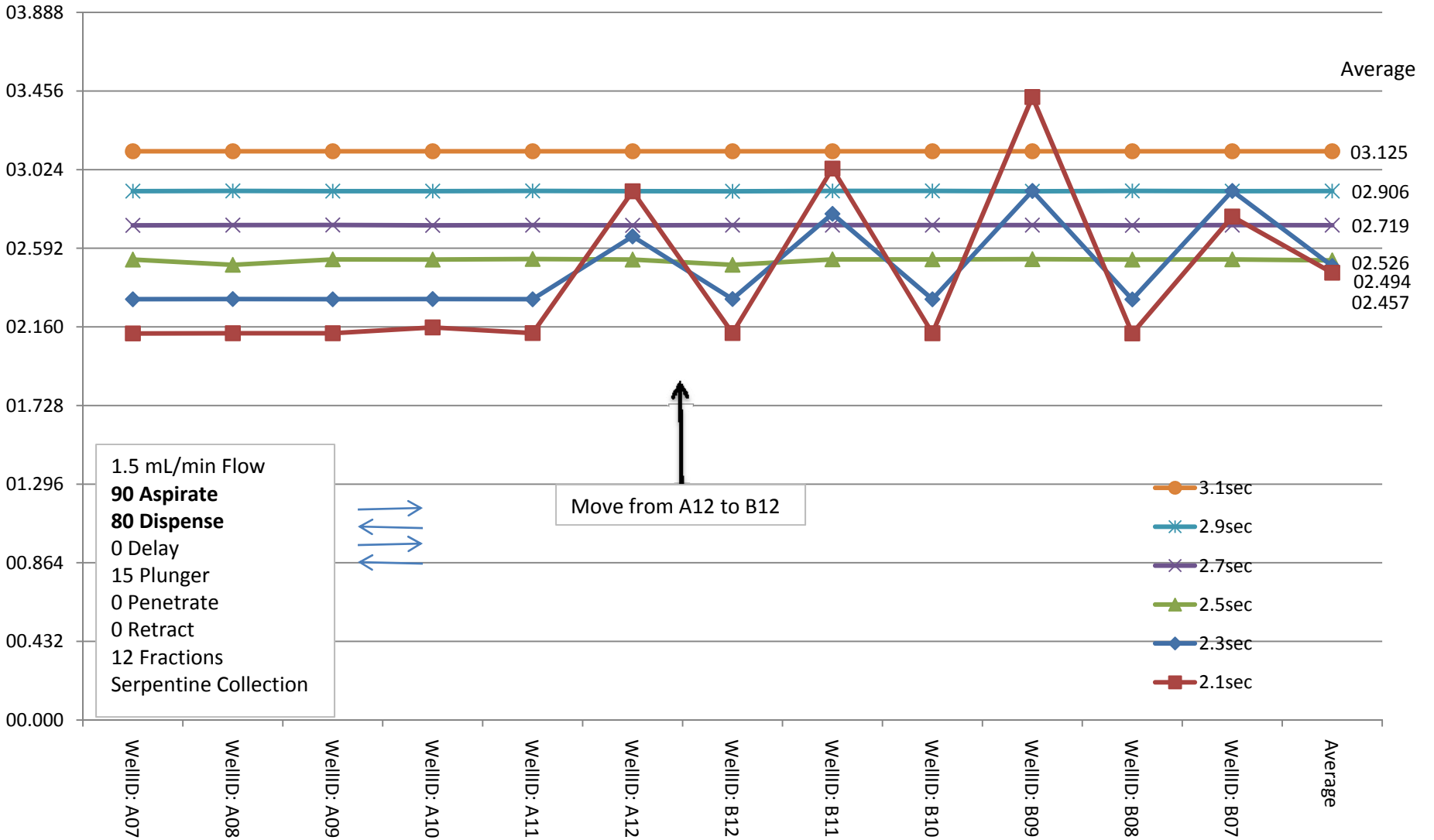


NUMERICAL COLLECTION – 500 uL/min Flow Rate

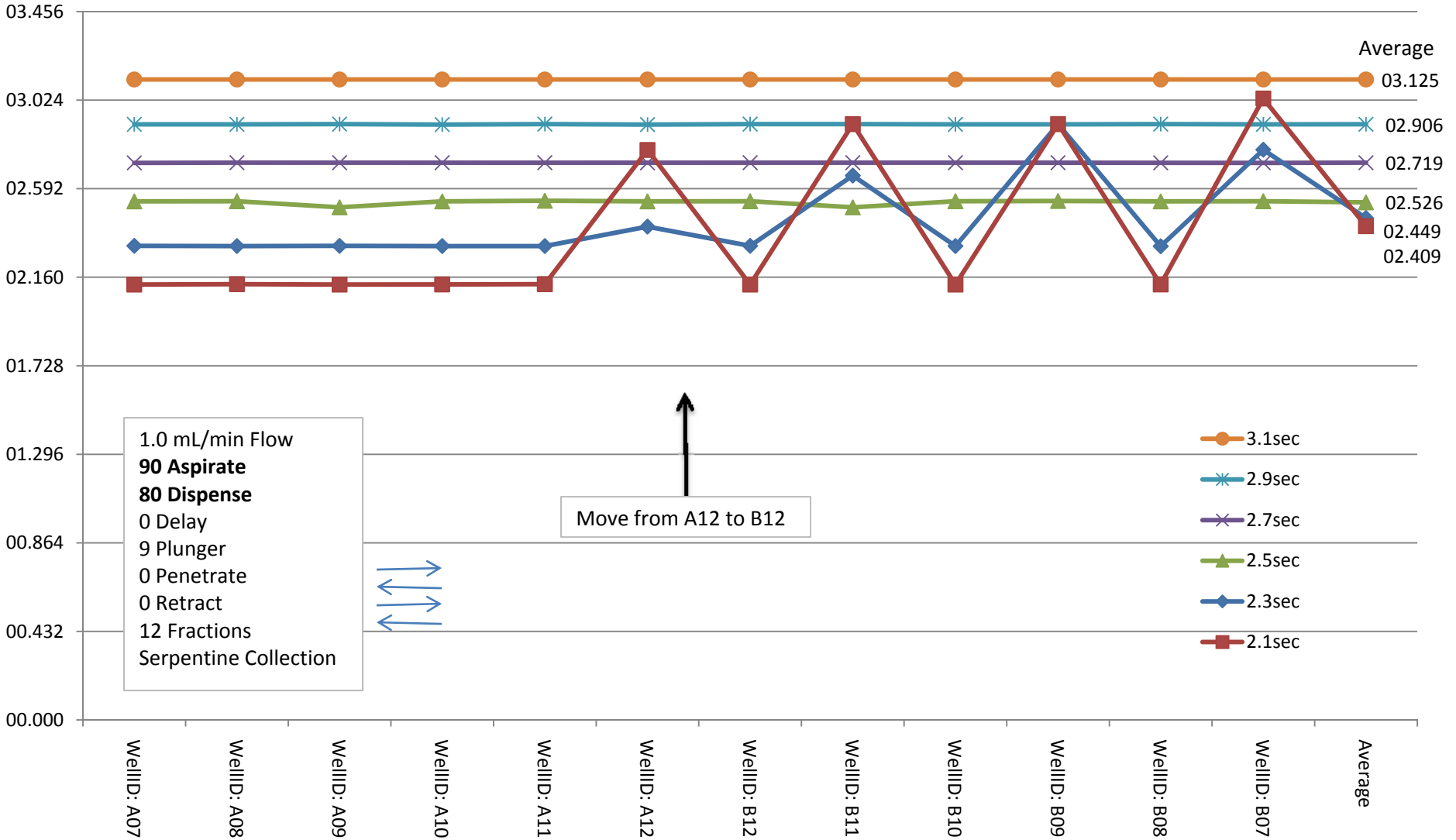




SERPENTINE COLLECTION – 1.5 mL/min Flow Rate



SERPENTINE COLLECTION – 1.0 mL/min Flow Rate





SERPENTINE COLLECTION – 500 uL/min Flow Rate

