



# Brief Study on CPAL Settings

## 60 Asp Variable Dsp

### Variable Flow Rates

### Variable Plunger

Starting Points  
for  
Method Development Work  
for the Researcher

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# Outline

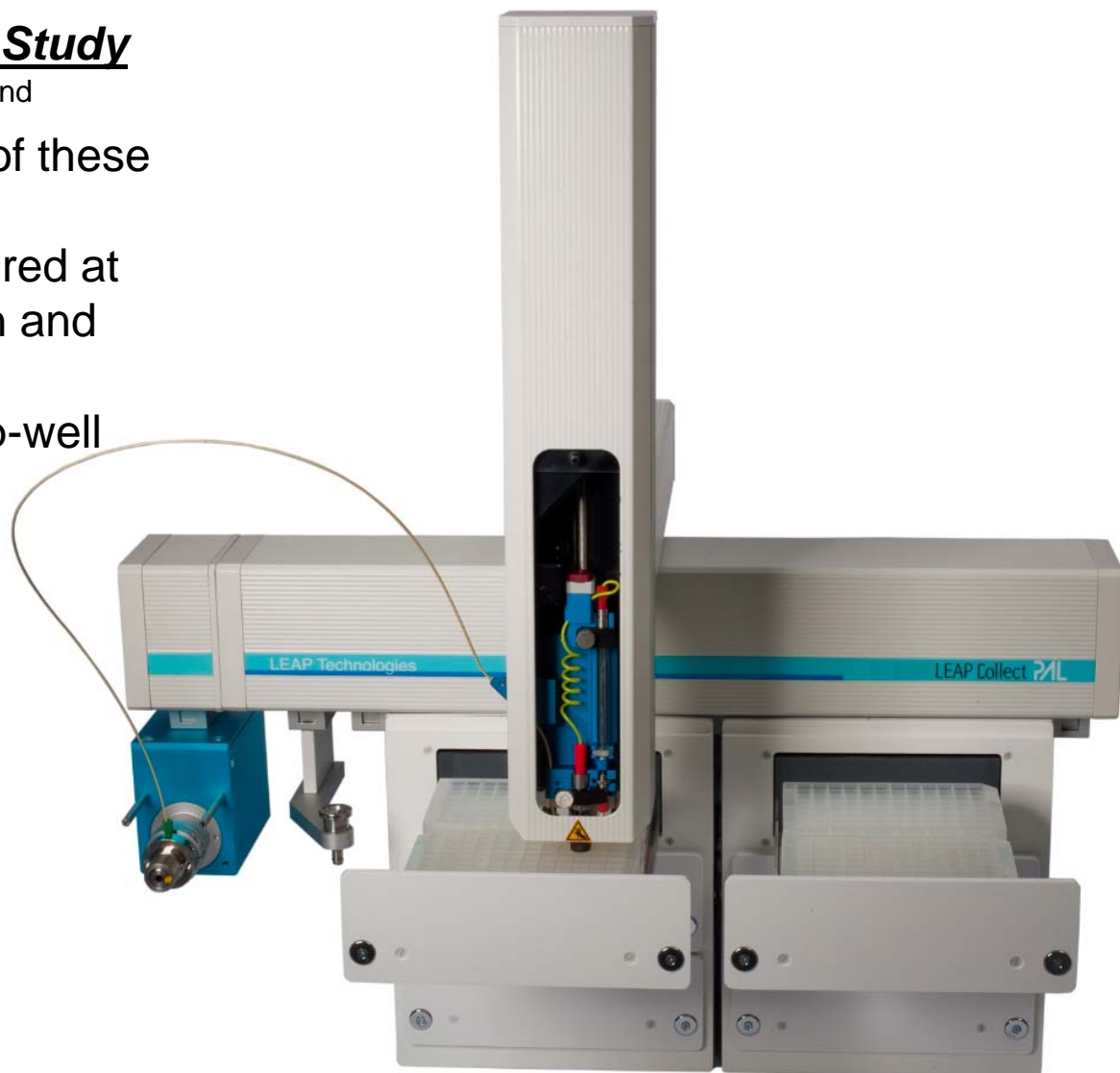
- This study was conducted over a period of three days with various settings to optimize the Collect PAL in house.
- Liquid (50:50 H<sub>2</sub>O:MeOH) was collected.
- Parameters were selected in order to test for no dripping between well-to-well or waste-to-well movements. Previous testing was performed to find these “starting” parameters shown here.
- 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.
- 60Asp and Variable Dsp settings were tested with only 3 sec and 6 sec Collection values.
- 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 these studies the furthest plate location was chosen as a worst case scenario for waste-to-well time movement after a short delay.

# 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.
- Move from Waste incorporates a new feature in version 2.1 that adds 10mm only for the 1<sup>st</sup> aspiration to prevent dripping from Waste to Well #1.
- Multiple 3 and 6 second collection trials were performed to show the DSP variable effects at these flow rates.

**Set Up as Shown for the Study**

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



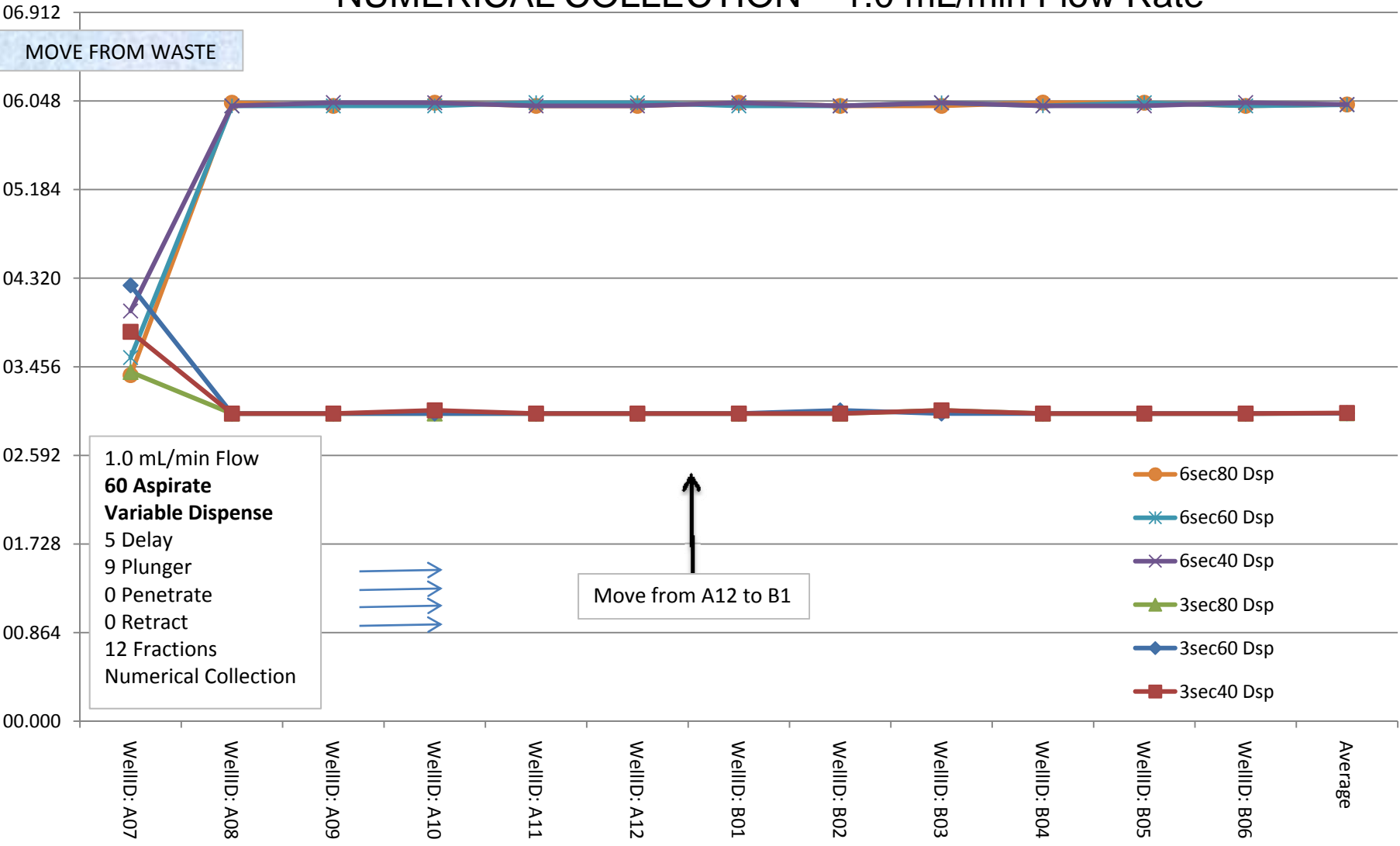
# 60 ASPIRATE Variable DISPENSE 5sec Delay

## Results

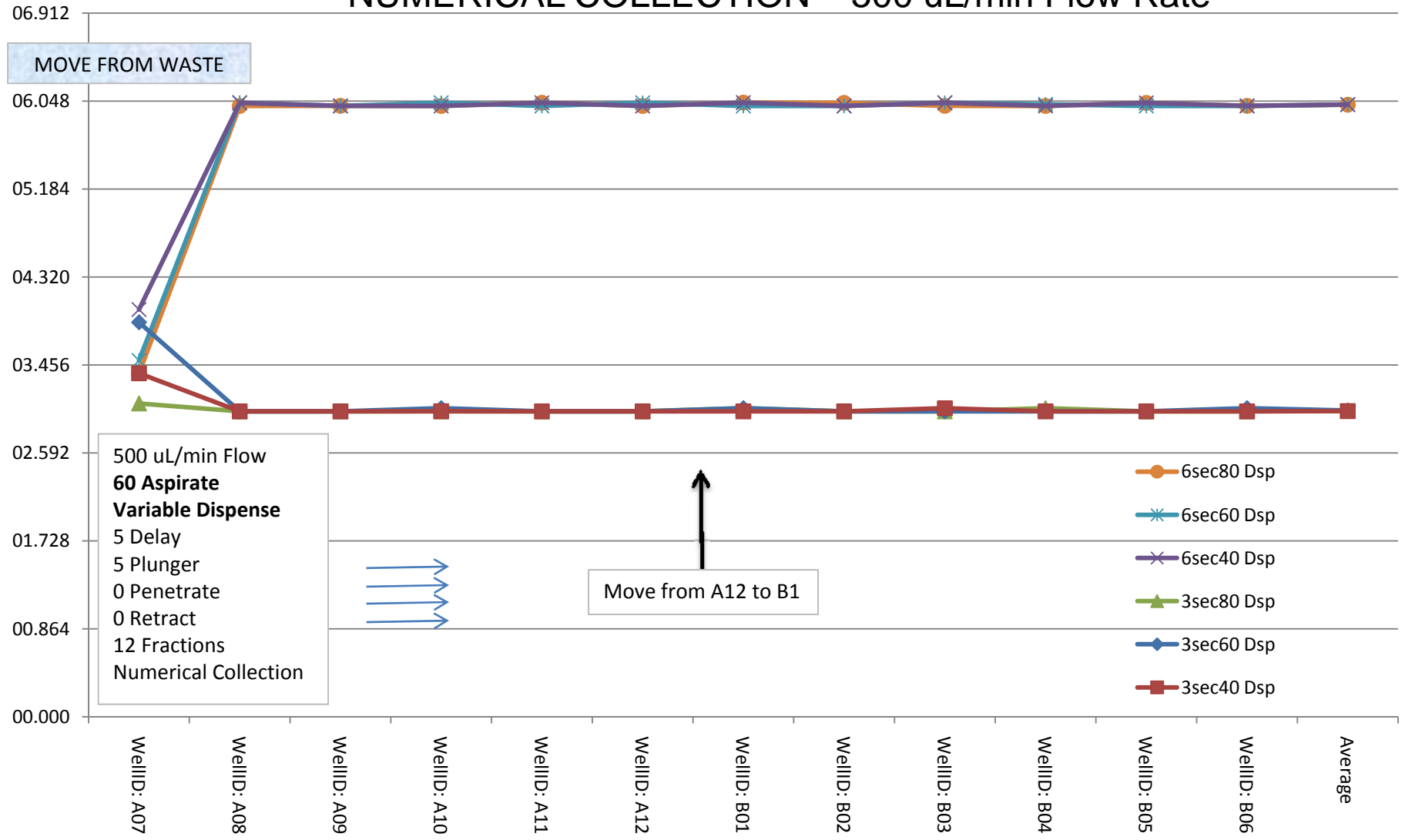
- With the delay you will always have different first well TOTAL FRACTION TIME that does not match to the Fraction Time per Well setting. This time has to take into account the movement of the Head from the Waste position to Well #1. A worst case (furthest distance scenario was used). A longer collection time does not adjust for this first well movement.
- 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.
- For numerical collection patterns all DSP settings for the flow rates tested had great reproducibility.
- For serpentine collection patterns all DSP settings for all flow rates passed.



# 60 ASPIRATION NUMERICAL COLLECTION – 1.0 mL/min Flow Rate

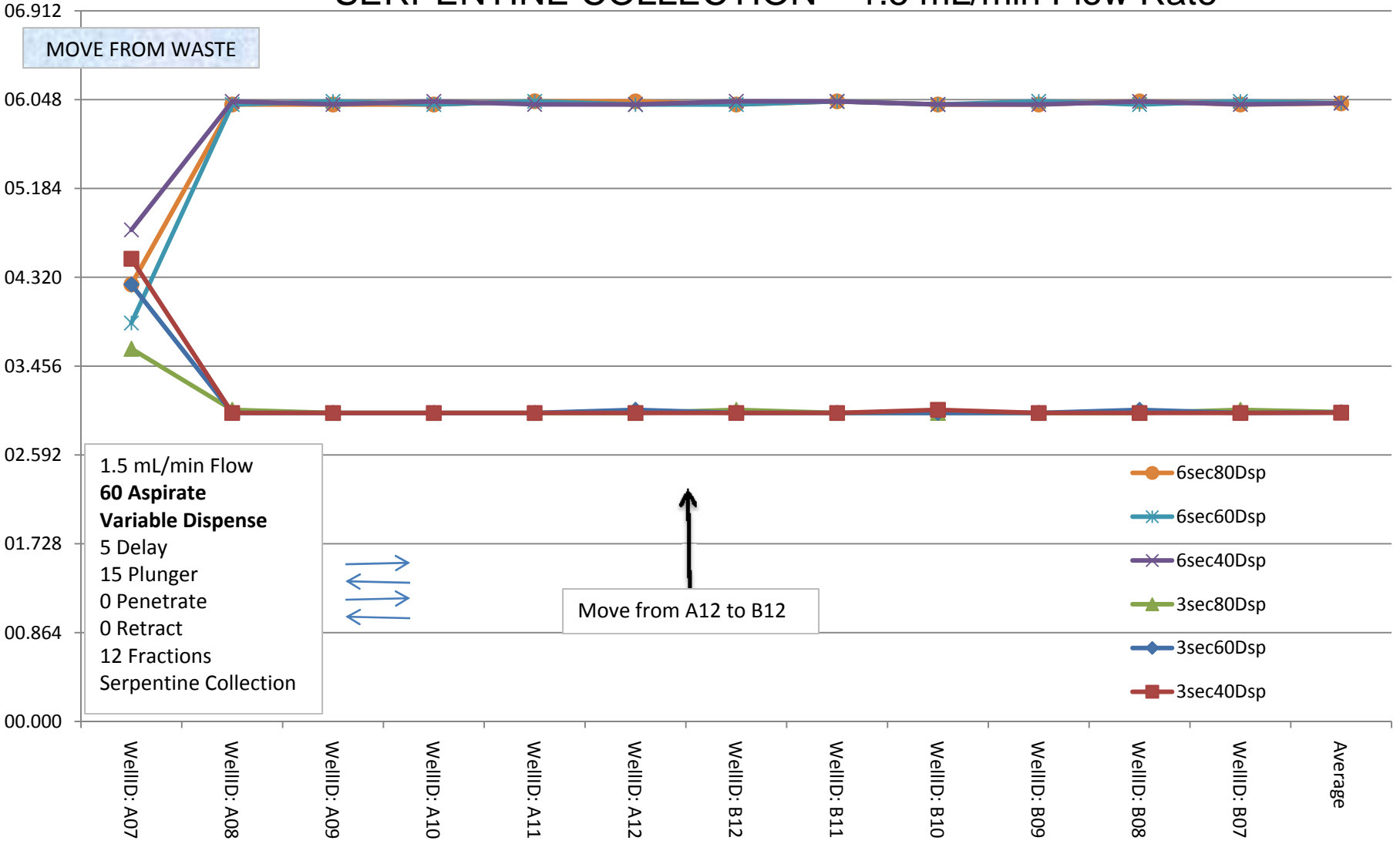


# 60 ASPIRATION NUMERICAL COLLECTION – 500 uL/min Flow Rate

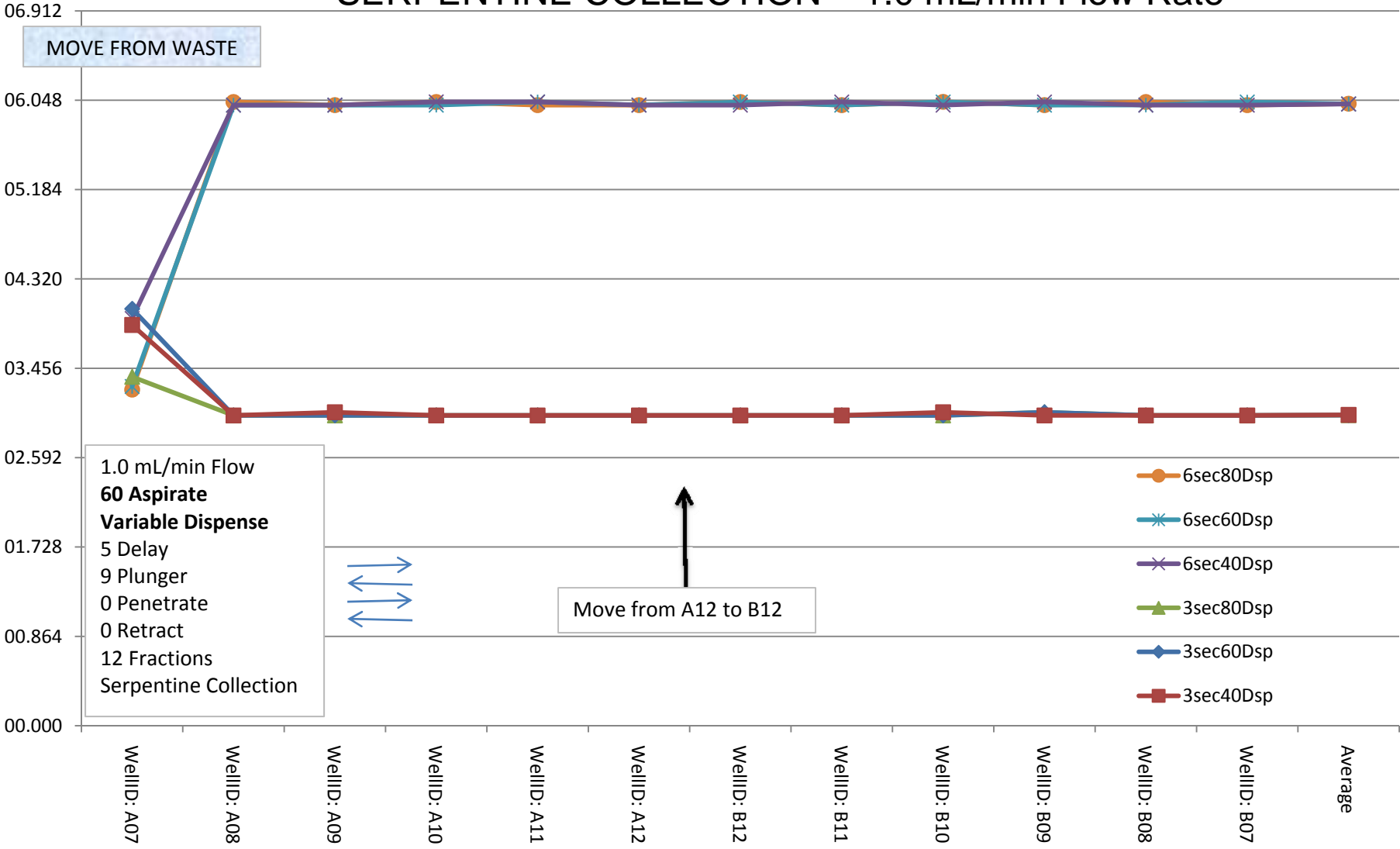




# 60 ASPIRATION SERPENTINE COLLECTION – 1.5 mL/min Flow Rate



# 60 ASPIRATION SERPENTINE COLLECTION – 1.0 mL/min Flow Rate



1.0 mL/min Flow  
**60 Aspirate**  
**Variable Dispense**  
 5 Delay  
 9 Plunger  
 0 Penetrate  
 0 Retract  
 12 Fractions  
 Serpentine Collection

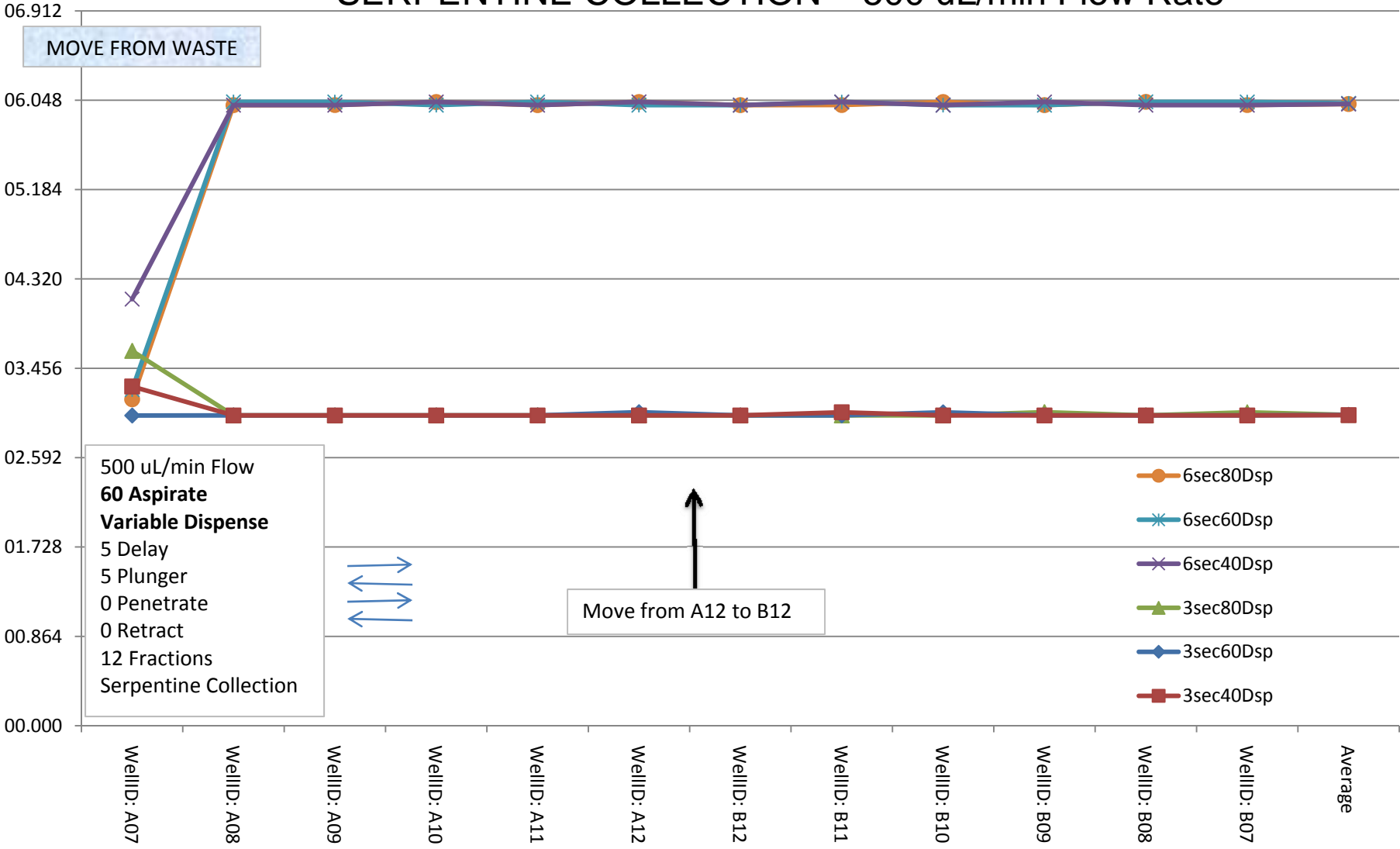
6sec80Dsp  
 6sec60Dsp  
 6sec40Dsp  
 3sec80Dsp  
 3sec60Dsp  
 3sec40Dsp



Move from A12 to B12



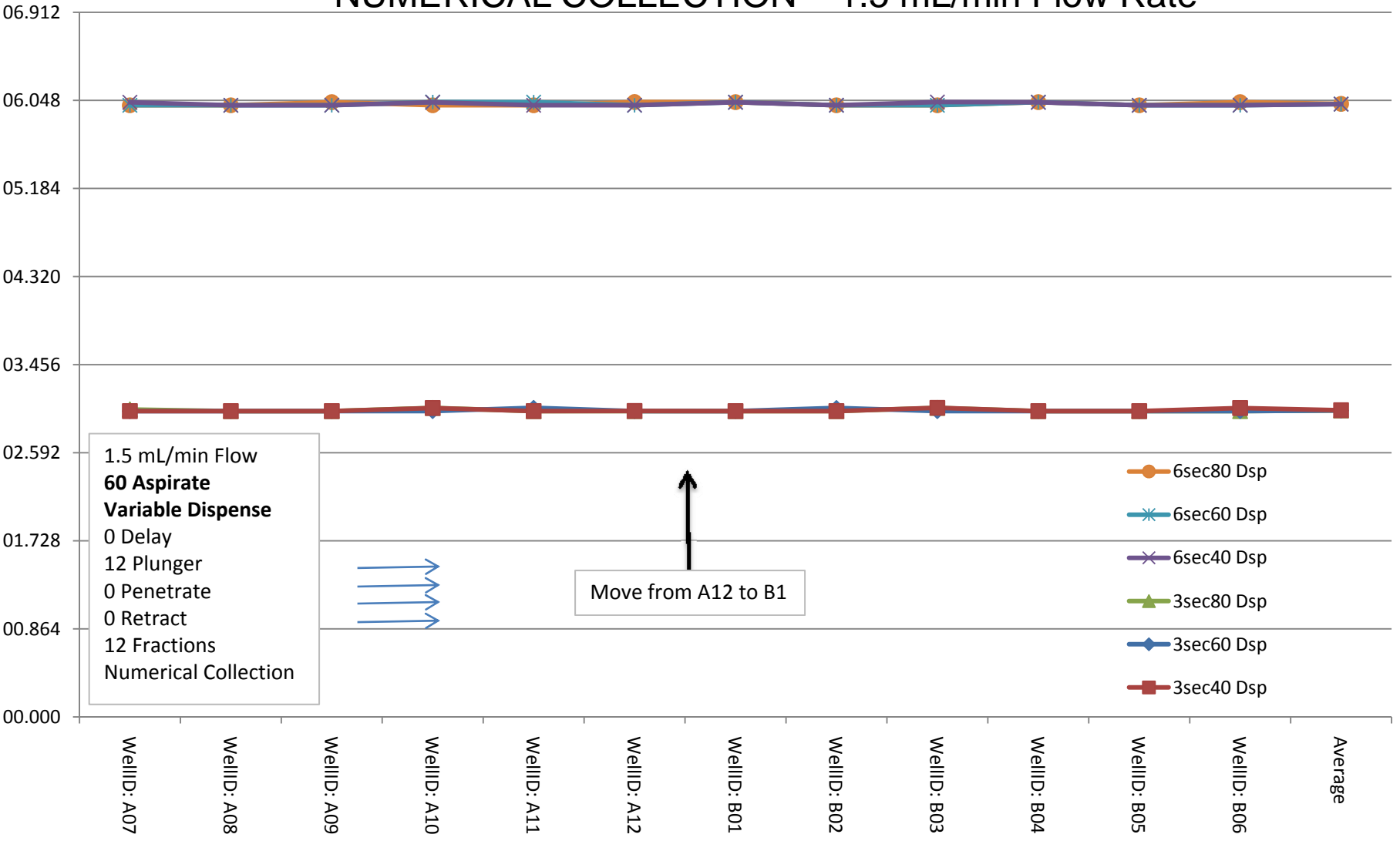
# 60 ASPIRATION SERPENTINE COLLECTION – 500 uL/min Flow Rate



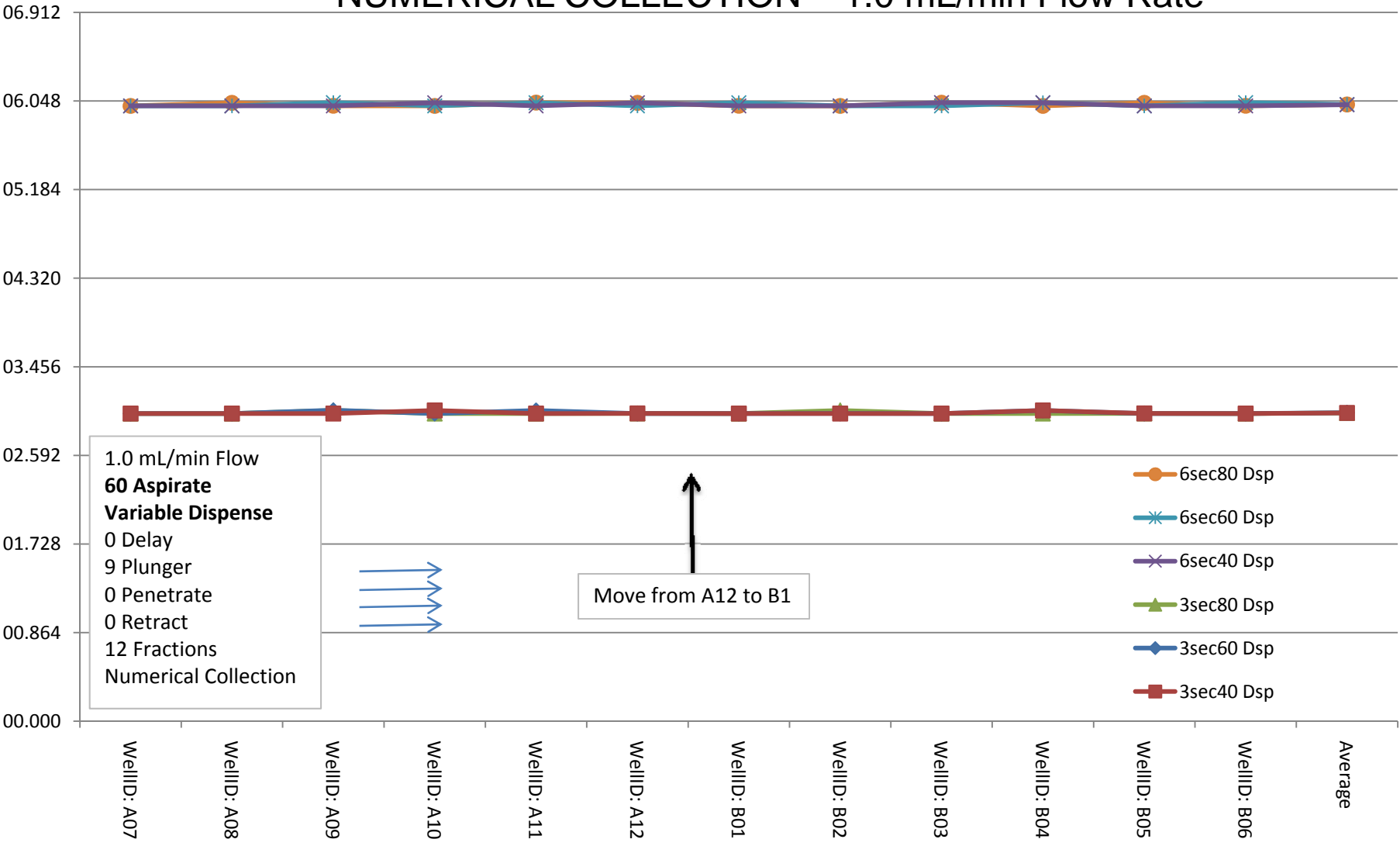
# 60 ASPIRATE Variable DISPENSE 0sec Delay Results

- 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.
- For numerical collection patterns all DSP settings for all flow rates passes.
- For serpentine collection patterns all DSP settings for all flow rates passed.

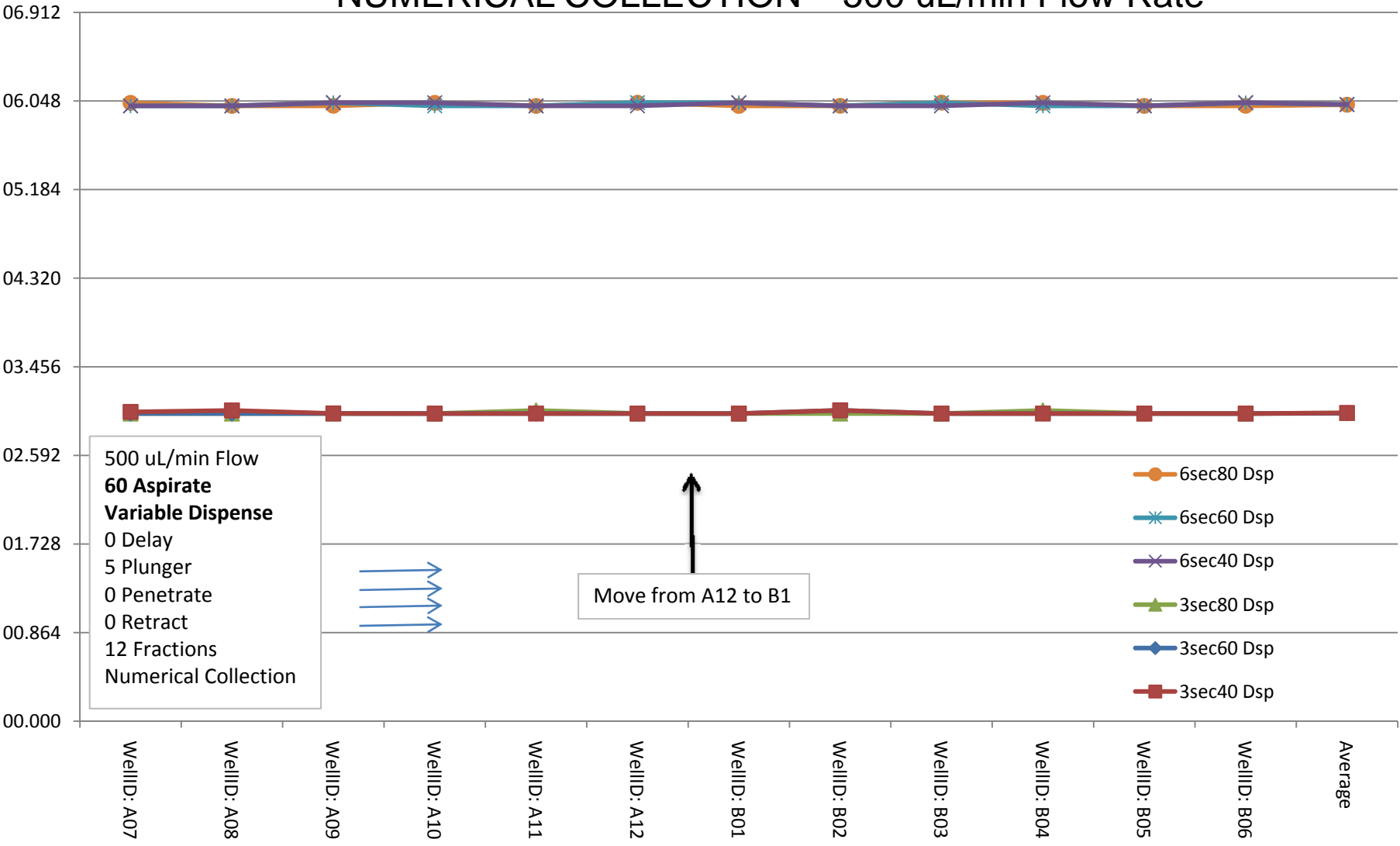
# 60 ASPIRATION NUMERICAL COLLECTION – 1.5 mL/min Flow Rate



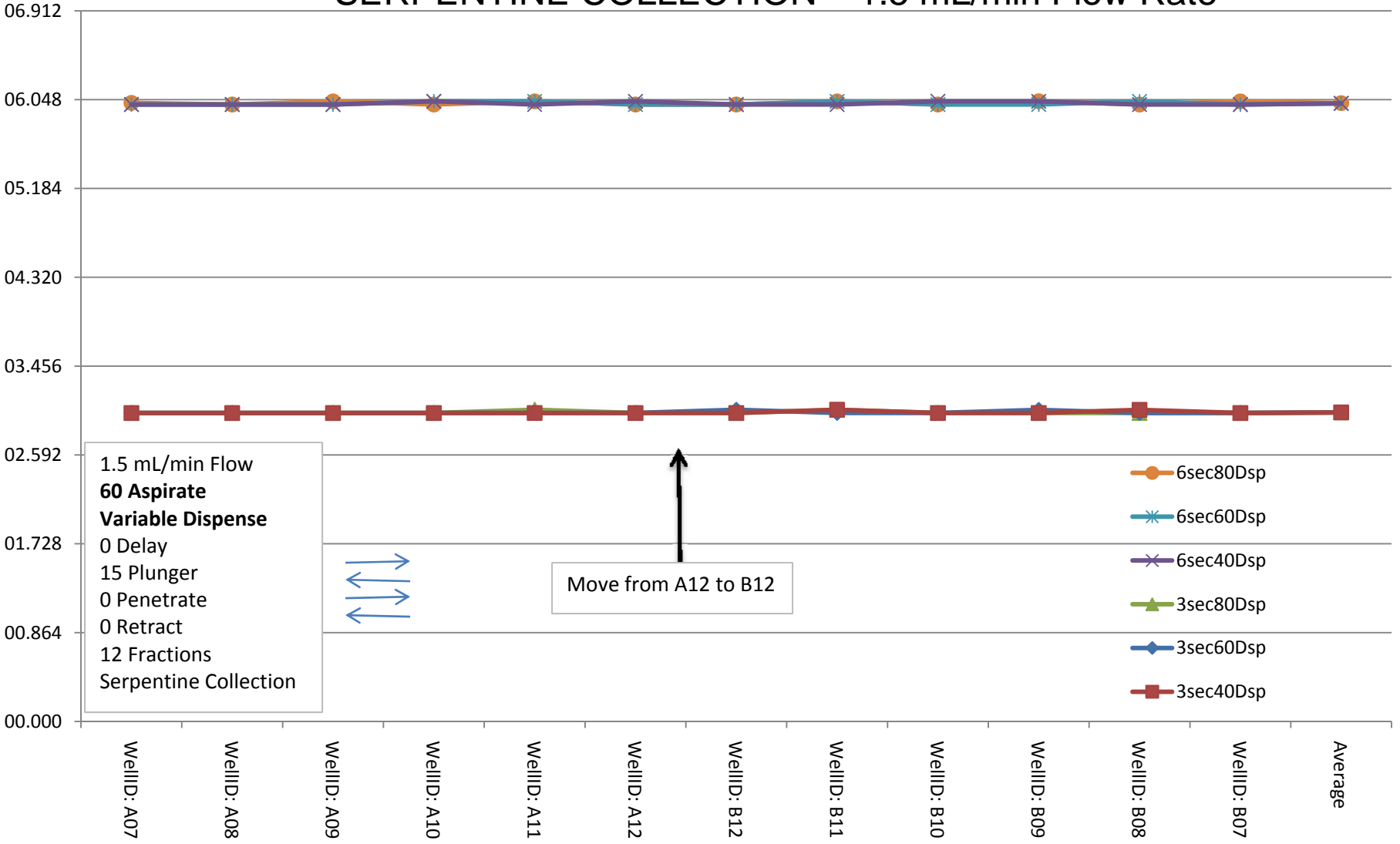
# 60 ASPIRATION NUMERICAL COLLECTION – 1.0 mL/min Flow Rate



# 60 ASPIRATION NUMERICAL COLLECTION – 500 uL/min Flow Rate

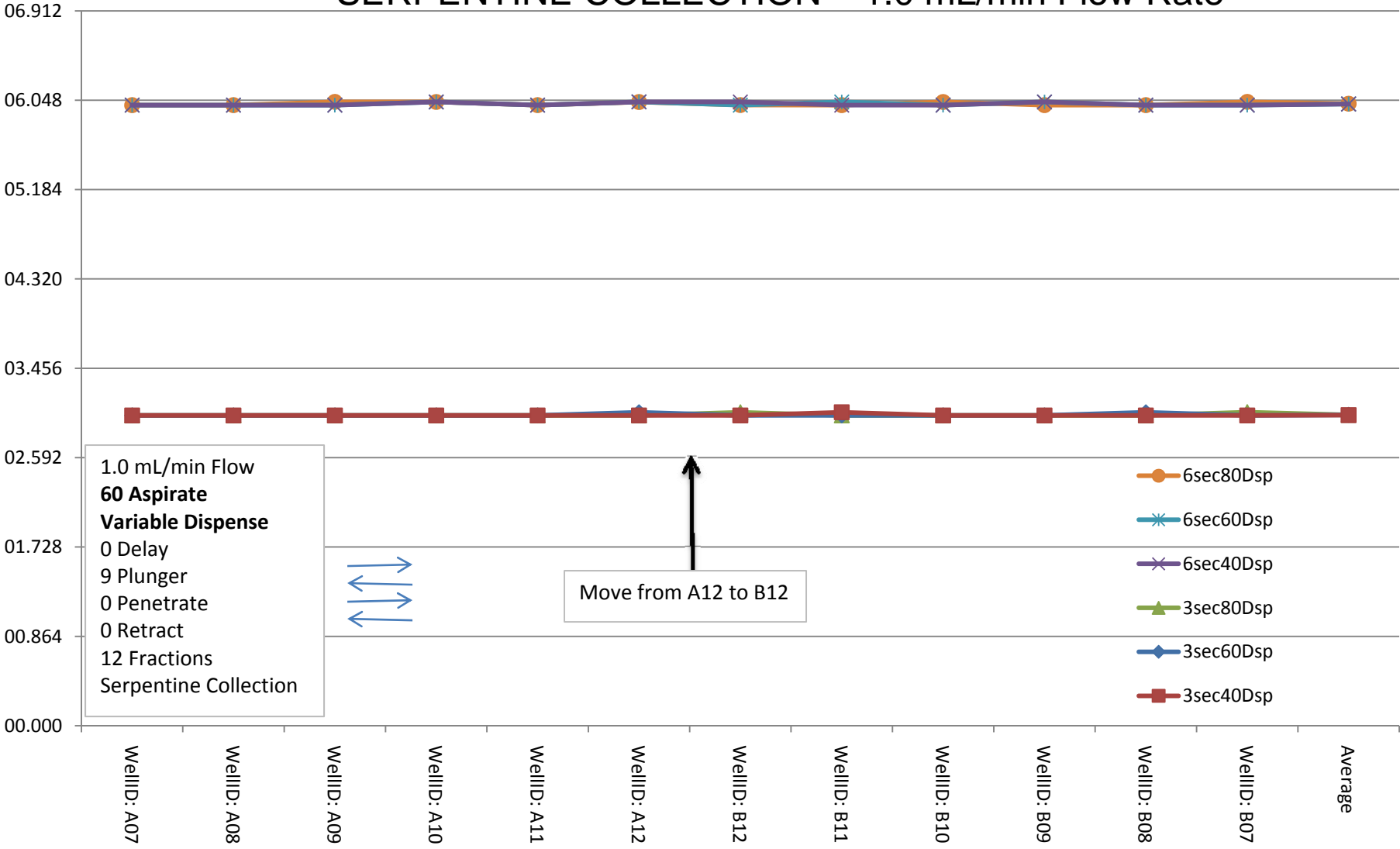


# 60 ASPIRATION SERPENTINE COLLECTION – 1.5 mL/min Flow Rate

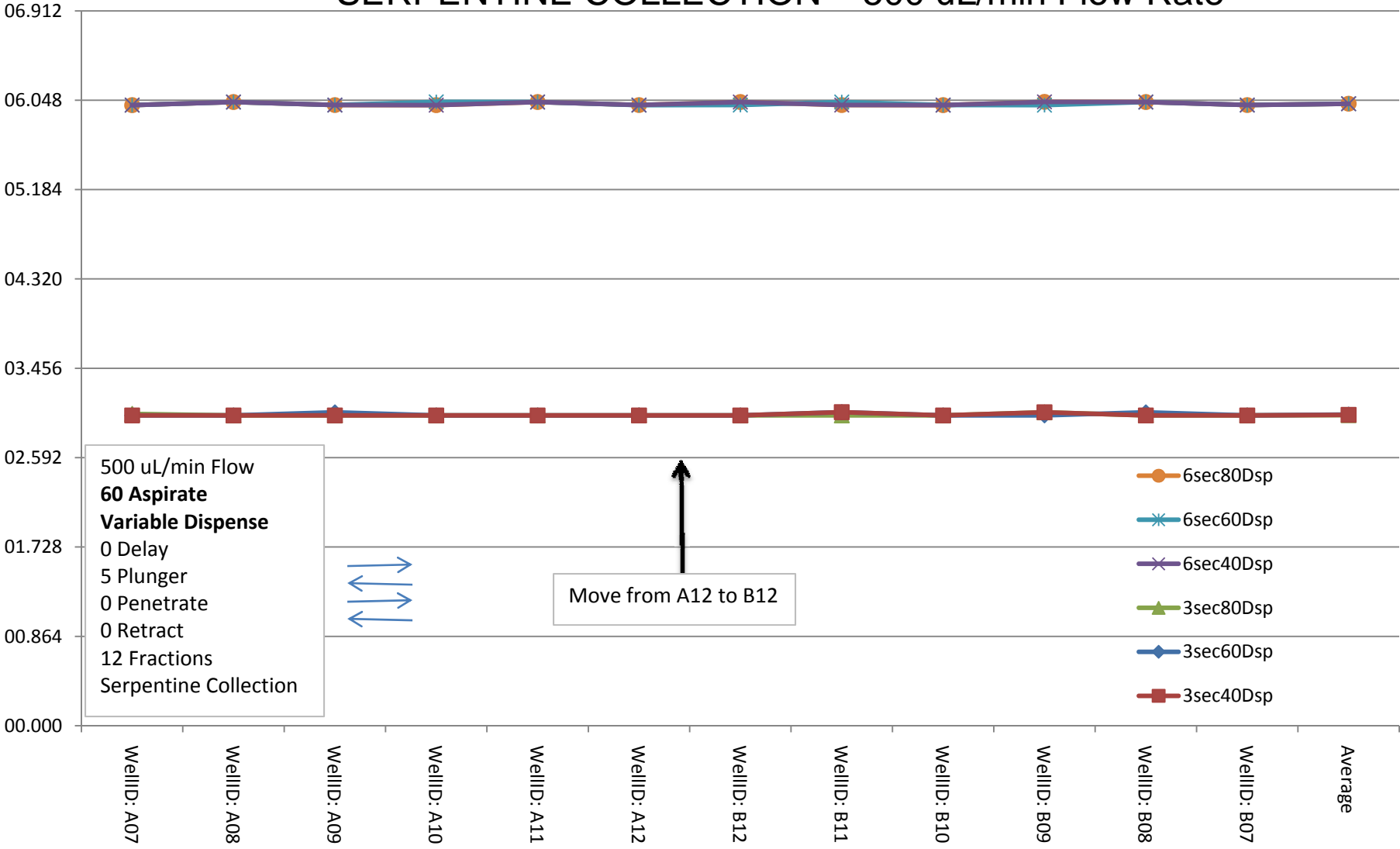




# 60 ASPIRATION SERPENTINE COLLECTION – 1.0 mL/min Flow Rate



# 60 ASPIRATION SERPENTINE COLLECTION – 500 uL/min Flow Rate



500 uL/min Flow  
**60 Aspirate**  
**Variable Dispense**  
 0 Delay  
 5 Plunger  
 0 Penetrate  
 0 Retract  
 12 Fractions  
 Serpentine Collection



Move from A12 to B12

- 6sec80Dsp
- 6sec60Dsp
- 6sec40Dsp
- 3sec80Dsp
- 3sec60Dsp
- 3sec40Dsp